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Upper Peninsula Power Company
1002 Harbor Hills Drive
Marquette, MI 49855
www.UPPCO.com

September 14, 2015

FERC Project No. 2506
NATDAM No. MI00167

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

Dear Secretary Bose:

Escanaba River Hydroelectric Project – Boney Falls Development
Notice of Potential Deviation – Escanaba River Hydroelectric Project Water Quality Monitoring

Per the Order Modifying and Approving the Water Quality Monitoring Plan under Article 415, dated March 9, 2005, Upper Peninsula Power Company (UPPCO) is conducting water quality monitoring at the following locations within the Escanaba River Hydroelectric Project:

- In the tailrace of Escanaba Boney Falls (Dam #4), approximately 600 feet downstream of the powerhouse
  - The dissolved oxygen standard for Boney Falls (Dam #4) is: 7.0 mg/L
  - The water quality monitoring equipment has a manufacturer-rated accuracy of ±0.1 mg/L. Given this information, readings below 6.9 mg/L at Boney Falls (Dam #4) are potential deviations from the D.O. standard
- Additionally, UPPCO attempts to operate Boney Falls (Dam #4) at temperatures specified by the Michigan Coldwater Stream Standard.
  - The standard for the month of August is: 68°F

Monitoring is completed in accordance with the Water Quality Monitoring Plan. Dissolved Oxygen (D.O.) data is collected continuously throughout the annual monitoring period at Boney Falls (Dam #4). Additionally, equipment is cleaned, calibrated and data downloaded weekly during the month of July, and bi-weekly during the month of August.

After collection, a post calibration of the monitoring equipment is conducted to determine calibration drift. Raw dissolved oxygen (D.O.) data is adjusted assuming a linear degradation of the calibration based upon the post calibration of the equipment.

During the monitoring period of August 17th through August 31st (when equipment maintenance occurred), dissolved oxygen readings below 7.0 mg/l were observed August 17th thru August 21st. After verifying and correcting (as necessary) the monitoring data for calibration drift, the lowest D.O. concentration observed was 6.3 mg/l on August 18th. The likely cause of the low D.O. levels observed was due to high water temperatures during the same time period (average daily water temperatures ranged from 70 °F to 74 °F during the time period of low D.O. readings).

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During the monitoring period, flow augmentation was initiated on August 17th and again on August 18th. Flow augmentation[1] is initiated as an attempt to mitigate warm water temperatures in the Escanaba River downstream of the Boney Falls (Dam #4) powerhouse.

Dissolved oxygen corrective action occurred, as required by the approved plan[2], August 17th through August 22nd and again on August 24th.

UPPCO provided notice of the low D.O. readings to the Michigan Department of Natural Resources (MDNR), Michigan Department of Environmental Quality (MDEQ), and the U.S. Fish and Wildlife Service (FWS) via e-mail on August 21st. Documentation of agency consultation is attached.

If you have any questions regarding this letter, please contact Bob Meyers at (906) 485-2419 or Jarrod Nelson at (906) 232-1433.

Sincerely,

Virgil Schlorke
Director - Energy Supply & Resource Planning
Upper Peninsula Power Company

VES/wmp

Enc: 20150904 Agency Notification

cc: Mr. Robert Meyers, UPPCO - UISC
Mr. Keith Moyle, UPPCO - UISC
Mr. Jarrod Nelson, UPPCO - UISC
Mr. Kyle Kruger – MDNR
Mr. Gary Kohlhepp – MDEQ
Mr. Koren Carpenter - MDEQ
Mr. David Tripp, UPPCO - UISC
Mr. John Zygaj, FERC - CRO
Mr. John Myers, IBS - D2
Mr. Burr Fisher - USFW
Ms. Diana Klemans - MDEQ

[1] As part of the procedure, when augmentation is initiated, flow from the powerhouse is increased to 150 percent of the base flow between 11:00 EST and 18:00 EST; the flow is then reduced to 75 percent of the base flow to allow the reservoir to refill.

