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January 9, 2004

FEDERAL ENERGY
REGULATORY COMMISSION

Ms. Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

041

RE: Michigamme Falls Hydroelectric Project - FERC No. 2073-008

Article 408; -Year 2003 - Water Quality Monitoring Report

Wisconsin Electric (WE) doing business as We-Energies, is hereby filing one original and eight additional copies of the results of water quality monitoring for the above identified Project performed during 2003 in fulfillment of the monitoring plan approved and incorporated in the article identified above by FERC for this project.

The Commission issued a new license for the above Project on January 12, 2001 and by Order issued March 9, 2001 clarified certain Water Quality Monitoring requirements. The approved monitoring plan assures that the discharges from the above Project meet the state's water quality standards for temperature and dissolved oxygen (DO). The applicable mean temperature standards for the months during which continuous monitoring takes place are shown in the table below:

Month	June	July	August	September
°F	80	83	81	74
°C	26.7	28.3	27.2	23.3

The applicable D.O. standard is 5.0 mg/l at all times.

The Plan as approved by FERC order dated January 12, 2001 was subsequently modified by WE, with approval of consulted state agencies. The modified plan was filed with FERC in correspondence dated May 20, 2003. The modified plan now requires continuous monitoring of temperature and dissolved oxygen for the next three years at only those projects where problems in meeting the water quality standards were encountered during the previous two years (2001-2002) period. Michigamme Falls was one of three projects which experienced problems during this time frame.

In addition, the modified plan also requires the collection of vertical profile measurements in the flowage upstream of any project when continuous monitoring is being conducted in the tailrace waters.

The results of our 2003 monitoring for this project are as follows:

I. Continuous water quality monitoring

Appendix A contains summary tables for the continuous monitoring data. Temperature and DO were monitored continuously from mid-July through the end of September in the Project's tailrace. As in 2001, the discharge from the Michigamme Falls Projects failed to meet the dissolved oxygen standard for a few hours during selected days in the month of August.

Appendix A also contains the monitoring data recovery statistics for each of the multi-function data sondes used in this monitoring period.

As part of this filing, a diskette containing all the raw data and accompanying explanatory sheets are being submitted to the agencies for their use.

II. Flowage measurements

Appendix B contains the results of the vertical profile measurements for the project which have been taken over the past three years (2001-2003). Patterns observed in Michigamme Falls Flowage were generally similar to previous years' observations, with an exception that occurred during the later part of August, 2003 as explained in the next section.

Consideration of Corrective Measures

The work conducted in 2003 represent WE's continuing efforts to correct problems caused by plant operations encountered during the initial two-year monitoring period that was specified by the initial Water Quality Monitoring Plan for this Project. The low DO problems encountered at Michigamme Falls during 2001 were expected, due to the nature of operations and the location of the intake relative to historic flowage thermocline depths. During 2001, the problems were mostly confined to periods when the plant was offline and the discharge from the plant was leakage flow. The source of the leakage flow was believed to be poorly oxygenated hypolimnetic water in the flowage. The change in operating conditions required by the new license operating directives in 2002 coupled with the installation of a new adjustable Kaplan turbine on one of the existing units corrected this problem, as evidenced by the 2002 monitoring data. However, follow-up work in 2003 showed that low DO conditions "re-appeared" in the tail race. In 2003, DO levels dropped below 5.0 mg/l (the lowest reading was 4.6 mg/l) during a total of six hours in late-August. We believe that these low readings were the result of abnormal conditions in the upstream flowage, which, in turn, were created by a prolonged wind-induced upwelling in the flowage. The wind-induced upwelling brought low DO water from the bottom of the flowage to the surface of the flowage in a region immediately upstream of the Project's intake (see vertical profile data for August 28, Appendix B, Table B-3). The transient nature of this event was captured by the vertical profile measurements. By contrast, no similar upwelling apparently occurred during 2001 or 2002 (Appendix B, Tables B-1, B-2). Thus, the incidence of low DO readings in the Project's tailrace were not caused by abnormal / non-permitted plant operations.

As a result of this year's findings, no additional continuous monitoring is proposed at this Project for the next three years.

Enclosed is a proof of service to the agencies listed on the copy list.

Please call me at (414) 221-2413, if you have questions on this matter.

Sincerely,

William Rauscher



William Rauscher

Manager, Hydroelectric Operations

Enclosures

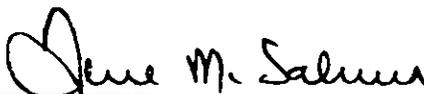
cc: Mr. Thomas Meronek, WDNR
w/diskette
Ms. Jessica Mistak, MDNR w/
diskette

Mr. Larry Thompson, USFWS
Mr. John Suppnick, MDEQ

Certificate of Service

I hereby certify that I have this day served the foregoing document upon all entities specified in the order to issue license to be consulted on matters related to the Commission filing. Service was done pursuant to Rule 2010 of FERC's Rules of Practice and Procedure 18 CFR, Section 385.2010

Dated this day Friday, January 9, 2004



Annie Salmona
We Energies

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Appendix A

Michigamme Falls Tailrace - 2003 Summary Data

Dissolved Oxygen Limit 5.0 mg/l

Monthly Average		<u>Degree F</u>	<u>Degree C</u>
Temperature Limits:	July	83	28.3
	August	81	27.2
	Sept	74	23.3

Michigamme Falls Tailrace - 2003 Data Summary

Month	OBS	Temperature (Degrees C)			DO % Saturation			Dissolved Oxygen		
		Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
Jul	375	21.3	22.6	20.5	83.8	108.1	62.0	7.3	9.3	5.4
Aug	744	22.4	24.3	21.1	72.6	95.3	54.1	6.1	9.4	4.6
Sep	720	18.9	22.1	13.2	83.3	95.3	65.3	7.7	9.4	6.0

100 % Data Recovery Monitoring Data from July 16 @ 0900 - Sept 30, 2003
 6 D.O. values below 5.0 mg/l 8/25 1600-2000 & 8/28 1300 (see below)

Date	Hour	Water Used	Water Wasted	D.O.
8/25/2003	1600	224	0	4.9
8/25/2003	1700	246	0	4.9
8/25/2003	1800	221	0	4.9
8/25/2003	1900	244	0	4.8
8/25/2003	2000	221	0	4.9
8/28/2003	1300	653	0	4.6

Appendix B Table B-1
 Mich Falls 2001 Hydroelectric Project
 Vertical Profile Data

