

UNITED STATES OF AMERICA 129 FERC ¶ 62,019
FEDERAL ENERGY REGULATORY COMMISSION

North Hartland, LLC

Project No. 2816-041

ORDER AMENDING LICENSE

(Issued October 08, 2009)

1. On June 4, 2009, North Hartland, LLC (North Hartland) filed an application to amend its license for the North Hartland Project, FERC No. 2816. North Hartland requests authorization to install a bypass flow turbine. The North Hartland Project is located at the U.S. Army Corps of Engineers' (Corps) North Hartland Dam on the Ottauquechee River in Windsor County, Vermont.

Background

2. The license for the North Hartland Project was issued in 1981 to Vermont Electric Generation and Transmission Cooperative, Inc.,¹ and transferred to North Hartland in 2005.²

3. The existing facilities at the North Hartland consists of an intake, above ground penstock, a powerhouse housing 4,000 kW unit, a tailrace 400 feet long extending from the powerhouse to the river and a bypass conduit, and a transmission line.³

Proposed Amendment

4. In the current filing, North Hartland proposes to install a bypass flow

¹ 17 FERC ¶ 62,307 Order Issuing License (Major), issued November 24, 1981.

² A 2000 order approving the transfer (91 FERC ¶ 62,227 (2000)) was rescinded (109 FERC ¶ 61,194 (2004)) but later reinstated (111 FERC ¶ 61,192 (2005)).

³ 119 FERC ¶ 62,130, Order Approving Partial Transfer of License, Amending License, issued May 15, 2007.

turbine with a maximum capacity of 137.5 kilowatts (kW). Presently, the North Hartland Project is required to maintain up to 40 cfs of bypass flow to meet minimum discharge requirements when the main 4,000 kW turbine is not operating. Installation of the bypass flow turbine would include the construction of a new bypass flow penstock and a concrete platform to house the turbine. The installed capacity of the project would increase from 4,000 kW to 4,137.5 kW, and the hydraulic capacity of the project would increase from 810 cfs to 835 cfs.

Consultations

5. Prior to filing the application to amend the license, North Hartland consulted with state and federal agencies and other parties whose interests could be potentially affected by the proposed amendment and they include: U.S. Army Corps of Engineers (Corps), U.S. Fish & Wildlife Service (FWS), Vermont Public Service Board, Vermont Department of Public Service, Vermont Agency of Natural Resources (VTANR), Vermont State Historic Preservation Commission, Town of Hartland, Vermont Public Service Company, and Ottauquechee Hydro Company Inc. (OHCI, owner of hydro project immediately downstream of North Hartland Project). On April 1, 2009, North Hartland held a public meeting in Hartland, Vermont.
6. There were no objections raised by any party to North Hartland's proposal to install a bypass flow turbine at the North Hartland Project. However, OHCI and VTANR raised issues unrelated to the bypass flow turbine installation.
7. OHCI requested that the license amendment include a requirement that a formal agreement be signed between OHCI and North Hartland to provide communication protocol to coordinate the operation of the North Hartland Project and OHCI's Ottauquechee Project.
8. The VTANR stated that the Dam and Hydrology Section of the Vermont Department of Environmental Conservation (VTDEC) found that the proposed bypass flow turbine installation does not require a change to the existing Water Quality Certification (WQC) that was issued on March 18, 1981, but VTDEC found a discrepancy between the operating reservoir levels specified in North Hartland's agreement with the Corps and the reservoir operating levels specified in WQC. The Corps requirement requires North Hartland to operate the reservoir within a band of 425 to 428 feet mean sea level (msl), whereas the WQC specifies a reservoir operating band of 422 to 425 feet msl.
9. In its application for amendment of license filed on June 4, 2009, North Hartland requested a waiver of the three stage consultation process specified in the

Commission's regulations at 18 C.F.R. §4.38(d). On June 30, 2009, the Office of the Attorney General, State of Vermont filed its support for the waiver.

10. On May 7, 2009, North Hartland submitted a request to VTDEC to amend its WQC to revise the reservoir operating band from 422 to 425 feet msl to 425 to 428 feet msl. An amendment to the WQC certificate issued by VTDEC on July 20, 2009 is attached to this order.