[2] The approved plan requires corrective action when real time monitoring indicates dissolved oxygen levels were less than 7.0 mg/l downstream of the powerhouse. Flow augmentation is a corrective action and when the facility is not augmenting flow, corrective action is initiated by releasing aeration flow through a spillway gate.

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Escanaba River Hydroelectric Project

Boney Falls (Dam #4) D.O. Deviation Correspondence (September 4, 2015)

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Nelson, Jarrod F

From: Schlorke, Virgil E
Sent: Friday, September 04, 2015 1:19 PM
To: 'Kruger, Kyle'; 'Gary Kohlhepp '; 'Diana Klemans '; 'Carpenter, Koren'; 'Burr Fisher '
Cc: Nelson, Jarrod F; Metcalf, Mark W; Meyers, Robert J
Subject: FW: Boney Falls - Agency notice
Attachments: Boney Falls WQM data Aug 2015.pdf

Expires: Sunday, September 03, 2017 12:00 AM

All,

Per the Order dated March 9, 2005, approving modifications to the Dissolved Oxygen Monitoring Plan as required by Article 415 in the License issued July 13, 1995 and amended November 4, 2013, UPPCO is conducting annual monitoring of dissolved oxygen (D.O.) downstream of its Boney Falls (Dam #4) development. Data is collected continuously throughout the annual monitoring period. Additionally, equipment is cleaned, calibrated and data downloaded weekly in the month of July and bi-weekly in the month of August. Manufacturer specifications indicate that the accuracy of the D.O. monitoring equipment is ±0.1 mg/L, therefore, readings below 6.9 mg/L are potential deviations. Raw data is adjusted assuming a linear degradation of calibration based upon post-calibration of equipment.

