1414 West Hamilton Avenue
P.O. Box 8
Eau Claire, WI 54702-0008

January 21, 2020

Ms. Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, D.C. 20426

Subject: **2019 Water Quality Monitoring Report – Articles 404 & 406**
Big Falls Hydro (P-2390-01) and Thornapple Hydro (P-2475)

Dear Secretary:

Enclosed is the 2019 Water Quality Monitoring Report for the Big Falls and Thornapple hydroelectric projects. The report is being filed pursuant to license articles 404 (Big Falls) and 406 (Thornapple). The results are summarized for the past five years and while there appears to be some variability in the parameters analyzed, for the most part, the results have been relatively consistent. Northern States Power Company – Wisconsin (NSPW), licensee for the projects, has also confirmed that the water quality monitoring results for Turtle Flambeau Reservoir (P-2390-02) have been posted on the WDNR's website.

Licensee provided a copy of the report to the WDNR and USFWS for comment via e-mail on November 5, 2019. The WDNR responded that they had no comments. The USFWS responded that they will not be providing comments. Documentation of agency correspondence is included in Appendix D of the enclosed report.

Should you have any questions, feel free to contact Matthew Miller of this office at (715) 737-1353 or by e-mail at matthew.j.miller@xcelenergy.com.

Sincerely,

Scott Crotty
-for-

James M. Zyduck
Director, Hydro Plants

Enclosure: Water Quality Monitoring Report

c: Cheryl Laatsch – WDNR (cover letter only – via email)
Nick Utrup – USFWS (cover letter only – via e-mail)
Project Files

2019 Water Quality Monitoring Report for Big Falls Flowage (P-2390-01) and Thornapple Flowage (P-2475)

Northern States Power Company –WI

An Xcel Energy Company

November 2019

APPENDIX A

2019 Water Quality Lab Analysis For Big Falls and Thornapple Flowages

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Big Falls Hydro	Project Name/Location: Phosphorus	
1400 Western Ave		**Reported:**
Eau Claire WI, 54701	Project Manager: Matt J Miller	05/22/2019 12:29

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Big Falls Flowage Surface		MEE0118-01	Water	05/07/2019 10:49	05/09/2019 13:00
Big Falls Flowage Bottom		MEE0118-02	Water	05/07/2019 10:42	05/09/2019 13:00

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
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Christine Keefe, Manager (612) 630-4506

Big Falls Hydro	Project Name/Location: Phosphorus	
1400 Western Ave		**Reported:**
Eau Claire WI, 54701	Project Manager: Matt J Miller	05/22/2019 12:29

Big Falls Flowage Surface

MEE0118-01 (Water) - Chain of Custody Number: 238401

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0250	0.00200	0.00667	mg/L		1	BEE0516	5/21/19 12:46	5/22/19 10:36	EPA 365.1	HRD

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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Big Falls Hydro	Project Name/Location: Phosphorus	
1400 Western Ave		**Reported:**
Eau Claire WI, 54701	Project Manager: Matt J Miller	05/22/2019 12:29

Big Falls Flowage Bottom

MEE0118-02 (Water) - Chain of Custody Number: 238401

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0230	0.00200	0.00667	mg/L		1	BEE0516	5/21/19 12:46	5/22/19 10:37	EPA 365.1	HRD

Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Thornapple Hydro	Project Name/Location: Phosphorus	
W 5506 Dam Road		**Reported:**
Glen Flora WI, 54563	Project Manager: Matt J Miller	05/22/2019 12:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Thornapple Flowage Surface		MEE0119-01	Water	05/07/2019 13:22	05/09/2019 13:00
Thornapple Flowage Bottom		MEE0119-02	Water	05/07/2019 13:31	05/09/2019 13:00

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Thornapple Hydro	Project Name/Location: Phosphorus	
W 5506 Dam Road		**Reported:**
Glen Flora WI, 54563	Project Manager: Matt J Miller	05/22/2019 12:52

Thornapple Flowage Surface

MEE0119-01 (Water) - Chain of Custody Number: 238401

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0240	0.00200	0.00667	mg/L		1	BEE0516	5/21/19 12:46	5/22/19 10:38	EPA 365.1	HRD

Minneapolis Testing Laboratory
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Minneapolis, MN 55043
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Christine Keefe, Manager (612) 630-4506

Thornapple Hydro	Project Name/Location: Phosphorus	
W 5506 Dam Road		**Reported:**
Glen Flora WI, 54563	Project Manager: Matt J Miller	05/22/2019 12:52

Thornapple Flowage Bottom

MEE0119-02 (Water) - Chain of Custody Number: 238401

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0250	0.00200	0.00667	mg/L		1	BEE0516	5/21/19 12:46	5/22/19 10:41	EPA 365.1	HRD

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: 320836
NLS Customer: 96708

Phone: 715 737 1353

Client: **Xcel Energy**
Attn: Matt Miller (reports)
1414 W. Hamilton Ave
P.O. Box 8
Eau Claire, WI 54702

Project: Big Falls-Thornapple

Big Falls Flowage NLS ID: 1119936
COC: 209165:1 Matrix: SW
Collected: 05/07/19 10:50 Received: 05/09/19