11. On July 10, 2009, staff issued a notice of application accepted for filing, soliciting motions to intervene and protests, comments and recommendations, terms and condition with within 60 days from the issuance date and reply comments due within 105 days from the issuance date of the notice. No entity filed comments.

Review

A. Project Design

12. North Hartland proposes to install a bypass flow turbine with a maximum capacity of 137.5 kW to utilize a portion of the minimum flow discharge requirement of 40 cfs that is not currently used for generating purposes. The installed capacity of the project would increase from 4,000 kW to 4,137.5 kW, and the hydraulic capacity of the project would increase from 810 cfs to 835 cfs. In accordance with the Commission's regulations, the effective date of the annual charges under Part I of the Federal Power Act will be the date of the commencement of construction of the authorized additional capacity. Accordingly, ordering paragraph (D) of this order requires the licensee to file with the Commission the date of commencement of project construction, which we will use to revise the annual charges under article 39(1) of the license.

13. A cofferdam would be necessary to construct the powerhouse under the proposed amendment. Accordingly, ordering paragraph (E) of this order requires the licensee to file with the Commission for approval of contractor-designed and licensee approved cofferdams construction drawings and specifications. Additionally, in ordering paragraph (F) of this order we are requiring the licensee to file at least 60 days prior to start of construction final plans and specifications and supporting design document which should also include a Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Soil Erosion and Sediment Control Plan.

14. The licensee shall consult with the Corps to determine if lands and property under their administration would be impacted or affected by construction activities. If so, within 90 days from the issuance date of the license amendment,

the licensee shall enter into an agreement with the Corps as we are requiring in ordering paragraph (G) of this order.

15. In ordering paragraph (H) of this order, we are requiring the licensee to file monthly construction progress reports.

B. Project Operation

16. The North Hartland Project is a peaking plant designed to provide power during daily peak periods of the ISO-NE system using available head and reservoir outflow. The existing reservoir is operated during July, August, September, and October on a daily cycling basis to ensure that the level is restored to the permanent pool elevation of 425.5 feet msl every 24 hours while still maintaining a minimum downstream release requirement of 23 cfs. During the remainder of the year the reservoir is operated from a pool elevation of 428 feet msl to a minimum of 425 feet msl while maintaining a minimum downstream release requirement of 40 cfs.

17. The bypass flow turbine is operated during hours when the main turbine is not operated. In the event neither the main nor the bypass flow turbine is operating, minimum bypass flow is discharged through the bypass flow system.

18. During the periods when the flow is 2,400 cfs or less, the main and bypass flow turbines will operate at full gate capacity of 835 cfs. When the discharge from the reservoir exceeds 835 cfs, surplus flow is discharged through the penstock bypass control gate directly into the tailrace below the powerhouse.

C. Exhibit Drawings

19. The licensee included in the filing revised Exhibit A, and Exhibit F drawings. No changes to the Exhibit G are required since the proposed bypass flow turbine will be installed wholly within the existing project boundary. Ordering paragraph (I) of this order approves the revised Exhibit A filed on June 4, 2009. This order approves the Exhibit F drawings which are in accordance with the Commission's regulations at 18 C.F.R. §§4.39 and 4.41 (g) in ordering paragraph (J) of this order. In ordering paragraph (K) we are requiring the licensee to file the approved drawings in aperture card and electronic file formats.

20. Ordering paragraph (L) of this order requires the licensee to file revised Exhibit A and Exhibit F drawings, as needed, reflecting as-built conditions, within 90 days of the completion of construction.

D. Environmental Review

21. During construction of the powerhouse, turbidity increases may occur as a result of installation and removal of the requisite cofferdam. With implementation of the soil erosion and sediment control plan required in ordering paragraph (F), any impacts to water quality would be short term and minor in nature.

Operation of the proposed bypass turbine would not result in any changes to the extant project flow regime. No impacts to downstream water quality parameters are expected to occur from operation of the turbine as it will discharge similarly to the current bypass flow piping. Commission-imposed environmental requirements of the existing license and compliance with state water quality regulations would also similarly ensure that operation of the bypass turbine will not significantly impact aquatic resources in the project area.

Summary

22. Based upon the review of the information provided by the licensee, agency comments and current and prior assessments, and our independent analysis, we conclude that approving this amendment of license is not a major federal action significantly affecting the quality of the human environment. This order approves North Hartland's amendment request to install a bypass flow turbine.