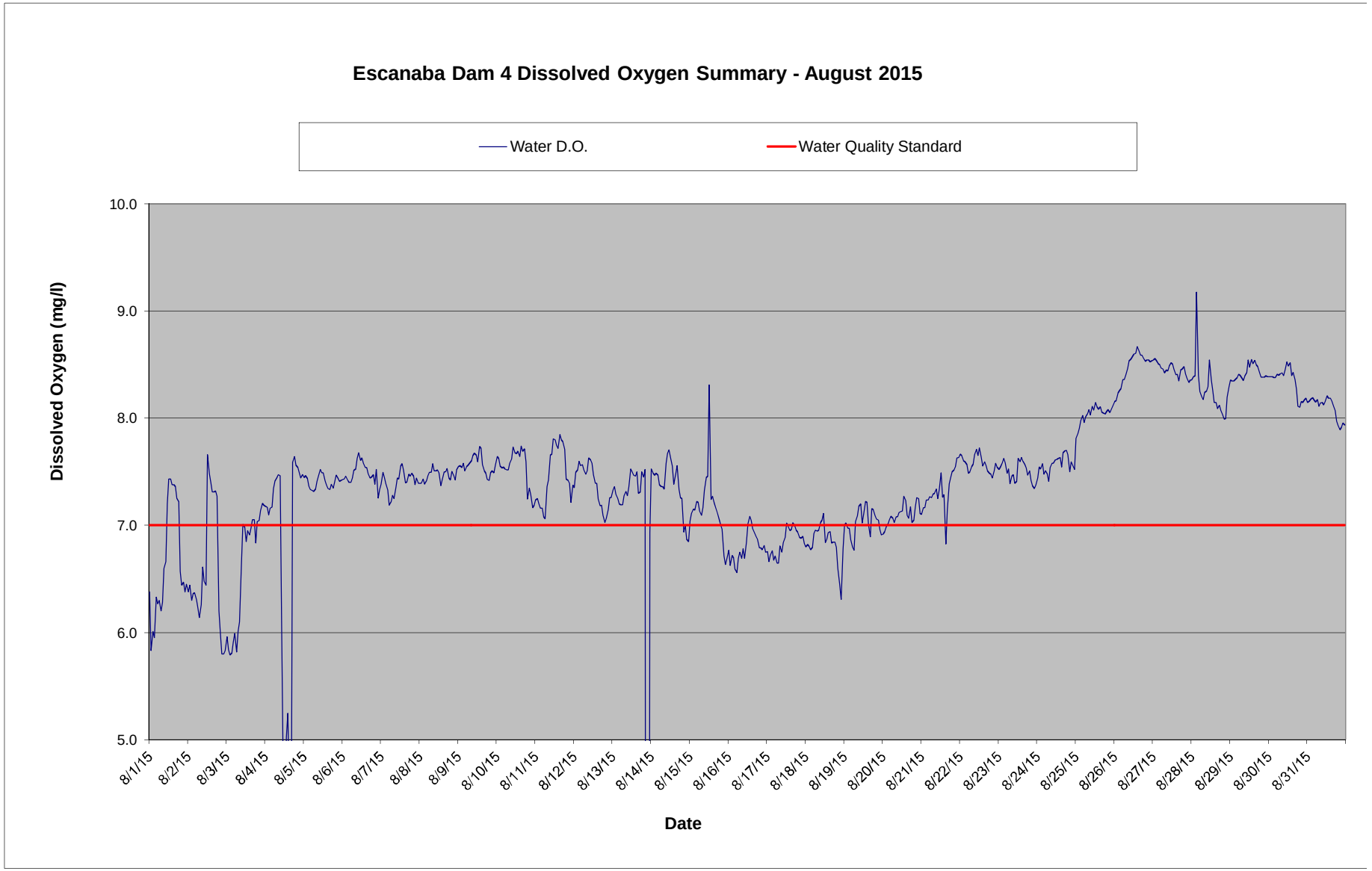
UPPCO is required to meet the water quality standard of 7.0 mg/L for D.O. below the Boney Falls (Dam #4) development. UPPCO attempts to meet the D.O. standard by releasing water out of spillway gates in the event that D.O. readings are below 7.0 mg/L. UPPCO also makes attempts to meet the cold water stream requirements for Michigan below the Boney Falls (Dam #4) development in an effort to maintain trout fishery integrity. UPPCO augments flow from the powerhouse during times of high temperatures, as a method for reducing temperatures. The augmentation consists of increasing flows to 150% of base flow between 11:00 EST and 18:00 EST, then reducing flows to 75% of base flows in order to allow the reservoir to refill. Suggested cold water temperatures for July and August are 68˚F.

Dates for the most recent period of D.O. monitoring were August 17 to August 31. During this time period, DO levels below the water quality standard of 7.0 mg/l were observed on August 17, 18, 19, 20 and 21. After correcting the monitoring data for calibration drift, the lowest DO reading observed was 6.3 mg/l. When the low DO readings were observed, the facility was performing flow augmentation or DO corrective action by releasing aeration flow through a spillway gate to mitigate low D.O. levels. The likely cause of the low DO readings is warm water temperatures. During the period when the DO readings below the water quality standard were observed, water temperatures ranged between 68 and 74 F.

Attached for your review is the DO and temperature monitoring data for the month of August. Should you have any questions about the monitoring data, please contact Jarrod Nelson at (906)232-1433

Thanks and have a great weekend

Virgil Schlorke, P.E.
Director - Energy Supply & Resource Planning | Upper Peninsula Power Company
Direct: 906-232-1431
Cell: 906-250-9021



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Escanaba Dam 4 - August 2015 Dissolved Oxygen Monitoring Data