7-Jun-01				21-Jun-01				11-Jul-01									
Approximate air temp.: 21 C				Approximate air temp.: 21 C				Approximate air temp.: 22 C									
Time 1250				Time 1030				Time 1130									
Secchi Depth: 6.0 ft water depth: 40-43'				Secchi Depth: 5.0 ft water depth: 4L-42'				Secchi Depth: 6.5 ft water depth: 40-42'									
57% clouds				100% overcast				30% clouds									
Light variable winds				Calin				NNW winds 8-12 mph and gusty									
sunny, beautiful day				Drizzly													
Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)
0.0	18.1	9.1	98.3	96	7.4	0.0	19.2	8.2	91.5	102	7.4	0.0	22.4	8.5	100.3	110	7.6
0.5	18.8	9.4	99.9	95	7.5	0.5	19.2	8.2	91.3	101	7.3	0.5	22.4	8.4	101.0	110	7.6
1.0	16.3	9.3	97.8	95	7.5	1.0	19.2	8.1	90.1	101	7.3	1.0	22.4	8.5	101.0	110	7.6
1.5	16.1	9.3	96.6	95	7.4	1.5	19.2	8.0	89.0	100	7.3	1.5	22.3	8.5	100.5	110	7.6
2.0	15.9	9.1	94.9	94	7.4	2.0	19.1	8.0	88.9	101	7.3	2.0	22.3	8.5	100.0	110	7.6
2.5	15.4	9.1	93.7	94	7.4	2.5	19.1	7.9	87.8	101	7.3	2.5	22.3	8.4	99.7	111	7.6
3.0	15.2	9.1	92.9	94	7.4	3.0	19.0	8.0	88.2	101	7.2	3.0	22.3	8.4	98.7	110	7.6
3.5	15.0	9.0	91.9	94	7.3	3.5	18.8	7.7	88.1	101	7.2	3.5	22.3	8.4	98.6	110	7.6
4.0	14.9	9.0	91.2	93	7.3	4.0	18.7	7.7	85.0	102	7.2	4.0	22.2	8.4	98.0	111	7.6
4.5	14.8	8.9	90.3	95	7.3	4.5	18.5	7.5	82.7	102	7.2	4.5	22.2	8.3	98.0	110	7.5
5.0	14.7	8.9	89.6	95	7.3	5.0	18.4	7.6	83.2	102	7.2	5.0	22.2	8.3	98.6	110	7.5
5.5	14.5	8.8	88.2	95	7.3	5.5	18.4	7.4	81.3	101	7.3	5.5	22.1	8.4	98.3	110	7.5
6.0	14.4	8.7	87.6	94	7.3	6.0	18.4	7.5	81.9	101	7.2	6.0	21.8	8.2	96.1	110	7.5
6.5	14.3	8.7	87.0	94	7.3	6.5	18.3	7.4	80.7	101	7.2	6.5	21.8	8.1	94.4	110	7.5
7.0	14.4	8.7	87.0	93	7.3	7.0	18.3	7.4	79.8	99	7.1	7.0	20.9	7.2	82.6	111	7.2
7.5	14.3	8.7	86.4	93	7.2	7.5	18.1	7.2	77.5	100	7.1	7.5	20.7	7.1	81.9	109	7.2
8.0	14.3	8.6	86.0	93	7.2	8.0	18.0	7.1	77.1	99	7.1	8.0	20.5	7.0	79.4	111	7.2
8.5	14.3	8.6	86.3	94	7.2	8.5	17.9	7.1	76.8	101	7.1	8.5	20.3	6.8	77.7	110	7.1
9.0	14.3	8.6	86.4	94	7.2	9.0	17.9	7.0	76.3	100	7.1	9.0	20.2	6.6	74.7	109	7.1
9.5	14.2	8.6	86.4	93	7.2	9.5	17.8	7.1	76.6	101	7.1	9.5	19.8	6.3	70.7	108	7.1
10.0	14.2	8.6	85.7	95	7.2	10.0	17.8	6.9	74.8	100	7.0	10.0	19.8	6.2	68.4	109	7.1
10.5	14.2	8.5	85.3	93	7.2	10.5	17.8	6.9	74.7	101	7.0	10.5	19.8	6.0	87.7	109	7.0
11.0	14.2	8.5	85.3	94	7.2	11.0	17.6	6.7	71.7	99	7.0	11.0	19.7	5.9	86.1	109	7.0
11.5	14.2	8.5	85.1	93	7.2	11.5	17.6	6.6	71.4	101	7.0	11.5	19.6	5.9	65.9	107	7.0
11.9	14.2	8.5	84.6	94	7.2	12.0	17.5	6.5	69.4	99	7.0	12.0	19.5	5.7	63.8	108	7.0
						12.5	17.4	6.3	67.9	98	7.0	12.5	19.3	5.3	58.8	111	6.9
						12.8	17.3	6.2	66.8	100	7.0	12.9	19.2	5.1	56.9	111	6.9

Highlighted depths- Opening to intake forebay (1.5 to 9.5m)

Tailrace data for same time period as vertical profile on 6/7/01

Time	Temp.C	D.O.mg/l	D.O.% Sat	Cond	pH
1200	14.9	8.9	89.6	81	n/a
1300	14.8	8.9	89.4	82	n/a
1400	14.9	8.9	89.5	82	n/a

n/a - no data available

Tailrace data for same time period as vertical profile on 6/21/01

Time	Temp.C	D.O.mg/l	D.O.% Sat	Cond	pH
1000	18.5	7.7	84.2	88	n/a
1100	18.6	7.7	84.2	86	n/a
1200	18.6	7.7	84.3	88	n/a

Tailrace data for same time period as vertical profile on 7/11/01

Time	Temp.C	D.O.mg/l	D.O.% Sat	Cond	pH
1100	21.4	7.6	87.2	111	n/a
1200	21.5	7.8	89.3	111	n/a
1300	22	8.1	93.9	111	n/a

Appendix B Table B-1
 Mich Falls 2001 Hydroelectric Project
 Vertical Profile Data -