The Director orders:

(A) The amendment of license filed on June 4, 2009, is approved as provided by this order, effective the day this order is issued.

(B) The project description in ordering paragraph (B)(2) of the license is revised to read as follows:

(1) an existing outlet located in the south end of the North Hartland dam, lined with steel for use as the intake for Project No. 2816; (2) a 12-foot-diameter penstock installed above ground for a distance of approximately 470 feet from the toe of the dam to the powerhouse; (3) a powerhouse with a total authorized installed capacity of 4,137.5 kW, consisting of a 4,000-kW adjustable blade, vertical shaft turbine-generator, and a 137.5-kW fixed geometry horizontal pump turbine-generator unit located on a platform erected outside of the southern wall of the powerhouse; (4) a tailrace approximately 400 feet long which extends from the powerhouse to the river; (5) a bypass conduit, 12 feet in diameter, which branches off from the penstock about 100 feet before

the powerhouse, discharging water through a control gate into a concrete-lined channel extending 60 feet east to the tailrace; (6) a 30-inch penstock located approximately 50 feet upstream of bypass control gate that carries water to the to the 137.5 kW bypass unit (7) a fenced switchyard, parking area, and access road located next to the powerhouse; and (8) a transmission line that comprises: (a) an approximately 600-foot underground segment of 12.5-kV, three-phase line from the project's substation to the riser pole owned by the New England Telephone Company; (b) approximately 4,000 feet of 12.5-kV, three-phase line from the riser pole to a junction with Central Vermont Public Service Corporation's (CVPS) Distribution Line 66 at CVPS Pole # 115 on Clay Hill Road.

(C) The licensee shall start construction of the bypass flow turbine within two years from the issuance date of this order and complete construction within two years from start of construction.

(D) Within 30 days of the commencement of construction of bypass flow turbine, the licensee shall file with the Commission the date of commencement of construction.

(E) Before starting construction of the bypass flow turbine, the licensee shall review and approve the design of contractor-designed cofferdams and deep excavations and shall make sure construction of cofferdams and deep excavations is consistent with the approved design. At least 30 days before starting construction of the cofferdam, the licensee shall submit one copy to the Commission's D2SI – New York Regional Engineer and two copies to the Commission (one of these copies shall be a courtesy copy to the Commission's Director, Division of Dam Safety and Inspections), of the approved cofferdam construction drawings and specifications and the letters of approval.

(F) At least 60 days prior to the start of construction of the bypass flow turbine, the licensee shall submit one copy of its final plans and specifications and supporting design document to the Commission's Division of Dam Safety and Inspections (D2SI) – New York Regional Engineer, and two copies to the Commission (one of these shall be a courtesy copy to the Director, D2SI). The submittal must also include as part of preconstruction requirements: a Quality Control and Inspection Program, Temporary Construction Emergency Action Plan, and Soil Erosion and Sediment Control Plan. The licensee may not begin construction until the D2SI – New York Regional Engineer has reviewed and commented on the plans and specifications, determined that all preconstruction requirements have been satisfied, and authorized start of construction.

(G) The licensee shall consult with the U.S. Army Corps of Engineers (Corps) to determine if lands and property under their administration would be impacted or affected by construction activities. If so, within 90 days from the issuance date of the license amendment, the licensee shall enter into an agreement with the Corps identifying the facilities, studies and construction activities, as applicable, and the terms and conditions under which studies and construction will be conducted. The agreement shall be mainly composed of reasonable arrangements for access to the Corps site to conduct studies and construction activities, with such access rights to be conditioned by the Corps as may be necessary to protect the federally authorized project purposes and operations. In general, the agreement shall not be redundant with the Commission's requirements contained in this order. Should the licensee and the Corps fail to reach an access agreement, the licensee shall refer the matter to the Commission for resolution.

(H) During construction activities, the licensee shall submit one copy to the Division of Dam Safety and Inspections - New York Regional Engineer and two copies to the Commission (one of these shall be a courtesy copy to the Director, Division of Dam Safety and Inspections), of a monthly progress report.

(I) The revised Exhibit A filed on June 4, 2009, is approved.