Time HHMMSS	8/1/2015	8/2/2015	8/3/2015	8/4/2015	8/5/2015	8/6/2015	8/7/2015	8/8/2015	8/9/2015	8/10/2015	8/11/2015	8/12/2015	8/13/2015	8/14/2015	8/15/2015	8/16/2015	8/17/2015
0	6.4	6.4	6.0	7.2	7.4	7.4	7.4	7.4	7.5	7.6	7.2	7.4	7.3	7.5	7.0	6.8	6.8
10000	5.8	6.4	5.8	7.2	7.5	7.4	7.5	7.4	7.6	7.6	7.2	7.5	7.4	7.5	7.1	6.6	6.7
20000	6.0	6.3	5.8	7.1	7.4	7.5	7.4	7.4	7.5	7.6	7.2	7.5	7.3	7.5	7.2	6.7	6.7
30000	6.0	6.4	5.8	7.2	7.4	7.4	7.4	7.4	7.6	7.5	7.2	7.6	7.3	7.5	7.1	6.7	6.8
40000	6.3	6.4	5.9	7.2	7.3	7.4	7.3	7.4	7.5	7.5	7.2	7.6	7.2	7.5	7.2	6.6	6.7
50000	6.3	6.3	6.0	7.3	7.3	7.4	7.2	7.5	7.5	7.5	7.1	7.6	7.2	7.4	7.2	6.6	6.7
60000	6.3	6.2	5.8	7.4	7.3	7.4	7.2	7.5	7.6	7.5	7.1	7.5	7.2	7.4	7.1	6.7	6.6
70000	6.2	6.1	6.0	7.4	7.3	7.5	7.3	7.5	7.6	7.5	7.4	7.5	7.3	7.4	7.1	6.8	6.6
80000	6.3	6.3	6.1	7.5	7.4	7.5	7.3	7.6	7.6	7.6	7.4	7.5	7.3	7.3	7.2	6.7	6.8
90000	6.6	6.6	6.6	7.5	7.5	7.6	7.4	7.5	7.7	7.6	7.7	7.6	7.3	7.6	7.3	6.8	6.7
100000	6.7	6.5	7.0	6.1	7.5	7.7	7.4	7.5	7.7	7.7	7.7	7.6	7.4	7.7	7.4	6.7	6.8
110000	7.2	6.4	7.0	4.8	7.5	7.6	7.4	7.5	7.7	7.7	7.8	7.6	7.5	7.7	7.5	6.8	6.9
120000	7.4	7.7	6.9	4.5	7.5	7.6	7.6	7.5	7.6	7.7	7.8	7.5	7.5	7.6	8.3	7.0	7.0
130000	7.4	7.5	7.0	5.0	7.4	7.6	7.6	7.4	7.7	7.7	7.7	7.4	7.5	7.6	7.2	7.1	7.0
140000	7.4	7.4	6.9	5.2	7.4	7.5	7.5	7.4	7.7	7.6	7.7	7.4	7.5	7.4	7.3	7.0	7.0
150000	7.4	7.3	7.0	4.3	7.3	7.5	7.4	7.5	7.6	7.7	7.8	7.2	7.5	7.5	7.2	7.0	7.0
160000	7.4	7.3	7.1	3.8	7.3	7.5	7.4	7.5	7.5	7.7	7.8	7.2	7.3	7.6	7.2	6.9	7.0
170000	7.3	7.3	7.1	7.6	7.4	7.4	7.5	7.5	7.5	7.7	7.8	7.2	7.3	7.3	7.1	6.9	7.0
180000	7.2	7.3	6.8	7.6	7.3	7.5	7.5	7.4	7.4	7.6	7.7	7.1	7.5	7.3	7.1	6.9	7.0
190000	6.6	6.2	7.0	7.6	7.4	7.5	7.5	7.4	7.4	7.2	7.4	7.0	7.5	7.2	7.0	6.8	6.9
200000	6.4	6.0	7.0	7.5	7.5	7.4	7.5	7.5	7.5	7.3	7.4	7.1	7.5	6.9	7.0	6.8	6.9
210000	6.5	5.8	7.1	7.5	7.4	7.5	7.4	7.5	7.5	7.3	7.4	7.1		7.0	6.7	6.8	6.9
220000	6.4	5.8	7.2	7.4	7.4	7.3	7.4	7.4	7.5	7.2	7.2	7.3		6.9	6.6	6.8	6.9
230000	6.5	5.8	7.2	7.5	7.4	7.3	7.4	7.5	7.6	7.2	7.4	7.3	6.9	6.9	6.7	6.8	6.8
Daily Max	7.4	7.7	7.2	7.6	7.5	7.7	7.6	7.6	7.7	7.7	7.8	7.6	7.5	7.7	8.3	7.1	7.0
Daily Min	5.8	5.8	5.8	3.8	7.3	7.3	7.2	7.4	7.4	7.2	7.1	7.0	6.9	6.9	6.6	6.6	6.6
Average	6.7	6.6	6.6	6.6	7.4	7.5	7.4	7.5	7.6	7.5	7.5	7.4	7.3	7.4	7.2	6.8	6.8