27-Jul-01		9-Aug-01		22-Aug-01								
Approximate air temp.: 20 C Time: 1015 Light Clouds		Approximate air temp.: 29 C Time: 0915 10% clouds, warm muggy day		Approximate air temp.: 24 C Time: 1515 Sunny and clear								
Secchi Depth: 6.5 ft water depth: 40-42' Winds calm to light easterly 1-3 mph		Secchi Depth: 6.0 ft water depth: 40-42' Winds WSW 8-12 mph.		Secchi Depth: 8.0 ft water depth: 40-42' Light north wind								
Depth (m)	D.O. (mg/l)	D.O. % Saturation	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Temp. (C)	pH (S.U.)	pH (S.U.)	pH (S.U.)
0.0	22.8	7.3	86.6	113	7.4	0.0	23.1	6.9	81.7	123	7.4	7.4
0.5	22.8	7.1	85.3	113	7.5	0.5	22.9	7.1	82.9	122	7.4	7.4
1.0	22.8	7.2	85.7	113	7.5	1.0	22.6	7.2	83.9	123	7.5	7.5
1.5	22.8	7.2	85.7	113	7.5	1.5	22.3	7.2	83.9	123	7.5	7.5
2.0	22.8	7.2	85.2	113	7.5	2.0	22.3	7.2	83.9	122	7.6	7.6
2.5	22.8	6.9	81.2	113	7.4	2.5	22.3	7.0	81.5	123	7.6	7.6
3.0	22.7	6.9	82.8	113	7.4	3.0	22.3	7.0	80.7	122	7.6	7.6
3.5	22.7	6.9	81.5	113	7.4	3.5	21.7	6.2	71.1	122	7.6	7.6
4.0	22.7	6.9	82.6	113	7.4	4.0	21.4	6.2	71.4	123	7.6	7.6
4.5	22.7	6.9	81.8	113	7.4	4.5	21.3	6.2	69.8	122	7.6	7.6
5.0	22.7	6.8	79.6	113	7.4	5.0	21.3	5.9	67.2	122	7.5	7.5
5.5	22.6	6.6	77.5	113	7.3	5.5	21.3	5.9	66.5	122	7.5	7.5
6.0	22.5	6.3	75.1	114	7.3	6.0	21.1	5.8	66.5	122	7.5	7.5
6.5	22.5	5.9	89.9	114	7.2	6.5	21.1	5.8	66.2	123	7.5	7.5
7.0	22.5	5.8	88.9	114	7.2	7.0	21.1	5.3	60.4	123	7.5	7.5
7.5	22.5	5.9	89.8	112	7.1	7.5	21.0	5.3	58.9	123	7.5	7.5
8.0	22.3	5.5	83.5	113	7.1	8.0	21.0	5.2	58.8	123	7.5	7.5
8.5	22.2	5.2	58.5	113	7.1	8.5	20.9	5.1	58.0	123	7.5	7.5
9.0	22.1	4.8	55.1	112	7.1	9.0	20.9	5.4	60.8	123	7.5	7.5
9.5	21.9	4.3	48.5	111	6.9	9.5	20.9	5.3	59.8	123	7.5	7.5
10.0	21.9	4.2	48.3	113	6.9	10.0	20.9	5.3	59.8	123	7.5	7.5
10.5	21.8	4.0	46.9	113	6.9	10.5	20.9	5.3	59.4	123	7.5	7.5
11.0	21.5	3.4	40.6	113	6.8	11.0	20.8	4.7	53.2	128	7.5	7.5
11.5	21.4	3.5	39.4	111	6.8	11.5	20.8	4.7	54.3	125	7.5	7.5
12.0	21.2	3.2	30.3	115	6.8	12.0	20.7	4.7	53.7	128	7.5	7.5
12.5	20.8	2.7	30.3	115	6.8	12.5	20.5	3.9	42.1	128	7.4	7.4
13.0	20.2	2.3	21.3	117	6.8	12.8	20.5	3.9	42.1	128	7.4	7.4
13.1	bottom					13.1	bottom					

7/27/01		8/9/01		8/22/01								
Tailrace data for same time period as vertical profile on 7/27/01		Tailrace data for same time period as vertical profile on 8/9/01		Tailrace data for same time period as vertical profile on 8/22/01								
Time	D.O. (mg/l)	D.O. % Sat	Temp. C	D.O. (mg/l)	D.O. % Sat	Temp. C	D.O. (mg/l)	D.O. % Sat	Temp. C	pH	pH	pH
1000	22.6	6.9	81.1	116	n/a	900	24.3	4.9	59.6	122	n/a	n/a
1100	22.6	6.7	78.1	116	n/a	1000	23.8	5.2	63.5	122	n/a	n/a
1200	22.6	6.6	77.6	117	n/a	1100	24.2	5.5	67.4	122	n/a	n/a

Appendix B Table B-2
 Mich Falls 2002 Hydroelectric Project
 Vertical Profile Data -