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	See Attached					05/29/19	10200-H	721026460
Lab filtration for Chlorophyll	yes					05/10/19	NA	721026460

Thornapple Flowage NLS ID: 1119937
COC: 209165:2 Matrix: SW
Collected: 05/07/19 13:22 Received: 05/09/19

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	See Attached					05/29/19	10200-H	721026460
Lab filtration for Chlorophyll	yes					05/10/19	NA	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution and/or solids content.
ND = Not Detected (< LOD) LOD = Limit of Detection LOQ = Limit of Quantitation NA = Not Applicable
DWB = Dry Weight Basis %DWB = (mg/kg DWB) / 10000 1000 ug/L = 1 mg/L
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: Xcel Energy
Project: 320836
Big Falls-Thornapple

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
1119936	Big Falls Flowage	2.1	1.2	2.9	0.25	0.42
1119937	Thornapple Flowage	2.9	0.71	3.4	0.089	0.44

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.

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Big Falls Hydro	Project Name/Location: Phosphorus	
1400 Western Ave		**Reported:**
Eau Claire WI, 54701	Project Manager: Matt J Miller	08/02/2019 09:13

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Big Falls Flowage Surface		MEG0288-01	Water	07/23/2019 10:12	07/25/2019 11:10
Big Falls Flowage Bottom		MEG0288-02	Water	07/23/2019 10:15	07/25/2019 11:10

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Big Falls Hydro	Project Name/Location: Phosphorus	
1400 Western Ave		**Reported:**
Eau Claire WI, 54701	Project Manager: Matt J Miller	08/02/2019 09:13

Big Falls Flowage Surface

MEG0288-01 (Water) - Chain of Custody Number: 238402

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0490	0.00200	0.00667	mg/L		1	BEG0731	7/31/19 10:19	8/1/19 17:37	EPA 365.1	HRD

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Big Falls Hydro	Project Name/Location: Phosphorus	
1400 Western Ave		**Reported:**
Eau Claire WI, 54701	Project Manager: Matt J Miller	08/02/2019 09:13

Big Falls Flowage Bottom

MEG0288-02 (Water) - Chain of Custody Number: 238402

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0620	0.00200	0.00667	mg/L		1	BEG0731	7/31/19 10:19	8/1/19 17:38	EPA 365.1	HRD

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Thornapple Hydro	Project Name/Location: Phosphorus	
W 5506 Dam Road		**Reported:**
Glen Flora WI, 54563	Project Manager: Matt J Miller	08/02/2019 09:15

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Thornapple Flowage Surface		MEG0289-01	Water	07/23/2019 11:35	07/25/2019 11:10
Thornapple Flowage Bottom		MEG0289-02	Water	07/23/2019 11:32	07/25/2019 11:10

Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Thornapple Hydro	Project Name/Location: Phosphorus	
W 5506 Dam Road		**Reported:**
Glen Flora WI, 54563	Project Manager: Matt J Miller	08/02/2019 09:15

Thornapple Flowage Surface

MEG0289-01 (Water) - Chain of Custody Number: 238402

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0420	0.00200	0.00667	mg/L		1	BEG0731	7/31/19 10:19	8/1/19 17:39	EPA 365.1	HRD

Minneapolis Testing Laboratory
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Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Thornapple Hydro	Project Name/Location: Phosphorus	
W 5506 Dam Road		**Reported:**
Glen Flora WI, 54563	Project Manager: Matt J Miller	08/02/2019 09:15

Thornapple Flowage Bottom

MEG0289-02 (Water) - Chain of Custody Number: 238402

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0450	0.00200	0.00667	mg/L		1	BEG0731	7/31/19 10:19	8/1/19 17:40	EPA 365.1	HRD

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: 326669
NLS Customer: 96708

Client: **Xcel Energy**
Attn: Matt Miller (reports)
1414 W. Hamilton Ave
P.O. Box 8
Eau Claire, WI 54702

Phone: 715 737 1353

Project: Bigfalls - Thornapple

Big Falls Flowage NLS ID: 1136764
COC: 237392:1 Matrix: SW
Collected: 07/23/19 10:10 Received: 07/25/19

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
TESTS CANCELLED	Sample lost during analysis, no chlorophyll result available.					08/06/19	NA	721026460
Lab filtration for Chlorophyll	yes					07/26/19	NA	721026460

Thornapple Flowage NLS ID: 1136765
COC: 237392:2 Matrix: SW
Collected: 07/23/19 11:28 Received: 07/25/19

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
TESTS CANCELLED	Sample lost during analysis, no chlorophyll result available.					08/06/19	NA	721026460
Lab filtration for Chlorophyll	yes					07/26/19	NA	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution and/or solids content.
ND = Not Detected (< LOD) LOD = Limit of Detection LOQ = Limit of Quantitation NA = Not Applicable
DWB = Dry Weight Basis %DWB = (mg/kg DWB) / 10000 1000 ug/L = 1 mg/L
MCL = Maximum Contaminant Levels for Drinking Water Samples. Shaded results indicate >MCL.