License Minimum Dissolved Oxygen: 7.0 mg/l

Augmentation Event

DO corrective action occurring. Water being released through spillway gate.

Missing data on 8/13 due to equipment power failure (lightning strike)

Readings on 8/4 between 10:00 EST and 1600 EST Are not representative of actual conditions. Weed buildup around the monitor resulted in non-representative readings.

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Escanaba Dam 4 - August 2015 Dissolved Oxygen Monitoring Data

Time HHMMSS	8/18/2015	8/19/2015	8/20/2015	8/21/2015	8/22/2015	8/23/2015	8/24/2015	8/25/2015	8/26/2015	8/27/2015	8/28/2015	8/29/2015	8/30/2015	8/31/2015
0	6.8	7.0	6.9	7.1	7.7	7.5	7.4	7.8	8.2	8.5	8.4	8.4	8.4	8.1
10000	6.8	7.0	6.9	7.2	7.7	7.5	7.5	7.9	8.2	8.6	8.4	8.3	8.4	8.2
20000	6.8	7.0	7.0	7.2	7.6	7.6	7.5	7.9	8.2	8.5	8.4	8.3	8.4	8.2
30000	6.8	7.0	7.0	7.2	7.6	7.6	7.6	8.0	8.3	8.5	9.2	8.4	8.4	8.2
40000	6.8	6.9	7.1	7.2	7.6	7.6	7.5	8.0	8.3	8.5	8.4	8.4	8.4	8.2
50000	6.9	6.8	7.1	7.3	7.5	7.5	7.5	8.0	8.4	8.5	8.2	8.4	8.4	8.2
60000	7.0	6.8	7.1	7.3	7.5	7.5	7.5	8.0	8.4	8.5	8.2	8.4	8.4	8.2
70000	6.9	7.0	7.0	7.3	7.5	7.4	7.4	8.0	8.4	8.4	8.2	8.4	8.4	8.1
80000	7.0	7.1	7.1	7.3	7.6	7.5	7.5	8.1	8.5	8.5	8.2	8.4	8.4	8.1
90000	7.0	7.2	7.1	7.3	7.7	7.5	7.6	8.0	8.5	8.4	8.3	8.4	8.4	8.1
100000	7.0	7.2	7.1	7.3	7.7	7.4	7.6	8.1	8.6	8.5	8.3	8.4	8.4	8.1
110000	7.1	7.0	7.1	7.3	7.7	7.4	7.6	8.1	8.6	8.5	8.5	8.5	8.5	8.2
120000	6.8	7.1	7.1	7.5	7.7	7.6	7.6	8.1	8.6	8.5	8.4	8.5	8.5	8.2
130000	6.9	7.2	7.3	7.3	7.6	7.6	7.6	8.1	8.6	8.5	8.3	8.5	8.5	8.2
140000	6.9	7.2	7.2	7.3	7.6	7.6	7.6	8.1	8.7	8.4	8.1	8.5	8.4	8.2
150000	6.9	7.0	7.1	6.8	7.6	7.6	7.5	8.1	8.6	8.4	8.1	8.5	8.4	8.2
160000	6.8	6.9	7.1	7.1	7.6	7.6	7.7	8.1	8.6	8.3	8.1	8.5	8.4	8.1
170000	6.8	7.2	7.2	7.4	7.5	7.5	7.7	8.0	8.6	8.4	8.1	8.5	8.3	8.1
180000	6.8	7.1	7.0	7.4	7.5	7.5	7.7	8.0	8.6	8.5	8.1	8.4	8.1	8.0
190000	6.8	7.1	7.0	7.5	7.5	7.5	7.7	8.1	8.5	8.5	8.0	8.4	8.1	7.9
200000	6.6	7.1	7.2	7.5	7.4	7.4	7.5	8.1	8.5	8.4	8.0	8.4	8.2	7.9
210000	6.4	7.0	7.3	7.5	7.5	7.4	7.6	8.1	8.5	8.4	8.0	8.4	8.1	7.9
220000	6.3	7.0	7.2	7.6	7.6	7.3	7.6	8.1	8.5	8.3	8.2	8.4	8.2	8.0
230000	6.8	6.9	7.1	7.6	7.5	7.4	7.5	8.1	8.5	8.4	8.3	8.4	8.2	7.9
Daily Max	7.1	7.2	7.3	7.6	7.7	7.6	7.7	8.1	8.7	8.6	9.2	8.5	8.5	8.2
Daily Min	6.3	6.8	6.9	6.8	7.4	7.3	7.4	7.8	8.2	8.3	8.0	8.3	8.1	7.9
Average	6.8	7.0	7.1	7.3	7.6	7.5	7.6	8.0	8.5	8.5	8.3	8.4	8.3	8.1