6-Jun-02				20-Jun-02				2-Jul-02									
Approximate air temp.: 22 C				Approximate air temp.: 26.8 C				Approximate air temp.: 28.4 C									
Time: 1300				Time: 1400				Time: 1300									
90% clouds				30% overcast				50% clouds									
Secd Depth: 6.0 ft water depth: 40-43'				Secd Depth: 5.0 ft water depth: 40-42'				Secd Depth: 4.5 ft water depth: 40-42'									
SSW Winds				westerly 8-12 mph				strong 12-19 mph westerly									
Depth (m)	Temp (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)
0.0	17.5	9.0	96.0	85	7.2	0.0	20.4	6.1	92.1	96	7.3	0.0	25.8	7.4	92.5	96	7.4
0.5	17.4	8.9	95.9	85	7.2	0.5	20.3	6.0	89.5	96	7.3	0.5	25.9	7.5	93.9	96	7.4
1.0	15.3	8.9	90.6	84	7.2	1.0	20.0	7.9	88.7	96	7.4	1.0	25.6	7.4	92.3	96	7.4
1.5	15.2	8.8	89.9	84	7.2	1.5	19.9	7.9	88.5	96	7.3	1.5	25.2	7.2	89.4	96	7.4
2.0	15.1	8.7	88.7	84	7.2	2.0	19.6	7.9	88.5	96	7.3	2.0	24.3	7.0	85.4	96	7.3
2.5	15.0	8.7	86.3	83	7.2	2.5	19.4	7.9	88.0	96	7.3	2.5	23.9	6.8	81.9	96	7.3
3.0	14.9	8.6	86.7	83	7.2	3.0	18.6	7.8	85.8	96	7.3	3.0	22.9	6.3	74.9	95	7.2
3.5	14.7	8.5	85.9	83	7.2	3.5	18.0	7.7	83.0	95	7.3	3.5	21.6	6.3	72.0	94	7.2
4.0	14.6	8.5	84.7	83	7.2	4.0	17.8	7.7	82.0	95	7.2	4.0	21.7	6.0	69.6	94	7.2
4.5	14.6	8.4	84.8	82	7.2	4.5	17.5	7.1	75.9	94	7.2	4.5	21.5	6.1	70.8	94	7.1
5.0	14.5	8.4	84.7	83	7.2	5.0	16.5	7.1	73.7	94	7.1	5.0	21.3	6.1	70.4	94	7.1
5.5	14.5	8.4	84.9	83	7.2	5.5	16.5	7.1	74.1	92	7.1	5.5	21.3	6.1	70.2	94	7.1
6.0	14.4	8.4	84.0	82	7.2	6.0	16.5	7.1	74.4	93	7.1	6.0	21.0	5.8	67.9	94	7.1
6.5	14.4	8.4	84.1	83	7.2	6.5	16.5	7.1	74.4	93	7.1	6.5	21.0	6.1	68.6	94	7.1
7.0	14.4	8.4	83.7	82	7.2	7.0	16.5	7.2	74.4	92	7.1	7.0	20.6	6.0	66.3	93	7.1
7.5	14.4	8.3	83.0	72	7.2	7.5	16.4	7.2	74.7	93	7.1	7.5	20.7	5.9	67.2	93	7.1
8.0	14.3	8.2	81.7	83	7.2	8.0	16.4	7.1	74.7	92	7.1	8.0	20.6	5.9	67.2	93	7.1
8.5	14.3	8.2	82.1	83	7.2	8.5	16.4	7.2	74.7	91	7.1	8.5	20.3	5.9	66.0	93	7.1
9.0	14.3	8.2	81.7	82	7.2	9.0	16.4	7.2	74.7	92	7.1	9.0	20.2	5.8	65.1	92	7.1
9.5	14.3	8.2	81.6	83	7.2	9.5	16.4	7.2	74.7	91	7.1	9.5	20.1	5.7	64.2	92	7.1
10.0	14.3	8.0	80.1	82	7.2	10.0	16.4	7.2	74.8	91	7.1	10.0	20.0	5.7	63.5	92	7.0
10.5	14.2	8.0	79.7	83	7.2	10.5	16.4	7.2	74.9	91	7.1	10.5	19.9	5.6	62.6	91	7.1
11.0	14.2	8.0	79.8	82	7.1	11.0	16.4	7.2	74.9	91	7.1	11.0	19.6	5.6	62.0	92	7.1
11.5	14.2	8.0	79.8	81	7.1	11.5	16.4	7.2	74.9	91	7.1	11.5	19.7	5.5	61.0	92	7.0
12.0	14.0	7.7	78.1	82	7.1	12.0	16.4	7.2	75.1	92	7.1	12.0	19.4	5.1	58.8	92	7.0
12.5	13.0	6.7	64.8	61	7.1	12.5	16.4	7.2	75.8	92	7.2	12.5	18.7	4.7	50.0	93	7.0
12.8	12.1	5.9	56.2	80	7.0	13.0	16.4	7.7	75.6	83	7.2	12.7	bottom				

Highlighted depth, opening of intake forebay (1.5 m to 9.5 m)

Tailrace data for same time period as vertical profile on 6/6/02

Time	Temp.C	D.O.mgf	D.O.% Sat	Cond	pH
1300	14.9	8.5	84.8	82	n/a
1400	14.7	8.4	83.8	82	n/a
1500	14.8	8.4	83.8	82	n/a

n/a - no available data

Tailrace data for same time period as vertical profile on 7/2/02

Time	Temp.C	D.O.mgf	D.O.% Sat	Cond	pH
1300	22.3	6.6	77.2	96	n/a
1400	22.2	6.5	76.3	96	n/a
1500	22.0	6.7	77.5	96	n/a

18-Jul-02										28-Jul-02										15-Aug-02									
Approximate air temp: 24 C										Approximate air temp: 29 C										Approximate air temp: 26.6 C									
Sec'd Depth: 5.0 ft water depth: 40-42'										Sec'd Depth: 8.0 ft water depth: 40-42'										Sec'd Depth: 5.5 ft water depth: 38-40'									
Time: 7:50										Time: 1:50										Time: 1:00									
30% clouds										20% clouds										50% clouds									
very pleasant										warm										threats of storm to north									
4-7 mph										winds 10-13 mph										southerly gusty winds 8-12 mph									
Depth (m)	Temp (C)	D.O. (mg/l)	D.O. %	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp (C)	D.O. (mg/l)	D.O. %	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp (C)	D.O. (mg/l)	D.O. %	Cond. (uS/cm)	pH (S.U.)												
0.0	26.1	7.7	98.7	98	7.8	0.0	26.8	7.9	97.2	110	7.9	0.0	23.0	6.3	74.9	112	7.4												
0.5	25.7	7.7	98.1	100	7.8	0.5	26.7	7.7	95.6	110	7.9	0.5	22.9	6.2	72.3	112	7.4												
1.0	25.5	7.7	95.4	99	7.7	1.0	26.6	7.6	83.7	110	7.8	1.0	22.9	6.1	71.4	111	7.3												
1.5	25.3	7.6	92.6	98	7.7	1.5	26.3	7.5	91.5	108	7.8	1.5	22.8	5.9	69.7	111	7.3												
2.0	25.2	7.5	92.6	99	7.7	2.0	26.1	7.4	91.4	108	7.8	2.0	22.7	5.9	67.4	112	7.3												
2.5	25.1	7.3	90.0	99	7.6	2.5	26.1	7.3	89.2	108	7.6	2.5	22.6	5.6	65.4	111	7.3												
3.0	25.0	7.1	86.5	100	7.6	3.0	23.9	6.9	78.4	106	7.5	3.0	22.6	5.6	65.1	111	7.2												
3.5	24.9	6.7	82.0	98	7.5	3.5	23.7	6.0	71.9	110	7.5	3.5	22.6	5.5	65.1	111	7.2												
4.0	24.8	6.6	81.5	99	7.5	4.0	23.4	5.8	69.2	109	7.4	4.0	22.6	5.4	63.4	111	7.2												
4.5	24.2	6.5	71.0	98	7.3	4.5	23.4	5.8	68.9	109	7.4	4.5	22.8	5.2	61.7	111	7.2												
5.0	23.6	5.9	65.9	100	7.3	5.0	23.3	5.7	68.3	109	7.4	5.0	22.8	5.2	60.9	110	7.2												
5.5	23.4	5.2	62.1	100	7.2	5.5	23.2	5.6	67.5	109	7.4	5.5	22.5	5.2	59.6	111	7.2												
6.0	23.2	5.0	58.4	100	7.1	6.0	23.0	5.3	63.0	109	7.3	6.0	22.6	5.1	58.2	110	7.2												
6.5	23.1	5.1	60.3	100	7.1	6.5	23.0	5.2	62.3	108	7.3	6.5	22.5	5.1	56.2	111	7.2												
7.0	23.0	5.0	58.7	100	7.1	7.0	22.9	5.2	61.5	109	7.3	7.0	22.5	5.0	54.4	110	7.1												
7.5	22.9	4.8	57.6	99	7.1	7.5	22.7	5.1	60.7	109	7.3	7.5	22.5	5.0	52.7	110	7.1												
8.0	22.8	4.6	56.4	98	7.1	8.0	22.7	5.0	59.4	109	7.3	8.0	22.5	5.0	51.6	110	7.1												
8.5	22.7	4.6	54.4	98	7.1	8.5	22.5	4.7	56.2	108	7.2	8.5	22.5	5.0	49.9	110	7.1												
9.0	22.5	4.5	52.4	98	7.0	9.0	22.4	4.7	55.0	108	7.2	9.0	22.5	4.9	48.3	110	7.1												
9.5	22.3	4.2	49.5	98	7.0	9.5	22.4	4.6	54.2	109	7.2	9.5	22.5	4.7	47.1	110	7.1												
10.0	22.3	4.2	48.2	100	7.0	10.0	22.3	4.5	53.3	108	7.2	10.0	22.4	4.6	46.1	110	7.1												
10.5	22.0	3.6	43.9	100	7.0	10.5	22.3	4.4	51.4	108	7.2	10.5	22.4	4.6	44.4	110	7.1												
11.0	21.9	3.7	43.0	100	6.9	11.0	22.2	4.3	49.4	108	7.2	11.0	22.3	4.4	42.9	110	7.1												
11.5	21.5	2.9	33.6	101	6.9	11.5	21.9	4.0	45.9	109	7.2	11.5	22.3	4.4	40.9	110	7.1												
12.0	20.8	2.4	27.8	103	6.9	12.0	21.9	3.7	43.4	110	7.2	12.0	22.0	3.8	40.9	111	7.0												
12.5	19.4	1.2	15.6	110	6.9																								