Reviewed by:

Authorized by:
R. T. Krueger
President

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Big Falls Hydro	Project Name/Location: Phosphorus	
1400 Western Ave		**Reported:**
Eau Claire WI, 54701	Project Manager: Matt J Miller	09/06/2019 08:45

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Big Falls Flowage Surface		MEH0645-01	Water	08/27/2019 8:49	08/29/2019 13:15
Big Falls Flowage Bottom		MEH0645-02	Water	08/27/2019 8:55	08/29/2019 13:15

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Big Falls Hydro	Project Name/Location: Phosphorus	
1400 Western Ave		**Reported:**
Eau Claire WI, 54701	Project Manager: Matt J Miller	09/06/2019 08:45

Big Falls Flowage Surface

MEH0645-01 (Water) - Chain of Custody Number: 238403

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0330	0.00200	0.00667	mg/L		1	BEI0018	9/3/19 14:00	9/5/19 11:13	EPA 365.1	HRD

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Big Falls Hydro	Project Name/Location: Phosphorus	
1400 Western Ave		**Reported:**
Eau Claire WI, 54701	Project Manager: Matt J Miller	09/06/2019 08:45

Big Falls Flowage Bottom

MEH0645-02 (Water) - Chain of Custody Number: 238403

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0420	0.00200	0.00667	mg/L		1	BEI0018	9/3/19 14:00	9/5/19 11:13	EPA 365.1	HRD

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Thornapple Hydro	Project Name/Location: Phosphorus	
W 5506 Dam Road		**Reported:**
Glen Flora WI, 54563	Project Manager: Matt J Miller	09/06/2019 08:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Sample Qualifier	Laboratory ID	Matrix	Sampled	Received
Thornapple Flowage Surface		MEH0646-01	Water	08/27/2019 10:35	08/29/2019 13:15
Thornapple Flowage Bottom		MEH0646-02	Water	08/27/2019 10:43	08/29/2019 13:15

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Thornapple Hydro	Project Name/Location: Phosphorus	
W 5506 Dam Road		**Reported:**
Glen Flora WI, 54563	Project Manager: Matt J Miller	09/06/2019 08:46

Thornapple Flowage Surface

MEH0646-01 (Water) - Chain of Custody Number: 238403

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0380	0.00200	0.00667	mg/L		1	BEI0018	9/3/19 14:00	9/5/19 11:14	EPA 365.1	HRD

Minneapolis Testing Laboratory
1518 Chestnut Ave N
Minneapolis, MN 55043
Certification # MN-027-053-197
WI-999071150
Christine Keefe, Manager (612) 630-4506

Thornapple Hydro	Project Name/Location: Phosphorus	
W 5506 Dam Road		**Reported:**
Glen Flora WI, 54563	Project Manager: Matt J Miller	09/06/2019 08:46

Thornapple Flowage Bottom

MEH0646-02 (Water) - Chain of Custody Number: 238403

Analyte	Result	LOD	LOQ	Units	Analyte Qualifier	Dilution	Batch	Prepared	Analyzed	Method	Analyst
Wet Chemistry											
Phosphate, Total as P	0.0410	0.00200	0.00667	mg/L		1	BEI0018	9/3/19 14:00	9/5/19 11:15	EPA 365.1	HRD

NORTHERN LAKE SERVICE, INC.
Analytical Laboratory and Environmental Services
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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: 329410
NLS Customer: 96708
Phone: 715 737 1353

Client: **Xcel Energy**
Attn: Matt Miller (reports)
1414 W. Hamilton Ave
P.O. Box 8
Eau Claire, WI 54702

Project: Big Falls Thornapple

Big Falls Flowage NLS ID: 1144396
COC: 238321:1 Matrix: SW
Collected: 08/27/19 08:49 Received: 08/29/19

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	See Attached					09/04/19	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/29/19	NA	721026460

Thornapple Flowage NLS ID: 1144397
COC: 238321:2 Matrix: SW
Collected: 08/27/19 10:35 Received: 08/29/19

Parameter	Result	Units	Dilution	LOD	LOQ	Analyzed	Method	Lab
Chlorophyll, all species	See Attached					09/04/19	10200-H	721026460
Lab filtration for Chlorophyll	yes					08/29/19	NA	721026460

Values in brackets represent results greater than or equal to the LOD but less than the LOQ and are within a region of "Less-Certain Quantitation". Results greater than or equal to the LOQ are considered to be in the region of "Certain Quantitation". LOD and/or LOQ tagged with an asterisk(*) are considered Reporting Limits. All LOD/LOQs adjusted to reflect dilution and/or solids content.
ND = Not Detected (< LOD) LOD = Limit of Detection LOQ = Limit of Quantitation NA = Not Applicable
DWB = Dry Weight Basis %DWB = (mg/kg DWB) / 10000 1000 ug/L = 1 mg/L
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: Xcel Energy
Project: 329410
Big Falls Thornapple

Sample	Description	CC a	Pheo a	TC a	TC b	TC c
1144396	Big Falls Flowage	2.3	0.93	3	0.11	0.036
1144397	Thornapple Flowage	1.7	1	2.4	0.11	0.059

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.