Augmentation Event
DO corrective action occurring. Water being released through spillway gate.
2-Hour monitoring period after DO corrective action event.

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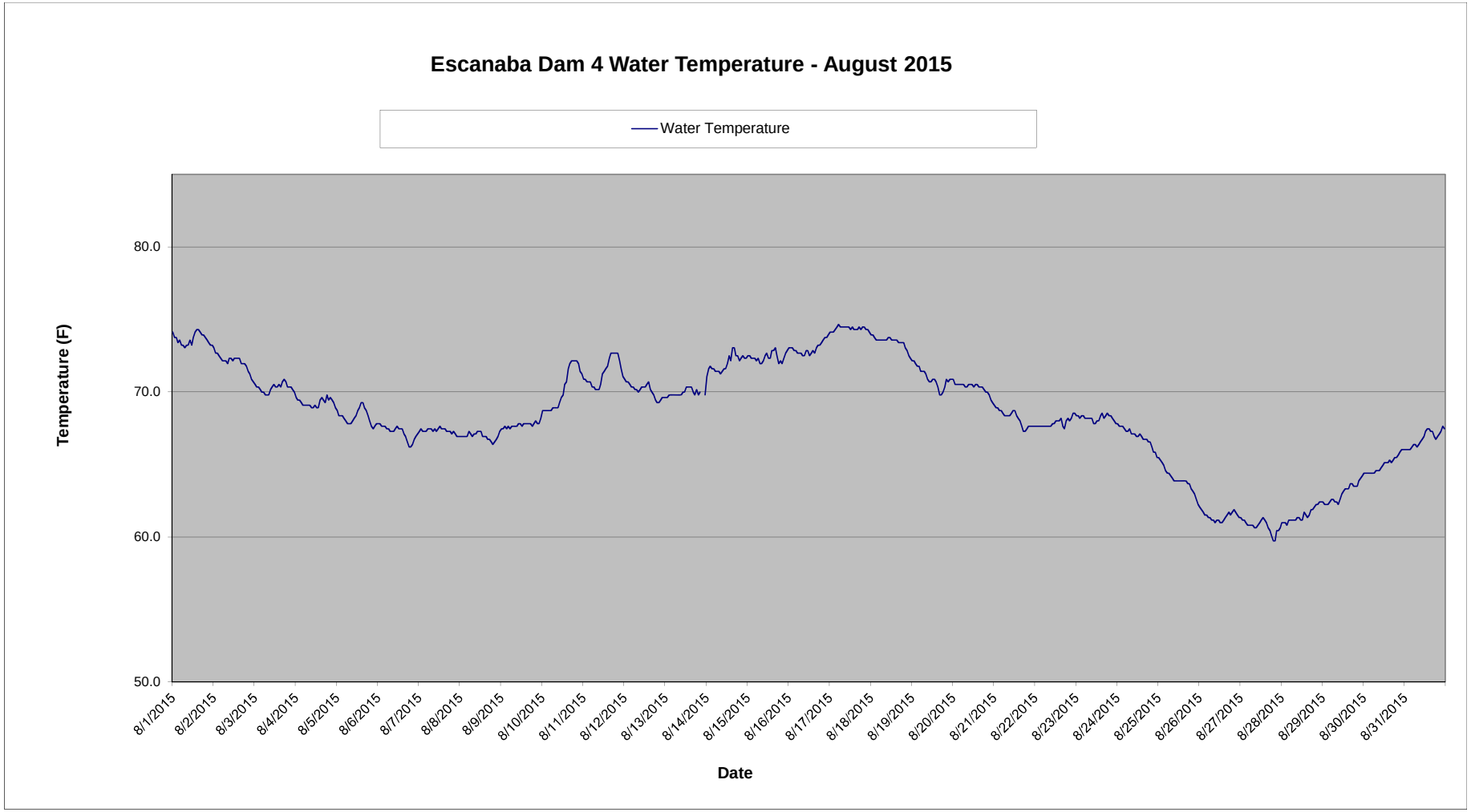

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Escanaba Dam 4 - August 2015 Temperature Monitoring Data

Time HHMMSS	8/1/2015	8/2/2015	8/3/2015	8/4/2015	8/5/2015	8/6/2015	8/7/2015	8/8/2015	8/9/2015	8/10/2015	8/11/2015	8/12/2015	8/13/2015	8/14/2015	8/15/2015	8/16/2015
0	74	73	71	70	69	68	67	67	67	69	71	71	70	71	73	73
10000	74	73	70	69	68	68	67	67	67	69	71	71	70	72	73	73
20000	74	73	70	69	68	68	67	67	68	69	71	71	70	72	72	73
30000	73	73	70	69	68	68	67	67	67	69	71	71	70	72	72	73
40000	74	72	70	69	68	68	67	67	68	69	71	70	70	72	72	73
50000	73	72	70	69	68	67	67	67	67	69	70	70	70	71	72	73
60000	73	72	70	69	68	67	67	67	68	69	70	70	70	71	72	73
70000	73	72	70	69	68	67	67	67	68	69	70	70	70	71	72	73
80000	73	72	70	69	68	67	67	67	68	69	70	70	70	71	72	73