Highlighted depth: opening of intake forebay (1.5 m to 8.5 m)

Tailrace data for same time period as vertical profile on 7/18/02
 Time: 7:00 Temp: 23.5 D.O. (mg/l): 6.7 D.O. (% Sat): 77.3 Cond: 104 pH: n/a
 Time: 8:00 Temp: 23.5 D.O. (mg/l): 6.6 D.O. (% Sat): 76.8 Cond: 104 pH: n/a
 Time: 9:00 Temp: 23.5 D.O. (mg/l): 6.7 D.O. (% Sat): 77.9 Cond: 104 pH: n/a

Tailrace data for same time period as vertical profile on 7/29/02
 Time: 1:50 Temp: 23.6 D.O. (mg/l): 6.4 D.O. (% Sat): 75.4 Cond: 109 pH: n/a
 Time: 1:00 Temp: 23.7 D.O. (mg/l): 6.2 D.O. (% Sat): 73.3 Cond: 109 pH: n/a
 Time: 1:00 Temp: 23.6 D.O. (mg/l): 6.2 D.O. (% Sat): 72.5 Cond: 109 pH: n/a

Tailrace data for same time period as vertical profile on 8/15/02
 Time: 14:00 Temp: 22.8 D.O. (mg/l): 6.0 D.O. (% Sat): 99.0 Cond: 118 pH: n/a
 Time: 15:00 Temp: 22.6 D.O. (mg/l): 6.0 D.O. (% Sat): 98.8 Cond: 118 pH: n/a
 Time: 16:00 Temp: 22.5 D.O. (mg/l): 6.0 D.O. (% Sat): 98.7 Cond: 118 pH: n/a

Appendix B Table B- 2
Mich Falls 2002 Hydroelectric Project
Vertical Profile Data -

FERC Project No. 2073-008

29-Aug-02						12-Sep-02					17-Oct-02						
Approximate air temp. 26.6 C			Time: 12:30			Approximate air temp. 19 C			Time: 16:10		Approximate air temp. 1.6 C			Time: 12:15			
Secci Depth: 5.5 ft water depth: 39-42'			20 % clouds			Secci Depth: 7.5 ft water depth: 40-42'			Clear Blue Sky		Secci Depth: 5.0 ft water depth: 40-44'			20 % clouds			
calm			Sunny pleasant			Westerly 12-18			Very nice		Westerly 4-7 mph			crisp day			
Depth (m)	Temp (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)
0.0	22.4	7.4	85.5	118	7.4	0.0	21.9	7.6	86.8	124	7.8	0.0	9.8	9.7	84.3	115	7.7
0.5	22.0	7.4	85.5	115	7.4	0.5	21.9	7.6	86.1	123	7.8	0.5	9.8	9.8	84.3	115	7.7
1.0	21.8	7.3	83.5	115	7.4	1.0	21.8	7.6	85.7	123	7.5	1.0	9.5	9.7	84.5	115	7.7
1.5	21.6	7.2	82.9	115	7.4	1.5	21.8	7.5	85.2	122	7.5	1.5	9.4	9.7	84.3	115	7.7
2.0	21.6	7.2	82.3	114	7.4	2.0	21.7	7.5	85.7	123	7.5	2.0	9.4	9.7	84.3	115	7.7
2.5	21.5	7.0	79.8	114	7.4	2.5	21.7	7.4	84.3	122	7.5	2.5	9.4	8.7	83.7	115	7.7
3.0	21.4	6.9	78.4	114	7.3	3.0	21.7	7.4	82.7	122	7.4	3.0	9.3	9.5	82.6	115	7.7
3.5	21.3	6.9	77.9	114	7.3	3.5	21.5	7.2	81.1	122	7.4	3.5	9.3	9.5	82.7	114	7.7
4.0	21.2	6.7	78.1	114	7.3	4.0	21.3	7.1	78.3	122	7.4	4.0	9.3	9.6	83.0	114	7.6
4.5	21.2	6.8	78.8	114	7.3	4.5	21.2	6.9	77.5	122	7.4	4.5	9.3	9.5	82.6	114	7.6
5.0	21.1	6.5	73.0	114	7.3	5.0	21.2	6.8	73.2	122	7.4	5.0	9.3	9.5	82.2	114	7.6
5.5	21.1	6.4	72.6	114	7.3	5.5	21.2	6.6	73.4	122	7.3	5.5	9.3	9.5	82.1	114	7.6
6.0	21.0	6.0	68.4	114	7.2	6.0	21.2	6.5	72.2	122	7.3	6.0	9.3	9.5	82.4	114	7.6
6.5	21.0	6.0	67.9	114	7.2	6.5	21.1	6.4	71.6	122	7.3	6.5	9.3	9.5	82.5	114	7.6
7.0	21.0	6.0	67.5	114	7.2	7.0	21.1	6.4	71.3	122	7.3	7.0	9.2	9.5	82.6	114	7.6
7.5	21.0	5.9	66.7	113	7.1	7.5	21.1	6.2	68.7	121	7.3	7.5	9.2	9.5	81.8	114	7.6
8.0	21.0	5.7	63.8	114	7.1	8.0	21.0	6.0	66.3	121	7.2	8.0	9.2	9.5	81.8	114	7.6
8.5	21.0	5.6	67.2	113	7.1	8.5	21.0	6.0	68.7	121	7.2	8.5	9.2	9.4	81.4	114	7.6
9.0	20.9	6.2	70.6	113	7.2	9.0	20.9	5.9	67.0	121	7.1	9.0	9.2	9.4	81.4	114	7.6
9.5	20.9	5.9	68.7	113	7.2	9.5	20.9	5.8	64.0	121	7.1	9.5	9.2	9.4	81.5	114	7.6
10.0	20.8	5.2	58.9	113	7.1	10.0	20.8	5.8	64.0	121	7.1	10.0	9.2	9.4	81.1	114	7.6
10.5	20.7	5.2	58.1	113	7.1	10.5	20.8	5.2	56.0	121	7.1	10.5	9.2	9.3	80.8	114	7.6
11.0	20.7	5.0	58.4	113	7.0	11.0	20.7	5.2	67.0	121	7.1	11.0	9.2	9.3	81.1	114	7.6
11.5	20.6	4.8	53.6	114	7.0	11.5	20.6	5.0	56.0	121	7.1	11.5	9.2	9.4	81.4	114	7.6
12.0	20.4	4.3	48.1	114	7.0	12.0	20.6	5.1	56.0	121	7.2	12.0	9.2	9.4	80.9	114	7.6
12.5	20.2	3.6	39.3	117	7.0	12.5						12.5	9.2	9.3	80.8	114	7.5
12.9	19.7	2.4	26.5	125	7.0	12.9	bottom					13.0	9.2	9.3	80.8	114	7.6
Highlighted depth: opening of intake forebay (1.5 m to 9.5 m)																	
Tailrace data for same time period as vertical profile on 8/26/02						Tailrace data for same time period as vertical profile on 9/12/03						No tailrace data available.					
Time	Temp.C	D.O. mg/l	D.O. % Sat	Cond	pH	Time	Temp.C	D.O. mg/l	D.O. % Sat	Cond	pH						
1200	21.7	7.1	80.2	116	n/a	1600	21.6	7.4	82.8	120	n/a						
1300	21.6	7.1	80.1	116	n/a	1700	21.6	7.4	82.8	120	n/a						
1400	21.6	7.1	80.1	116	n/a	1800	21.5	7.2	81.1	120	n/a						

