

APPENDIX 5-1

**SUMMER 2013 WATER QUALITY SAMPLING PLAN FOR THE DOWNER'S MILLS
HYDROELECTRIC PROJECT LOCATED ON THE OTTAUQUECHEE RIVER IN THE VILLAGE OF
QUECHEE, VT.**

**JEFF CROCKER, VERMONT AGENCY OF NATURAL RESOURCES APPROVAL OF WATER
QUALITY SAMPLING PLAN DATED JUNE 28, 2013**

Steve Hickey

From: Crocker, Jeff
Sent: Friday, June 28, 2013 11:15 AM
To: Stephen Hickey
Subject: RE: Downers Mill Hydro, Ottauquechee River - Hartford, VT- Request for LIHI review

Steve,

I have reviewed the water quality monitoring plan that you have proposed for the Downer Mills project and do not have any additional comments. In terms of responding to your request below, I would like to see the results from the water quality monitoring before issuing comments.

The Bethel Mills water quality monitoring plan I have briefly looked at and the operations capacity does not match up with what is reported in the water quality certification. If you could double check the operational capacity of the project it would be appreciated. And as a reminder I will not be commenting on this project till the fish passage is installed and approved by the US Fish and Wildlife Service.

Thanks,

Jeff

From: Stephen Hickey [<mailto:sjh@essexhydro.com>]
Sent: Friday, June 28, 2013 9:20 AM
To: Crocker, Jeff
Subject: Fwd: Downers Mill Hydro, Ottauquechee River - Hartford, VT- Request for LIHI review

Jeff,

Do you have a timetable for when you anticipate being able to respond to my below request for comment on the Downer's Mill hydroelectric project (FERC Exemption No. 5195)?

Thank you,
Steve

----- Original Message -----

Subject:Downers Mill Hydro, Ottauquechee River - Hartford, VT- Request for LIHI review

Date:Mon, 01 Apr 2013 16:56:34 -0400

From:Stephen Hickey <sjh@essexhydro.com>

To:Brian Fitzgerald <Brian.Fitzgerald@state.vt.us>, "Crocker, Jeff" <Jeff.Crocker@state.vt.us>, "Jaquith, Shayne" <Shayne.Jaquith@state.vt.us>

Brian, Jeff, and Shayne;

I am working on an application to the Low Impact Hydropower Institute for the low impact certification of Simon Pearce (US) Inc.'s **Downer's Mill hydroelectric project** located on the Ottauquechee River in the Town of Hartford, Village of Quechee, Vermont. Can you comment on the project's compliance with the terms and conditions of its FERC Exemption (Project No. 5195) issued May 4, 1982 and attached for your reference? It is

my understanding that upstream and downstream fish passage has not been requested at this project to date.

Thank you and please contact me if you need any additional information.

Steve

Stephen Hickey
Hydro Management Group
as authorized agent for Simon Pearce (US) Inc.
55 Union Street, 4th Floor
Boston, MA 02108
tel: 617-367-0032
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DOWNERS MILL LIHI WATER QUALITY TESTING PROPOSAL

Dissolved Oxygen Sampling Program for Simon Pearce USA Inc's Downers Mill Hydroelectric Power Project

The goal of the sampling program is to determine what effect the Downers Mill Hydroelectric Project, FERC Exemption No. 5195 (the "Project") has on dissolved oxygen concentrations during low flow conditions and compare those values to the Vermont Water Quality Standards (VT Code R.12 004 0052). The dissolved oxygen water quality standard for the Ottauquechee River at this location is 7 mg/l. The Vermont water quality standard for percent saturation for dissolved oxygen is 75% saturation.

Two locations will be tested using YSI 600 XLM deployable data loggers: (1), the deepest site of the impoundment; and (2), immediately below the Project (see Appendix 2 for proposed locations).

The YSI 600 XLM data loggers will be deployed for 10 complete days of data collected at 15 minute increments from June through September. The sampling periods will occur at least three days after a precipitation event. Dataloggers will be set at the bottom of the epilimnion (if stratified) or at 25% depth if not stratified. The YSI 600 XLM data loggers will be deployed under critical low flow with high temperature conditions. For the Downers Mill location, the bypass flow is 22 cfs or 7Q10 with a hydraulic capacity of 50 to 400 cfs, water quality sampling will occur when flows are near the lower end of the project's capacity of 72 cfs. The Downers Mills hydroelectric project will be operating under normal operational procedures during the time of sampling.

Meters will be calibrated before each deployment. If fouling interferes with the collection of accurate data, the deployment will be repeated.

Daily records will be kept in an electronic file and which will include dissolved oxygen, temperature, date/time of sampling, GPS location, date of last precipitation event, flow estimate through tailrace and bypass reach as reported by upstream USGS 01150900 OTTAUQUECHEE RIVER and the downstream USGS gage USGS 01151500 OTTAUQUECHEE RIVER AT NORTH HARTLAND, VT, and verification that the calibration procedures as described in Appendix 1, were followed each day prior to use.

The results from each 72 hour sampling period will be downloaded and sent to Jeff Crocker, River Ecologist at VT ANR for assessment.

DOWNERS MILL LIHI WATER QUALITY TESTING PROPOSAL

Appendix 1

Simon Pearce USA Inc. – Downers Mill Hydroelectric Project YSI 600 XLM Calibration Procedures

Calibration Procedure for Continuous Monitoring (deployment) Applications

The dissolved oxygen probe is calibrated prior to deployment. An initial inspection and calibration should be performed the day before to assure the membrane is in good shape and the instrument is working properly. Follow the procedure below to calibrate.

1. Clean all of the probes on the Sonde with tap (or clean ambient water) water. Shake off excess water.
2. Place approximately 1/8 inch of water in the bottom of the calibration cup. Place the probe end of the Sonde into the cup. Engage only one or two threads of the calibration cup to ensure the DO probe is vented to the atmosphere. Make sure that the DO and temperature probes are NOT immersed in water and that the Sonde cup is not in direct sunlight. Wait approximately 10 minutes for the air in the calibration cup to become water saturated and for the temperature to equilibrate.
3. Turn the instrument on. When the instrument will be deployed for multiple day monitoring applications, the “Autosleep RS232, and Autosleep SDI12” function must be activated before calibration. [From the “Main” menu on the display/logger, select the “System Setup” option and press Enter. Then select the “Advanced” option and press Enter. Select the “Autosleep RS232” option and press Enter to obtain the “on” setting. Then press the “ESC” button until returning to the main menu. Repeat to turn on the Autosleep SDI12 function.
4. From the calibration menu select the “Dissolved Oxy” option, then the DO% option (Note: for the YSI 6-Series Sondes, calibration of dissolved oxygen by the DO% procedure also results in the calibration of the DO mg/l mode).
5. Enter the correct barometric pressure in mm of Hg. The correct pressure will automatically appear, double check this value with the reading provided in the lower right hand corner of the display.
6. Press enter and then wait for the DO% reading to equilibrate. Press “Enter” to accept the calibration. Press “Enter” again to return to the calibration menu.
7. Immediately enter the “Sonde Run” mode and record the temperature, dissolved oxygen in mg/l and %, and the barometric pressure used for calibrating. The DO should be within ± 0.2 of saturation value. If not, go to section 4 to recalibrate.

DOWNERS MILL LHI WATER QUALITY TESTING PROPOSAL

Appendix 2

Simon Pearce USA Inc. – Downers Mill Hydroelectric Project
YSI 600 XLM Proposed Deployment Locations