90000	73	72	70	69	68	67	67	67	68	69	70	70	70	71	72	73
100000	74	72	70	69	68	67	67	67	68	69	71	70	70	72	73	73
110000	73	72	71	69	68	68	67	67	68	70	71	70	70	72	73	73
120000	74	72	70	69	69	67	68	67	68	70	71	70	70	72	72	73
130000	74	72	70	69	69	67	67	67	68	71	72	71	70	73	72	73
140000	74	72	71	69	69	67	67	67	68	71	72	71	70	72	73	73
150000	74	72	70	70	69	67	67	67	68	72	72	70	70	73	73	73
160000	74	72	71	69	69	67	67	67	68	72	73	70	70	73	73	73
170000	74	72	71	69	69	67	67	67	68	72	73	70	70	73	73	73
180000	74	72	71	70	68	66	67	67	68	72	73	69	70	73	72	73
190000	74	72	70	69	68	66	67	66	68	72	73	69	70	72	72	73
200000	74	71	70	70	68	66	67	67	68	72	73	69	70	72	72	74
210000	73	71	70	69	67	67	67	67	68	72	72	69		73	72	74
220000	73	71	70	69	68	67	67	67	68	71	72	70		72	73	74
230000	73	71	70	69	68	67	67	67	68	71	71	70	70	72	73	74
Daily Max	74	73	71	70	69	68	68	67	68	72	73	71	70	73	73	74
Daily Min	73	71	70	69	67	66	67	66	67	69	70	69	70	71	72	73
Average	74	72	70	69	68	67	67	67	68	70	71	70	70	72	72	73