Appendix B Table B-3

Mich Falls 2003 Hydroelectric Project
Vertical Profile Data -

28-Aug-03		28-Aug-03		11-Sep-03							
Approximate air temp. : 18.3C Secchi Depth 7.5 ft water depth 40-42' Sourthely 12-18 mph		Approximate air temp. : 18.3C Secchi Depth 7.5 ft water depth 40-42' Sourthely 12-18 mph In flowage: no ft of buoy line away from dam		Approximate air temp. : 26.6C SSE 12-18 mph							
Time: 1140		Time: 1215		Time: 1600							
Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)
0.0	23.0	5.7	66.4	115	7.3	0.0	20.9	7.4	83.8	121	7.4
0.5	23.0	5.4	64.6	115	7.3	0.5	20.9	7.3	82.5	121	7.4
1.0	23.0	5.4	64.3	113	7.3	1.0	20.8	7.2	81.8	121	7.4
1.5	22.9	5.4	64.1	115	7.3	1.5	20.8	7.2	91.1	124	7.5
2.0	22.9	5.1	58.7	115	7.3	2.0	20.8	7.1	80.2	121	7.5
2.5	22.9	4.9	58.4	116	7.2	2.5	20.8	7.0	79.9	121	7.5
3.0	22.8	5.0	59.0	115	7.2	3.0	20.8	6.8	74.9	121	7.4
3.5	22.8	5.0	58.7	115	7.2	3.5	20.7	6.7	73.3	121	7.3
4.0	22.8	4.9	57.0	115	7.2	4.0	20.3	6.0	66.8	120	7.2
4.5	22.8	4.7	55.4	115	7.2	4.5	20.4	5.9	66.6	122	7.2
5.0	22.8	4.7	55.4	115	7.2	5.0	20.3	5.9	65.5	121	7.2
5.5	22.8	4.7	55.0	116	7.2	5.5	20.2	5.8	64.4	121	7.2
6.0	22.7	4.6	54.1	116	7.2	6.0	20.2	5.6	63.1	121	7.2
6.5	22.7	4.5	52.8	116	7.2	6.5	20.2	5.5	62.3	121	7.2
7.0	22.7	4.4	51.4	115	7.1	7.0	20.1	5.5	61.0	121	7.2
7.5	22.7	4.3	50.4	116	7.1	7.5	20.1	5.5	61.0	122	7.2
8.0	22.6	4.0	46.8	116	7.1	8.0	20.0	5.4	59.8	122	7.2
8.5	22.5	3.8	44.5	116	7.1	8.5	20.0	5.3	59.7	122	7.2
9.0	22.5	3.7	43.6	117	7.1	9.0	20.0	5.3	59.2	121	7.2
9.5	22.4	3.2	38.2	117	7.1	9.5	20.0	5.1	57.5	123	7.2
10.0	22.3	2.7	31.7	118	7.1	10.0	20.0	5.1	56.8	123	7.2
10.5	21.9	1.9	21.3	120	7.0	10.5	20.0	5.1	56.8	123	7.2
11.0	21.4	1.4	13.7	121	7.0	11.0	19.9	5.0	55.9	122	7.2
11.5	21.0	0.8	8.9	124	7.0	11.5	19.9	4.8	53.5	122	7.3
12.0	20.3	0.4	4.7	127	7.0	12.0	19.8	4.8	52.7	122	7.3
						12.5	19.3	3.5	38.4	127	7.3