APPENDIX B

Summary Of Total Phosphorous And Chlorophyll A Data For Big Falls And Thornapple Flowages 2015 - 2019

Summary of Water Quality Data for Big Falls and Thornapple Flowages (2015-2019)

	Big Falls Flowage			Thornapple Flowage		
	Surface	Surface	Bottom	Surface	Surface	Bottom
	Total Phosphorus	Chlorophyll-A (CCa)	Total Phosphorus	Total Phosphorus	Chlorophyll-A (CCa)	Total Phosphorus
Date	(mg/L P)	(ug/L)	(mg/L P)	(mg/L P)	(ug/L)	(mg/L P)
4/28/2015	0.02	1.3	0.03	0.03	1.7	0.02
7/21/2015	0.04	6.8	0.05	0.03	0.6	0.03
8/26/2015	0.03	4.1	0.03	0.03	2.4	0.03
5/3/2016	0.02	1.9	0.02	0.02	2.1	0.02
7/19/2016	0.03	2.0	0.06	0.03	0.6	0.03
8/30/2016	0.02	4.7	0.03	0.03	1.3	0.03
4/24/2017	0.02	3.6	0.03	0.02	2.5	0.03
7/24/2017	0.03	1.6	0.05	0.03	1.3	0.04
8/29/2017	0.02	3.1	0.06	0.03	1.1	0.03
5/8/2018	0.03	7.8	0.03	0.02	2.5	0.02
7/24/2018	0.04	7.8	0.04	0.04	13.0	0.04
8/29/2018	0.04	8.1	0.04	0.03	0.9	0.03
5/7/2019	0.03	2.1	0.02	0.02	2.9	0.03
7/23/2019	0.05	n/a*	0.06	0.04	n/a*	0.05
8/27/2018	0.03	2.3	0.04	0.04	1.7	0.04
Average (Ice-out sample)	0.03	3.13	0.02	0.02	2.43	0.03
Average (July sample)	0.04	4.55	0.05	0.03	3.87	0.04
Average (August sample)	0.03	4.46	0.04	0.03	1.48	0.03

** Lab lost samples during analysis - see analytical report*

APPENDIX C

Summary Of Dissolved Oxygen and Temperature Data for Big Falls Flowage and Thornapple Flowage

2015-2019

Dissolved Oxygen and Temperature Profiles for the Big Falls Flowage in 2015.

Date:	4/28/2015
Secchi Disk (ft.):	4.0
Depth of Bottom Sample (ft):	34
Weather Conditions:	sunny, winds calm
Temperature (F):	57

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	13.4	10.75
2.0	12.0	10.83
4.0	11.9	10.81
6.0	11.7	10.77
8.0	11.6	10.75
10.0	11.6	10.72
12.0	11.6	10.71
14.0	11.5	10.69
16.0	11.5	10.69
18.0	11.4	10.66
20.0	11.3	10.64
22.0	11.2	10.60
24.0	11.1	10.57
26.0	11.1	10.57
28.0	11.0	10.59
30.0	11.0	10.56
32.0	10.8	10.45
34.0	10.7	10.4
36.0	Bottom	Bottom

Date:	7/21/2015
Secchi Disk (ft.):	4.0
Depth of Bottom Sample (ft):	34
Weather Conditions:	mostly sunny, NW winds @ 10
Temperature (F):	68

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	24.3	7.52
2.0	24.3	7.51
4.0	24.1	7.37
6.0	24.0	7.39
8.0	23.9	7.40
10.0	23.9	7.38
12.0	23.9	7.35
14.0	23.9	7.32
16.0	23.8	7.30
18.0	23.8	7.27
20.0	23.8	7.26
22.0	23.8	7.26
24.0	23.8	7.26
26.0	23.8	7.25
28.0	23.8	7.25
30.0	23.8	7.21
32.0	23.8	7.20
34.0	23.8	7.03
36.0	Bottom	Bottom

Date:	8/26/2015
Secchi Disk (ft.):	5.0
Depth of Bottom Sample:	36
Weather Conditions:	mostly sunny, NW winds @ 5
Temperature (F):	60

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	18.1	7.84
2.0	18.0	7.82
4.0	17.7	7.81
6.0	17.6	7.83
8.0	17.0	8.24
10.0	16.6	8.40
12.0	16.6	8.42
14.0	16.4	8.42
16.0	16.3	8.47
18.0	16.3	8.47
20.0	16.3	8.51
22.0	16.3	8.52
24.0	16.3	8.54
26.0	16.2	8.57
28.0	16.1	8.55
30.0	16.1	8.59
32.0	16.0	8.56
34.0	16.0	8.58
36.0	16.0	8.55
38.0	Bottom	Bottom

Dissolved Oxygen and Temperature Profiles for the Big Falls Flowage in 2016.