(J) The Exhibit F drawings filed on June 4, 2009, are approved and assigned drawing numbers as shown in the following table:

Exhibit	FERC No.	Title	Superseding
A5-1	2816-29	Single Line Diagram	2816-26
F1-1	2816-30	Site Plan & General Agreement	2816-27
F1-2	2816-31	Outlet Works Profile	2816-13
F1-6	2816-32	Penstock & Bypass Piping Sections	2816-17
F1-7	2816-33	Bypass Flow Turbine Powerhouse Addition (Elevation)	----
F1-8	2816-34	Bypass Flow Turbine Powerhouse Addition (Plan)	----

(K) Within 45 days of the date of issuance of this order, the licensee shall file the approved exhibit drawing in aperture card and electronic file formats.

a) Three sets of the approved exhibit drawings shall be reproduced on silver or gelatin 35mm microfilm. All microfilm shall be mounted on type D (3-1/4" X 7-3/8") aperture cards. Prior to microfilming, the FERC Project-Drawing Number

(i.e., P- 2816-29) shall be shown in the margin below the title block of the approved drawing. After mounting, the FERC Drawing Number shall be typed on the upper right corner of each aperture card. Additionally, the Project Number, FERC Exhibit (i.e., F1-1), Drawing Title, and date of this order shall be typed on the upper left corner of each aperture card. See Figure 1.

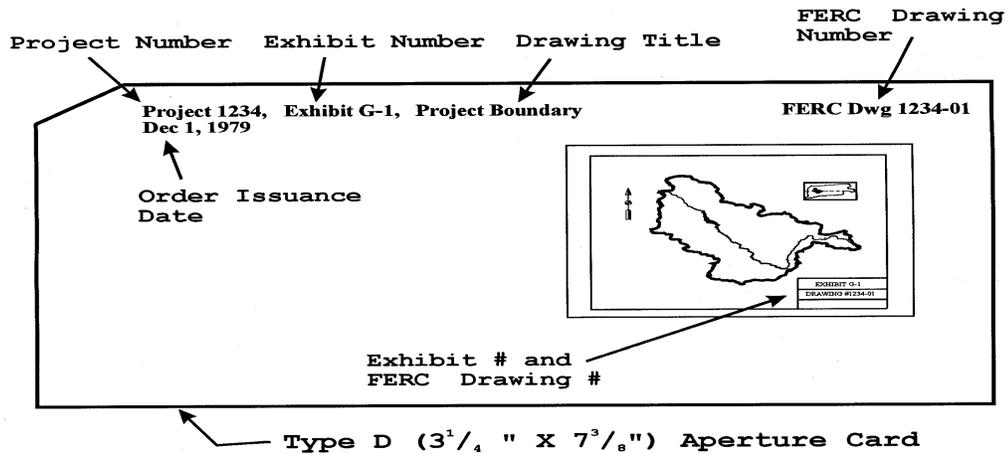


Figure 1 Sample Aperture Card Format

Two of the sets of aperture cards shall be filed with the Secretary of the Commission, ATTN: OEP/DHAC. The third set shall be filed with the Commission's Division of Dam Safety and Inspections Chicago Regional Office.

b) The licensee shall file two separate sets of exhibit drawings in electronic raster format with the Secretary of the Commission, ATTN: OEP/DHAC. A third set shall be filed with the Commission's Division of Dam Safety and Inspections New York Regional Office. Exhibit F drawings must be segregated from other project information and identified as **(CEII) material under 18 CFR §388.112 and §388.113(c)**. Each exhibit drawing must be contained in a separate electronic raster file; which meets the following format specification:

FILE NAME – MUST use the format (including commas and dashes)
 P-2816-30, F1-1, Site Plan and General Arrangement,
 MM-DD-YYYY.TIF
 IMAGERY - black & white raster file
 FILE TYPE – Tagged Image File Format, (TIFF) CCITT Group 4
 RESOLUTION –300 dpi desired, (200 dpi min)
 DRAWING SIZE FORMAT – 24" x 36" (min), 28" x 40" (max)
 FILE SIZE – less than 1 MB desired

The filename for each drawing must include: FERC Project-Drawing Number, FERC Exhibit, Drawing Title, FERC approval date, and file extension in the following format [P-2816-30, F1-1, Site Plan and General Arrangement, MM-DD-YYYY.TIF]. If the file name is not in this format, the filing will be rejected.