28-Aug-03		28-Aug-03		11-Sep-03							
Approximate air temp. : 18.3C Secchi Depth 7.5 ft water depth 40-42' Sourthely 12-18 mph		Approximate air temp. : 18.3C Secchi Depth 7.5 ft water depth 40-42' Sourthely 12-18 mph In flowage: no ft of buoy line away from dam		Approximate air temp. : 26.6C SSE 12-18 mph							
Time: 1140		Time: 1215		Time: 1600							
Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)
0.0	23.0	5.7	66.4	115	7.3	0.0	20.9	7.4	83.8	121	7.4
0.5	23.0	5.4	64.6	115	7.3	0.5	20.9	7.3	82.5	121	7.4
1.0	23.0	5.4	64.3	113	7.3	1.0	20.8	7.2	81.8	121	7.4
1.5	22.9	5.4	64.1	115	7.3	1.5	20.8	7.2	91.1	124	7.5
2.0	22.9	5.1	58.7	115	7.3	2.0	20.8	7.1	80.2	121	7.5
2.5	22.9	4.9	58.4	116	7.2	2.5	20.8	7.0	79.9	121	7.5
3.0	22.8	5.0	59.0	115	7.2	3.0	20.8	6.8	74.9	121	7.4
3.5	22.8	5.0	58.7	115	7.2	3.5	20.7	6.7	73.3	121	7.3
4.0	22.8	4.9	57.0	115	7.2	4.0	20.3	6.0	66.8	120	7.2
4.5	22.8	4.7	55.4	115	7.2	4.5	20.4	5.9	66.6	122	7.2
5.0	22.8	4.7	55.4	115	7.2	5.0	20.3	5.9	65.5	121	7.2
5.5	22.8	4.7	55.0	116	7.2	5.5	20.2	5.8	64.4	121	7.2
6.0	22.7	4.6	54.1	116	7.2	6.0	20.2	5.6	63.1	121	7.2
6.5	22.7	4.5	52.8	116	7.2	6.5	20.2	5.5	62.3	121	7.2
7.0	22.7	4.4	51.4	115	7.1	7.0	20.1	5.5	61.0	121	7.2
7.5	22.7	4.3	50.4	116	7.1	7.5	20.1	5.5	61.0	122	7.2
8.0	22.6	4.0	46.8	116	7.1	8.0	20.0	5.4	59.8	122	7.2
8.5	22.5	3.8	44.5	116	7.1	8.5	20.0	5.3	59.7	122	7.2
9.0	22.5	3.7	43.6	117	7.1	9.0	20.0	5.3	59.2	121	7.2
9.5	22.4	3.2	38.2	117	7.1	9.5	20.0	5.1	57.5	123	7.2
10.0	22.3	2.7	31.7	118	7.1	10.0	20.0	5.1	56.8	123	7.2
10.5	21.9	1.9	21.3	120	7.0	10.5	20.0	5.1	56.8	123	7.2
11.0	21.4	1.4	13.7	121	7.0	11.0	19.9	5.0	55.9	122	7.2
11.5	21.0	0.8	8.9	124	7.0	11.5	19.9	4.8	53.5	122	7.3
12.0	20.3	0.4	4.7	127	7.0	12.0	19.8	4.8	52.7	122	7.3
						12.5	19.3	3.5	38.4	127	7.3

28-Aug-03		28-Aug-03		11-Sep-03							
Approximate air temp. : 18.3C Secchi Depth 7.5 ft water depth 40-42' Sourthely 12-18 mph		Approximate air temp. : 18.3C Secchi Depth 7.5 ft water depth 40-42' Sourthely 12-18 mph In flowage: no ft of buoy line away from dam		Approximate air temp. : 26.6C SSE 12-18 mph							
Time: 1140		Time: 1215		Time: 1600							
Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)
0.0	23.0	5.7	66.4	115	7.3	0.0	20.9	7.4	83.8	121	7.4
0.5	23.0	5.4	64.6	115	7.3	0.5	20.9	7.3	82.5	121	7.4
1.0	23.0	5.4	64.3	113	7.3	1.0	20.8	7.2	81.8	121	7.4
1.5	22.9	5.4	64.1	115	7.3	1.5	20.8	7.2	91.1	124	7.5
2.0	22.9	5.1	58.7	115	7.3	2.0	20.8	7.1	80.2	121	7.5
2.5	22.9	4.9	58.4	116	7.2	2.5	20.8	7.0	79.9	121	7.5
3.0	22.8	5.0	59.0	115	7.2	3.0	20.8	6.8	74.9	121	7.4
3.5	22.8	5.0	58.7	115	7.2	3.5	20.7	6.7	73.3	121	7.3
4.0	22.8	4.9	57.0	115	7.2	4.0	20.3	6.0	66.8	120	7.2
4.5	22.8	4.7	55.4	115	7.2	4.5	20.4	5.9	66.6	122	7.2
5.0	22.8	4.7	55.4	115	7.2	5.0	20.3	5.9	65.5	121	7.2
5.5	22.8	4.7	55.0	116	7.2	5.5	20.2	5.8	64.4	121	7.2
6.0	22.7	4.6	54.1	116	7.2	6.0	20.2	5.6	63.1	121	7.2
6.5	22.7	4.5	52.8	116	7.2	6.5	20.2	5.5	62.3	121	7.2
7.0	22.7	4.4	51.4	115	7.1	7.0	20.1	5.5	61.0	121	7.2
7.5	22.7	4.3	50.4	116	7.1	7.5	20.1	5.5	61.0	122	7.2
8.0	22.6	4.0	46.8	116	7.1	8.0	20.0	5.4	59.8	122	7.2
8.5	22.5	3.8	44.5	116	7.1	8.5	20.0	5.3	59.7	122	7.2
9.0	22.5	3.7	43.6	117	7.1	9.0	20.0	5.3	59.2	121	7.2
9.5	22.4	3.2	38.2	117	7.1	9.5	20.0	5.1	57.5	123	7.2
10.0	22.3	2.7	31.7	118	7.1	10.0	20.0	5.1	56.8	123	7.2
10.5	21.9	1.9	21.3	120	7.0	10.5	20.0	5.1	56.8	123	7.2
11.0	21.4	1.4	13.7	121	7.0	11.0	19.9	5.0	55.9	122	7.2
11.5	21.0	0.8	8.9	124	7.0	11.5	19.9	4.8	53.5	122	7.3
12.0	20.3	0.4	4.7	127	7.0	12.0	19.8	4.8	52.7	122	7.3
						12.5	19.3	3.5	38.4	127	7.3