Date:	5/3/2016		Date:	7/19/2016		Date:	8/30/2016	
Secchi Disk (ft.):		4.5	Secchi Disk (ft.):		4.0	Secchi Disk (ft.):		4.0
Depth of Bottom Sample (ft):		35	Depth of Bottom Sample (ft):		NA	Depth of Bottom Sample:		34
Weather Conditions:	hazy sun, wind west @ 10		Weather Conditions:	Sunny, calm wind		Weather Conditions:	cloudy, calm wind	
Temperature (F):		55	Temperature (F):	74		Temperature (F):		60

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	13.2	10.18
2	13.0	10.21
4	12.9	10.17
6	12.8	10.15
8	12.8	10.13
10	12.8	10.12
12	12.8	10.11
14	12.8	10.11
16	12.8	10.10
18	12.8	10.10
20	12.8	10.10
22	12.8	10.08
24	12.8	10.05
26	12.7	10.03
28	12.8	10.04
30	12.7	10.03
32	12.7	10.04
34	12.7	10.0
36	Bottom	Bottom

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface		

No sampling - DO meter malfunctioned

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	22.9	7.80
2	22.9	7.77
4	22.7	7.74
6	22.7	7.73
8	22.7	7.71
10	22.7	7.71
12	22.7	7.69
14	22.6	7.66
16	22.6	7.66
18	22.6	7.64
20	22.6	7.64
22	22.6	7.60
24	22.6	7.53
26	22.5	7.46
28	22.5	7.31
30	22.5	7.29
32	22.3	7.35
34	22.0	7.35
36	Bottom	Bottom

Dissolved Oxygen and Temperature Profiles for the Big Falls Flowage in 2017.

Date: 4/24/2017
Secchi Disk (ft.): 4.0
Depth of Bottom Sample (ft): 34
Weather Conditions: Overcast, south wind @ 15
Temperature (F): 55

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	11.6	11.09
2	11.4	11.06
4	11.3	11.05
6	11.3	11.02
8	11.3	11.00
10	11.3	10.98
12	11.3	10.98
14	11.2	10.97
16	11.2	10.96
18	11.2	10.95
20	11.2	10.95
22	11.2	10.94
24	11.2	10.94
26	11.2	10.93
28	11.1	10.92
30	11.1	10.90
32	11.1	10.89
34	11.1	10.87
36	Bottom	Bottom

Date: 7/24/2017
Secchi Disk (ft.): 4.0
Depth of Bottom Sample (ft): 36
Weather Conditions: Partly cloudy, light winds
Temperature (F): 62

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	24.5	6.27
2	24.1	6.23
4	24.1	6.23
6	24.1	6.25
8	24.1	6.26
10	24.0	6.26
12	24.0	6.26
14	24.0	6.25
16	24.0	6.24
18	23.9	6.25
20	23.9	6.27
22	23.8	6.26
24	23.7	6.28
26	23.7	6.28
28	23.7	6.25
30	23.7	6.27
32	23.7	6.25
34	23.7	6.22
36	23.7	6.13
38	Bottom	Bottom

Date: 8/29/2017
Secchi Disk (ft.): 5.0
Depth of Bottom Sample: 34
Weather Conditions: Overcast, calm winds
Temperature (F): 58

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	18.7	8.25
2	18.7	8.23
4	18.5	8.20
6	18.5	8.18
8	18.4	8.17
10	18.4	8.13
12	18.4	8.09
14	18.4	8.08
16	18.4	8.08
18	18.4	8.07
20	18.4	8.07
22	18.4	8.07
24	18.4	8.05
26	18.4	8.04
28	18.3	8.01
30	18.3	8.01
32	18.3	8.01
34	18.2	7.84
36	Bottom	Bottom

Dissolved Oxygen and Temperature Profiles for the Big Falls Flowage in 2018.

Date: 5/8/2018
Secchi Disk (ft.): 4.5
Depth of Bottom Sample (ft): 34
Weather Conditions: overcast, calm wind
Temperature (F): 73

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	17.6	9.88
2	16.6	10.00
4	16.6	9.97
6	16.4	9.96
8	16.2	9.92
10	16.2	9.92
12	16.2	9.92
14	16.2	9.92
16	16.2	9.91
18	16.2	9.91
20	16.2	9.90
22	16.2	9.90
24	16.2	9.89
26	16.2	9.91
28	16.2	9.90
30	16.2	9.90
32	16.2	9.89
34	16.1	9.91
36	Bottom	Bottom

Date: 7/24/2018
Secchi Disk (ft.): 5.0
Depth of Bottom Sample (ft): 36
Weather Conditions: mostly sunny, winds NW @ 5-10
Temperature (F): 72

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	24.0	8.35
2	23.7	8.34
4	23.4	8.22
6	23.3	8.20
8	23.3	8.16
10	23.3	8.15
12	23.3	8.14
14	23.1	7.95
16	23.0	7.94
18	23.0	7.90
20	23.0	7.77
22	22.7	7.74
24	22.5	7.60
26	22.5	7.57
28	22.4	7.51
30	22.3	7.47
32	22.2	7.29
34	22.2	7.24
36	22.2	7.18
38	Bottom	Bottom

Date: 8/29/2018
Secchi Disk (ft.): 5.0
Depth of Bottom Sample (ft): 36
Weather Conditions: partly sunny, winds N @ 5-10
Temperature (F): 59

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	21.6	7.33
2	21.6	7.31
4	21.6	7.30
6	21.6	7.29
8	21.6	7.27
10	21.5	7.23
12	21.5	7.24
14	21.4	7.27
16	21.4	7.28
18	21.4	7.26
20	21.4	7.22
22	21.4	7.22
24	21.4	7.23
26	21.4	7.23
28	21.4	7.24
30	21.4	7.21
32	21.4	7.15
34	21.4	6.92
36	21.3	6.7
	Bottom	Bottom

Dissolved Oxygen and Temperature Profiles for the Big Falls Flowage in 2019.