(L) Within 90 days of completion of construction of the bypass flow turbine, the licensee shall file for Commission approval, revised Exhibits A, F, as applicable, to describe and show those project facilities as built. A courtesy copy shall be filed with the Commission's D2SI – New York Regional Engineer, the Director, D2SI, and the Director, DHAC.

(M) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days of the date of issuance of this order pursuant to 18 C.F.R. §385.713.

M. Joseph Fayyad
Engineering Team Lead
Division of Hydropower Administration
and Compliance

Water Quality Certification Amendment
(33 U.S.C. §1341)

In the matter of: North Hartland LLC
c/o Essex Hydro Associates, LLC
55 Union Street
Boston, MA 02108

APPLICATION FOR NORTH HARTLAND HYDROELECTRIC PROJECT

The Vermont Department of Environmental Conservation (the Department) has reviewed a water quality certification amendment application dated May 7, 2009 and filed by North Hartland LLC, the licensee for the North Hartland Hydroelectric Project (FERC Project No. 2816). The licensee seeks to change the approved reservoir operating band. The original licensee, the Vermont Electric Cooperative, Inc., was granted a water quality certification for the Project on March 18, 1981, and a federal license was granted on November 24, 1981.

The current application is subject to review under the Vermont Water Quality Standards adopted by the Water Resources Panel to become effective on January 1, 2008 (Standards). (Standards, Section 1-01. Applicability and Definitions)

The Department, based on the application and record before it, makes the following findings and conclusions.

Findings

1. The North Hartland Hydroelectric Project is located on the Ottauquechee River at the North Hartland Flood Control Project dam, which is owned by the U.S. Army Corps of Engineers (the Corps). A 40-year federal license was issued to the Vermont Electric Cooperative in 1981 to develop a hydroelectric facility at the dam. In 1983, the license was transferred to the Vermont Electric Generation and Transmission Cooperative, Inc., which completed construction of the facility in 1986 and operated it until 1996 when it filed for bankruptcy. Subsequently, ownership passed to the current licensee, which restarted operation of the station in November 2005.

2. The North Hartland Flood Control Project is part of a network of flood control dams that are utilized primarily to abate flooding caused by the Connecticut River in Massachusetts and Connecticut. Article 38 of the license required the licensee to enter into an agreement with the Corps "...specifying details on operational procedures and a power rule curve consistent with the overall project management objectives of the North Hartland Flood Control Project."
3. According to the license application (Application For Major License – Existing Dam For The North Hartland Dam Project, Vermont Electric Cooperative, December 1980, Section B.2.ii. Area-Capacity and Proposed Rules Curves), the Corps was maintaining the reservoir water level at elevation 425 feet (stage 35 feet) year around at the time of the application, and the hydroelectric project would operate in a daily peaking mode with an average drawdown to elevation 423 feet. Levels would be restored to elevation 425 feet every 24 hours. Figure B.2-3 (Modified Reservoir Regulation) depicts the maximum limit of daily drawdown as elevation 422.0 feet and the average minimum daily drawdown varying by month but in all cases elevation 423.0 or higher.
4. The 1981 water quality certification described in Finding 6 the normal daily drawdown below elevation 425.0 feet as two feet (elevation 423.0 feet) and the maximum daily drawdown as three feet (elevation 422.0 feet).
5. The May 16, 1983, memorandum of agreement between the Vermont Electric Cooperative and the Corps is consistent with the license application proposal and the water quality certification. The operating band would be between elevation 422 feet and elevation 425 feet, with the limitation that the volume released for generation would be no greater than the volume that could be stored during the off-peak hours to return the pool to elevation 425 feet daily.
6. On September 9, 2005, the licensee entered into an agreement with the Corps for operation under its new ownership. Under this memorandum of agreement, the normal pool elevation is set at elevation 425.5 feet (stage 35.5 feet) with the operating band set mostly above this elevation:

Summer (inflow 180-670 cfs) – 1.75-foot cycle between elevation 425.0 feet and elevation 426.75 feet; restored to at least elevation 425.5 feet by 10 a.m. each day

Summer (inflow <180 or >670 cfs) – 1.5-foot cycle between elevation 425.0 feet and elevation 426.5 feet; restored to at least elevation 425.5 feet by 10 a.m. each day

Winter – 3.0-foot cycle between elevation 425.0 feet and elevation 428.0 feet.

The summer period is defined in the agreement as the period from the Saturday before Memorial Day weekend through the first Sunday after Labor Day.