28-Aug-03		28-Aug-03		11-Sep-03							
Approximate air temp. : 18.3C Secchi Depth 7.5 ft water depth 40-42' Sourthely 12-18 mph		Approximate air temp. : 18.3C Secchi Depth 7.5 ft water depth 40-42' Sourthely 12-18 mph In flowage: no ft of buoy line away from dam		Approximate air temp. : 26.6C SSE 12-18 mph							
Time: 1140		Time: 1215		Time: 1600							
Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	Cond. (uS/cm)	pH (S.U.)
0.0	23.0	5.7	66.4	115	7.3	0.0	20.9	7.4	83.8	121	7.4
0.5	23.0	5.4	64.6	115	7.3	0.5	20.9	7.3	82.5	121	7.4
1.0	23.0	5.4	64.3	113	7.3	1.0	20.8	7.2	81.8	121	7.4
1.5	22.9	5.4	64.1	115	7.3	1.5	20.8	7.2	91.1	124	7.5
2.0	22.9	5.1	58.7	115	7.3	2.0	20.8	7.1	80.2	121	7.5
2.5	22.9	4.9	58.4	116	7.2	2.5	20.8	7.0	79.9	121	7.5
3.0	22.8	5.0	59.0	115	7.2	3.0	20.8	6.8	74.9	121	7.4
3.5	22.8	5.0	58.7	115	7.2	3.5	20.7	6.7	73.3	121	7.3
4.0	22.8	4.9	57.0	115	7.2	4.0	20.3	6.0	66.8	120	7.2
4.5	22.8	4.7	55.4	115	7.2	4.5	20.4	5.9	66.6	122	7.2
5.0	22.8	4.7	55.4	115	7.2	5.0	20.3	5.9	65.5	121	7.2
5.5	22.8	4.7	55.0	116	7.2	5.5	20.2	5.8	64.4	121	7.2
6.0	22.7	4.6	54.1	116	7.2	6.0	20.2	5.6	63.1	121	7.2
6.5	22.7	4.5	52.8	116	7.2	6.5	20.2	5.5	62.3	121	7.2
7.0	22.7	4.4	51.4	115	7.1	7.0	20.1	5.5	61.0	121	7.2
7.5	22.7	4.3	50.4	116	7.1	7.5	20.1	5.5	61.0	122	7.2
8.0	22.6	4.0	46.8	116	7.1	8.0	20.0	5.4	59.8	122	7.2
8.5	22.5	3.8	44.5	116	7.1	8.5	20.0	5.3	59.7	122	7.2
9.0	22.5	3.7	43.6	117	7.1	9.0	20.0	5.3	59.2	121	7.2
9.5	22.4	3.2	38.2	117	7.1	9.5	20.0	5.1	57.5	123	7.2
10.0	22.3	2.7	31.7	118	7.1	10.0	20.0	5.1	56.8	123	7.2
10.5	21.9	1.9	21.3	120	7.0	10.5	20.0	5.1	56.8	123	7.2
11.0	21.4	1.4	13.7	121	7.0						

Appendix B Table B-3

Mich Falls 2003 Hydroelectric Project
Vertical Profile Data -

25-Sep-03										2-Oct-03									
Approximate air temp.: 7.2C					Time: 1515					Approximate air temp.: 10.0 C					Time: 1250				
WNW winds 12-18 mph										Secd depth 11 ft					100 % clouds				
										WNW winds 12-18 mph									
Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	D.O. % Cond.	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	D.O. % Cond.	pH (S.U.)	Depth (m)	Temp. (C)	D.O. (mg/l)	D.O. % Saturation	D.O. % Cond.	pH (S.U.)		
0.0	16.8	8.1	84.4	122	7.5	0.0	12.9	9.3	89.4	122	7.6								
0.5	16.8	8.0	83.8	122	7.5	0.5	12.9	9.3	88.8	122	7.6								
1.0	16.8	8.0	83.2	122	7.5	1.0	12.9	9.2	88.6	122	7.6								
1.5	16.8	7.9	82.9	122	7.5	1.5	12.9	9.2	88.5	123	7.6								
2.0	16.8	7.9	82.5	122	7.5	2.0	12.8	9.2	88.0	122	7.6								
2.5	16.8	7.9	82.5	122	7.4	2.5	12.8	9.2	87.5	123	7.6								
3.0	16.8	7.9	82.1	122	7.4	3.0	12.8	9.1	87.3	122	7.6								
3.5	16.8	7.8	82.1	122	7.4	3.5	12.7	9.1	86.5	122	7.6								
4.0	16.8	7.8	81.9	122	7.4	4.0	12.6	9.0	86.1	122	7.6								
4.5	16.8	7.8	81.6	121	7.4	4.5	12.6	9.0	85.8	122	7.5								
5.0	16.8	7.8	81.4	122	7.4	5.0	12.5	9.0	85.5	122	7.5								
5.5	16.8	7.8	81.3	122	7.4	5.5	12.5	9.0	85.4	122	7.5								
6.0	16.8	7.8	81.2	121	7.4	6.0	12.5	9.0	85.7	122	7.5								
6.5	16.8	7.8	81.3	122	7.4	6.5	12.5	9.0	85.6	122	7.5								
7.0	16.8	7.8	81.3	123	7.4	7.0	12.5	9.0	85.3	122	7.5								
7.5	16.8	7.8	81.2	122	7.4	7.5	12.5	8.9	84.9	122	7.5								
8.0	16.8	7.8	81.2	123	7.4	8.0	12.5	8.9	84.5	123	7.5								
8.5	16.8	7.8	81.4	121	7.4	8.5	12.5	8.8	83.4	123	7.5								
9.0	16.7	7.8	81.9	122	7.4	9.0	12.5	8.8	83.7	121	7.5								
9.5	16.7	7.8	82.0	122	7.4	9.5	12.4	8.8	83.5	121	7.5								
10.0	16.6	7.9	82.1	123	7.4	10.0	12.4	8.7	82.9	124	7.5								
10.5	16.6	7.8	81.6	122	7.4	10.5	12.3	8.8	83.3	123	7.5								
11.0	16.6	7.9	81.7	121	7.4	11.0	12.3	8.8	83.9	122	7.5								
11.5	16.6	7.9	81.9	121	7.4	11.5	12.3	8.8	83.9	122	7.5								
12.0	16.5	7.9	81.6	121	7.4	12.0	12.3	8.8	83.7	121	7.5								
12.5	16.5	7.8	81.4	123	7.4	12.5	12.2	8.8	83.5	121	7.5								
12.9	16.5	7.6	79.4	122	7.5	12.7	bottom												
Highlighted depth: opening of intake forebay (1.5 m to 9.5 m)																			
Tailrace data for same time period as vertical profile on 9/25/03										Tailrace data for same time period as vertical profile on 10/2/03									
Time	Temp.C	D.O. mg/l	D.O. % Sat	Cond	pH	Time	Temp.C	D.O. mg/l	D.O. % Sat	Cond	pH	Time	Temp.C	D.O. mg/l	D.O. % Sat	Cond	pH		
1500	16.6	9.1	95.3	122	n/a	1200	12.6	8.5	81.6	124	n/a	1300	12.7	8.5	82.1	124	n/a		
1600	16.6	9.1	95.1	122	n/a	1300	12.7	8.5	82.1	124	n/a								
1700	16.5	8.9	93.4	122	n/a														