Date: 5/7/2019
Secchi Disk (ft.): 5.5
Depth of Bottom Sample (ft): 36
Weather Conditions: mostly sunny, wind NW @ 5 mph
Temperature (F): 47

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	12.3	10.65
2	12.2	10.64
4	12.1	10.66
6	11.9	10.63
8	11.8	10.62
10	11.8	10.61
12	11.8	10.60
14	11.7	10.59
16	11.4	10.60
18	11.4	10.59
20	11.4	10.59
22	11.4	10.58
24	11.4	10.58
26	11.4	10.57
28	11.4	10.57
30	11.4	10.57
32	11.4	10.56
34	11.3	10.56
36	11.3	10.54
38	Bottom	Bottom

Date: 7/23/2019
Secchi Disk (ft.): 4.5
Depth of Bottom Sample (ft): 34
Weather Conditions: mostly sunny, wind NW @ 5 mph
Temperature (F): 73

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	23.4	7.77
2	23.3	7.65
4	23.1	7.58
6	23.0	7.64
8	23.0	7.68
10	23.0	7.68
12	23.0	7.68
14	23.0	7.68
16	23.0	7.67
18	23.0	7.67
20	23.0	7.67
22	23.0	7.66
24	23.0	7.57
26	23.0	7.55
28	23.0	7.52
30	23.0	7.50
32	22.9	7.44
34	22.9	7.44
36	Bottom	Bottom

Date: 8/27/2019
Secchi Disk (ft.): 5.0
Depth of Bottom Sample (ft): 30
Weather Conditions: partly sunny, winds SW @ 5-10
Temperature (F): 60

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	19.8	8.06
2	19.8	8.08
4	19.8	8.06
6	19.8	8.04
8	19.8	8.05
10	19.8	8.05
12	19.8	8.04
14	19.8	8.04
16	19.8	8.05
18	19.8	8.03
20	19.8	8.04
22	19.8	8.03
24	19.8	8.03
26	19.8	8.01
28	19.8	7.99
30	19.7	7.88
32	Bottom	Bottom

Dissolved Oxygen and Temperature Profiles for the Thornapple Flowage in 2015.

Date:	4/28/2015
Secchi Disk (ft.):	4.0
Depth of Bottom Sample (ft):	18
Weather Conditions:	sunny, calm winds
Temperature (F):	63

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	13.8	10.52
2.0	10.9	10.41
4.0	10.6	10.42
6.0	10.3	10.31
8.0	10.3	10.28
10.0	10.0	10.14
12.0	9.9	10.09
14.0	9.9	10.11
16.0	9.9	10.10
18.0	9.9	10.08
20.0	Bottom	Bottom

Date:	7/21/2015
Secchi Disk (ft.):	5.5
Depth of Bottom Sample (ft):	20
Weather Conditions:	sunny, NW winds @ 10
Temperature (F):	78

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	24.3	6.77
2.0	23.8	6.69
4.0	23.8	6.66
6.0	23.4	6.61
8.0	22.9	6.55
10.0	22.8	6.52
12.0	22.8	6.48
14.0	22.8	6.48
16.0	22.7	6.47
18.0	22.7	6.46
20.0	22.7	6.44
22.0	Bottom	Bottom

Date:	8/26/2015
Secchi Disk (ft.):	6.0
Depth of Bottom Sample (ft)	18
Weather Conditions:	mostly sunny, NW winds @ 5
Temperature (F):	66

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	20.4	8.22
2.0	19.4	8.23
4.0	18.8	8.20
6.0	18.5	8.07
8.0	18.4	7.99
10.0	18.3	7.90
12.0	18.3	7.89
14.0	18.3	7.87
16.0	18.3	7.88
18.0	18.2	7.80
20.0	Bottom	Bottom

Dissolved Oxygen and Temperature Profiles for the Thornapple Flowage in 2016.

Date:	5/3/2016
Secchi Disk (ft.):	4.5
Depth of Bottom Sample (ft):	20
Weather Conditions:	overcast, wind west @ 15-20
Temperature (F):	65

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	11.0	10.65
2.0	10.9	10.58
4.0	10.8	10.59
6.0	10.8	10.59
8.0	10.5	10.60
10.0	10.5	10.63
12.0	10.5	10.61
14.0	10.4	10.59
16.0	10.4	10.58
18.0	10.4	10.59
20.0	10.4	10.57
22.0	Bottom	Bottom

Date:	7/19/2016
Secchi Disk (ft.):	4.5
Depth of Bottom Sample (ft):	NA
Weather Conditions:	mostly sunny, s wind @ 5-10
Temperature (F):	79

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)

No Sampling - DO meter malfunctioned

Date:	8/30/2016
Secchi Disk (ft.):	4.5
Depth of Bottom Sample (ft)	20
Weather Conditions:	partly sunny, light winds
Temperature (F):	80

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	24.3	6.99
2.0	23.9	6.88
4.0	23.6	6.85
6.0	23.4	6.77
8.0	23.4	6.76
10.0	23.3	6.72
12.0	23.2	6.66
14.0	23.2	6.66
16.0	23.2	6.65
18.0	23.2	6.64
20.0	23.2	6.57
22.0	Bottom	Bottom

Dissolved Oxygen and Temperature Profiles for the Thornapple Flowage in 2017.