The agreement notes that the Corps had been operating the reservoir with a fixed normal pool elevation of 425.5 feet during the period when the hydroelectric station was idle.

7. The revised operation was implemented without an amendment of the Project water quality certification having been sought. The licensee attributes the change to the Corps. A public beach was constructed on the reservoir in 1986 or 1987. Use of the swimming area was deemed unsatisfactory under the old operating rule. The licensee states in its amendment application that the operating band was raised at that time, although neither the water quality certification nor the agreement was amended to reflect the change. The licensee was unable to provide operating records showing how the pool was actually managed between 1986 and 1996. A graph of 2004 operating levels was provided and shows that the Corps was consistently maintaining the pool elevation between 425.0 feet and 426.0 feet during the summer period when the hydroelectric station was idle. The licensee also provided a graph of 2008 operating levels that show summer ranges consistent with the agreement
8. Noting that the reservoir has been managed with the higher operating band for more than 23 years, the licensee contends that a reversion to the former operating band would be deleterious to recreational use, the reservoir bed, water quality, and the shoreline. The licensee states that a reduced reservoir level would alter the balance between the beach area and the swimming area, substantially limiting swimming potential. The licensee states that extensive depositional areas at the head of the reservoir would be exposed if the reservoir is drawn to elevation 422 feet, increasing erosion and degrading aesthetics. The licensee further states that recreational boating would also be degraded due to shallower depths.
9. North Hartland Dam normally impounds the river for a distance of almost 3½ miles, reaching upstream to a cascade just below Quechee Gorge.

10. On May 8, 2009, staff from the Department and the Department of Fish and Wildlife performed a reconnaissance survey of the reservoir shoreline. The level was at about elevation 425 feet. The area subject to fluctuation water levels under current hydropeaking operations is devoid of vegetation and most topsoil has been lost due to erosion, exposing ledge or mineral subsoils. Since the change occurred several years ago, there was limited evidence of active erosion beyond what one would expect to find around an artificial waterbody managed in this fashion.

Analysis and Conclusions

11. The 2008 Department List of Priority Waters Outside the Scope of Clean Water Act Section 303(d) includes North Hartland Reservoir and the downstream 0.9-mile segment of the Ottauquechee River as Part F surface waters altered by flow regulation, in this case primarily related to hydropeaking and deficient minimum flows. The reservoir is considered to not fully support the designated uses of aquatic biota and secondary contact recreation. The river segment is considered to not fully support aesthetics, aquatic biota, and secondary contact recreation. The Department's current plan is to address the lack of full use support as part of the relicensing process, which should terminate in 2021. The Department may, however, opt to address use support earlier through a petition to FERC under Article 15 of the license (Form L-2 standard articles).
12. The proposed change apparently was implemented over two decades ago. Consequently, concerns regarding the potential for shoreline erosion and related degradation of water quality by increased sediment loading and turbidity have been rendered moot.
13. The increased water level extends the reservoir further upstream, but the presence of a cascade at the upstream limit reduces the inundation of riverine resources.
14. The normal reservoir volume has been increased but only slightly. The reservoir is fairly small relative to the contributing watershed size, a condition that is favorable to a short residence time, limiting the risk of thermal stratification and depleted dissolved oxygen conditions.
15. Boating and swimming use in the reservoir will be enhanced by the higher summer water levels.

16. The proposed modification will not increase the level of non-support for the designated uses of aesthetics, aquatic biota, and secondary contact recreation in the reservoir and downstream.

Decision and Certification

Based on its review of the applicant's proposal and the above findings, the Department concludes that there is reasonable assurance that the proposed operating modifications at the North Hartland Hydroelectric Project will not cause a violation of Vermont Water Quality Standards and will be in compliance with sections 301, 302, 303, 306, and 307 of the Federal Clean Water Act, 33 U.S.C. §1251 et seq., as amended, and other appropriate requirements of state law. In making this determination, the Department amends the original certification to include the following condition:

- G. Water Level Management. The Project shall be operated in accordance with the water level management schedule contained in Finding 6 above.

Dated at Waterbury, Vermont this
__20th__ day of July, 2009

Justin Johnson, Commissioner
Department of Environmental
Conservation

By _____/s/_____
Larry R. Fitch, Director
Facilities Engineering Division

c: Distribution List

LRF/JRC