Monthly average temp (F): 68.6

Augmentation Event

DO corrective action occurring. Water being released through spillway gate.

Missing data on 8/13 due to equipment power failure (lightning strike)

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Escanaba Dam 4 - August 2015 Temperature Monitoring Data

Time HHMMSS	8/17/2015	8/18/2015	8/19/2015	8/20/2015	8/21/2015	8/22/2015	8/23/2015	8/24/2015	8/25/2015	8/26/2015	8/27/2015	8/28/2015	8/29/2015	8/30/2015	8/31/2015
0	74	74	72	71	69	68	68	68	65	62	61	61	62	64	66
10000	74	74	72	71	69	68	68	68	65	62	61	61	62	64	66
20000	74	74	72	71	69	68	68	68	65	62	61	61	62	64	66
30000	74	74	72	71	69	68	68	68	65	62	61	61	62	64	66
40000	74	74	72	71	69	68	68	67	65	62	61	61	62	64	66
50000	75	74	71	71	69	68	68	67	64	61	61	61	63	64	66
60000	74	74	71	71	68	68	68	67	64	61	61	61	63	64	66
70000	74	74	71	70	68	68	68	67	64	61	61	61	62	65	66
80000	74	74	71	70	68	68	68	67	64	61	61	61	62	65	66
90000	74	74	71	71	68	68	68	67	64	61	61	61	62	65	67
100000	74	74	71	71	69	68	68	67	64	61	61	61	63	65	67
110000	74	74	71	71	69	68	68	67	64	61	61	61	63	65	67
120000	74	74	71	70	69	68	68	67	64	61	61	61	63	65	67
130000	74	74	71	71	68	68	68	67	64	61	61	62	63	65	67
140000	74	74	71	71	68	68	68	67	64	61	61	62	63	65	67
150000	74	74	70	70	68	68	69	67	64	61	61	61	63	65	67
160000	74	73	70	70	68	68	68	67	64	62	61	62	64	65	67
170000	74	73	70	70	67	67	68	67	64	62	60	62	64	65	67
180000	74	73	70	70	67	68	69	67	64	62	60	62	64	65	67
190000	74	73	70	70	67	68	68	67	63	62	60	62	64	65	67
200000	74	73	71	70	68	68	68	66	63	62	60	62	64	66	67
210000	74	73	71	70	68	68	68	66	63	62	60	62	64	66	67
220000	74	73	71	69	68	69	68	66	63	62	60	62	64	66	68
230000	74	72	71	69	68	69	68	65	62	61	61	62	64	66	67
Daily Max	75	74	72	71	69	69	69	68	65	62	61	62	64	66	68
Daily Min	74	72	70	69	67	67	68	65	62	61	60	61	62	64	66
Average	74	73	71	70	68	68	68	67	64	61	61	61	63	65	67

Augmentation Event

DO corrective action occurring. Water being released through spillway gate.

2-Hour monitoring period after DO corrective action event.

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