Date: 4/24/2017
Secchi Disk (ft.): 4.0
Depth of Bottom Sample (ft): 20
Weather Conditions: overcast, windy
Temperature (F): 60

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	10.1	11.15
2.0	10.1	11.05
4.0	10.1	10.95
6.0	10.0	10.97
8.0	10.0	10.94
10.0	10.0	10.97
12.0	10.0	10.95
14.0	10.0	10.90
16.0	10.0	10.95
18.0	10.0	10.90
20.0	10.0	10.9
22.0	Bottom	Bottom

Date: 7/24/2017
Secchi Disk (ft.): 5.0
Depth of Bottom Sample (ft): 20
Weather Conditions: mostly sunny, light winds
Temperature (F): 72

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	24.5	6.82
2.0	23.4	6.84
4.0	23.1	6.83
6.0	23.0	6.80
8.0	22.9	6.79
10.0	22.9	6.79
12.0	22.9	6.77
14.0	22.9	6.76
16.0	22.9	6.73
18.0	22.9	6.72
20.0	22.9	6.69
22.0	Bottom	Bottom

Date: 8/29/2017
Secchi Disk (ft.): 6.0
Depth of Bottom Sample (ft) 18
Weather Conditions: cloudy, light winds
Temperature (F): 62

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	21.6	7.59
2.0	21.3	7.47
4.0	21.2	7.42
6.0	21.1	7.39
8.0	21.1	7.35
10.0	21.0	7.33
12.0	21.0	7.30
14.0	21.0	7.24
16.0	21.0	7.23
18.0	20.9	7.21
20.0	Bottom	Bottom

Dissolved Oxygen and Temperature Profiles for the Thornapple Flowage in 2018.

Date: 5/8/2018
Secchi Disk (ft.): 5.0
Depth of Bottom Sample (ft): 20
Weather Conditions: cloudy, south wind @ 5-10
Temperature (F): 73

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	12.5	11.55
2.0	12.1	11.62
4.0	12.0	11.61
6.0	12.0	11.59
8.0	11.9	11.58
10.0	11.8	11.59
12.0	11.7	11.58
14.0	11.7	11.56
16.0	11.7	11.55
18.0	11.7	11.53
20.0	11.6	11.5
22.0	Bottom	Bottom

Date: 7/24/2018
Secchi Disk (ft.): 5.0
Depth of Bottom Sample (ft): 18
Weather Conditions: mostly sunny, wind NW @ 5-10
Temperature (F):

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	26.2	7.90
2.0	25.7	7.67
4.0	25.6	7.48
6.0	25.4	7.26
8.0	25.3	7.14
10.0	25.3	7.19
12.0	25.3	7.16
14.0	25.3	7.16
16.0	25.0	7.16
18.0	23.8	6.78
20.0	Bottom	Bottom

Date: 8/29/2018
Secchi Disk (ft.): 5.5
Depth of Bottom Sample (ft) 20
Weather Conditions: partly cloudy, light winds
Temperature (F):

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	21.5	6.20
2.0	21.5	6.18
4.0	21.4	6.17
6.0	21.4	6.16
8.0	21.4	6.17
10.0	21.4	6.16
12.0	21.4	6.14
14.0	21.4	6.15
16.0	21.4	6.14
18.0	21.4	6.13
20.0	21.4	6.1
22.0	Bottom	Bottom

Dissolved Oxygen and Temperature Profiles for the Thornapple Flowage in 2019.

Date: 5/7/2019
Secchi Disk (ft.): 6
Depth of Bottom Sample (ft): 20
Weather Conditions: sunny, winds N @ 5 mph
Temperature (F): 56

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	9.4	12.23
2.0	9.3	12.28
4.0	9.2	12.26
6.0	9.2	12.25
8.0	9.2	12.23
10.0	9.2	12.22
12.0	9.2	12.23
14.0	9.2	12.22
16.0	9.1	12.21
18.0	9.1	12.20
20.0	9.1	12.1
22.0	Bottom	Bottom

Date: 7/23/2019
Secchi Disk (ft.): 6
Depth of Bottom Sample (ft): 20
Weather Conditions: mostly sunny, NW wind @ 5 mph
Temperature (F): 74

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	25.3	6.45
2.0	24.6	6.36
4.0	24.3	6.25
6.0	24.2	6.21
8.0	24.2	6.20
10.0	24.2	6.20
12.0	24.2	6.19
14.0	24.2	6.18
16.0	24.2	6.18
18.0	24.2	6.16
20.0	24.2	6.10
22.0	Bottom	Bottom

Date: 8/27/2019
Secchi Disk (ft.): 5.0
Depth of Bottom Sample (ft) 18
Weather Conditions: partly sunny, SW wind at 15 mph
Temperature (F):

Depth (ft.)	Temperature (celsius)	Dissolved Oxygen (mg/l)
Surface	20.8	7.33
2.0	20.8	7.30
4.0	20.8	7.29
6.0	20.7	7.26
8.0	20.7	7.25
10.0	20.7	7.24
12.0	20.7	7.28
14.0	20.7	7.31
16.0	20.6	7.26
18.0	20.6	7.21
20.0	Bottom	Bottom

APPENDIX D

Agency Correspondence

Xcel Energy®
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1414 West Hamilton Avenue
P.O. Box 8
Eau Claire, WI 54702-0008

November 5, 2019

Cheryl Laatsch – Statewide FERC Coordinator
WI Dept. of Natural Resources
N7725 Hwy 28
Horicon, WI 53032

Nick Utrup
U.S. Fish and Wildlife Service
Wisconsin/Minnesota Ecological Services Field Office
4101 American Boulevard East
Bloomington, MN 55425

Subject: **2019 Water Quality Monitoring Report**
Big Falls (P-2390-01), Thornapple (P-2475) & Turtle-Flambeau (P-2390-02)

Dear Ms. Laatsch and Mr. Utrup:

Enclosed is the 2019 Water Quality Sampling Report for Big Falls and Thornapple flowages. The samples were taken in May, July and August from the deepest point of each reservoir immediately upstream of the boat restraining barrier. The report includes results for the past five years.

Annual water quality monitoring for the Turtle Flambeau Flowage is conducted by the Citizens Lake Monitoring Program and the results are published on the WDNR's website. The link is: https://dnr.wi.gov/lakes/clmn/Stations.aspx?location=26. Should citizen monitoring be discontinued in the future, NSPW shall provide replacement services as stipulated in the 2008 Water Quality Certification for Big Falls Hydro.

Should you have any questions concerning this report, you may contact me at (715) 737-1353 or at matthew.j.miller@xcelenergy.com. **Please provide any comments you may have by December 30, 2019.**

Sincerely,

Matthew J. Miller
Hydro License Compliance Consultant

Enclosure

c: General Project Files

Miller, Matthew J

From: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>
Sent: Tuesday, January 21, 2020 1:26 PM
To: Miller, Matthew J
Subject: RE: 2019 Annual Water Quality Report for Big Falls and Thornapple

No comments. thanks

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

dnr.wi.gov

From: Miller, Matthew J <Matthew.J.Miller@xcelenergy.com>
Sent: Tuesday, January 21, 2020 12:56 PM
To: Laatsch, Cheryl - DNR <Cheryl.Laatsch@wisconsin.gov>; (Nick_Utrup@fws.gov) <Nick_Utrup@fws.gov>
Subject: RE: 2019 Annual Water Quality Report for Big Falls and Thornapple

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From: Miller, Matthew J
Sent: Thursday, January 16, 2020 9:37 AM
To: Laatsch, Cheryl - DNR; (Nick_Utrup@fws.gov)
Subject: RE: 2019 Annual Water Quality Report for Big Falls and Thornapple

Hi Cheryl and Nick,

Please respond if you have any comments. My filing is due to FERC January 31.

From: Miller, Matthew J
Sent: Tuesday, November 05, 2019 11:53 AM
To: Laatsch, Cheryl - DNR; (Nick_Utrup@fws.gov)
Subject: RE: 2019 Annual Water Quality Report for Big Falls and Thornapple

The file I sent had an internal error and will not print. Attached is a printable version.

From: Miller, Matthew J
Sent: Tuesday, November 05, 2019 10:22 AM
To: Laatsch, Cheryl - DNR; (Nick_Utrup@fws.gov)
Subject: 2019 Annual Water Quality Report for Big Falls and Thornapple

Hello Cheryl and Nick,

Attached is the 2019 Annual Water Quality Monitoring Report for Big Falls and Thornapple. Please provide any comments you may have by December 30, 2019 so I may file the report with FERC. Let me know if you require a hard copy.

Matthew Miller
Xcel Energy | Responsible By Nature
Hydro License Compliance Consultant
1414 W. Hamilton Ave., P.O. Box 8, Eau Claire, WI 54702
P: 715.737-1353 **F**: 715.737.1077
E: matthew.j.miller@xcelenergy.com

XCELENERGY.COM

Miller, Matthew J

From: Utrup, Nick <nick_utrup@fws.gov>
Sent: Tuesday, January 21, 2020 12:59 PM
To: Miller, Matthew J
Cc: Laatsch, Cheryl - DNR
Subject: Re: [EXTERNAL] RE: 2019 Annual Water Quality Report for Big Falls and Thornapple

Hi Matt,

We will not be providing any comments on the water quality reports.

Thanks,

Nick

Nick Utrup
U.S. Fish and Wildlife Service
Minnesota/Wisconsin Field Office
4101 American Boulevard East
Bloomington, MN 55425

Office: (952) 252-0092 Ext. 204
FAX: (952) 646-2873
Email: Nick_Utrup@fws.gov

On Tue, Jan 21, 2020 at 12:56 PM Miller, Matthew J <Matthew.J.Miller@xcelenergy.com> wrote:

> **From:** Miller, Matthew J
> **Sent:** Thursday, January 16, 2020 9:37 AM
> **To:** Laatsch, Cheryl - DNR; (Nick_Utrup@fws.gov)
> **Subject:** RE: 2019 Annual Water Quality Report for Big Falls and Thornapple
>
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