

Mr. Whitaker B. Irvin Jr.  
QuasarWave, NH LLC  
6300 Sagewood Drive, STE H241  
Park City, Utah 84098

## **WATER QUALITY CERTIFICATION**

### **In Fulfillment of**

**Section 401 of the United States Clean Water Act (33 U.S.C 1341)  
and NH RSA 485-A:12, III**

**WQC # 2019-485A12IV-001**

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<b>Activity Name</b>	QuasarWave Groveton Power
<b>Activity Location</b>	Groveton, New Hampshire 156 Mechanic Street Tax Map 107, Lot 15
<b>Affected Surface waters</b>	Upper Ammonoosuc River NHIMP801010707-03 and NHIMP801010707-04
<b>Owner/Applicant</b>	Mr. Whitaker B. Irvin Jr. QuasarWave, NH LLC 6300 Sagewood Drive, STE H241 Park City, Utah 84098
Applicable Federal and State permit(s):	(NHDES Wetland and Alteration of Terrain permits are not required)
<b>DATE OF APPROVAL</b> (subject to Conditions below)	October 24, 2019

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### **A. INTRODUCTION**

QuasarWave NH, LLC (Applicant) is proposing to utilize an existing intake at the Brooklyn Dam in Groveton, New Hampshire to withdraw water from the Upper Ammonoosuc River for the purpose of extracting the hydrogen for use as a fuel to generate power (Activity). A more complete description of the

Activity is provided in Finding D-1 of this Certification.

This Water Quality Certification (WQC or Certification) documents laws, regulations, determinations and conditions related to the Activity for the attainment and maintenance of New Hampshire (NH) surface water quality standards, including the provisions of NH RSA 485-A:8 and NH Code of Administrative Rules Env-Wq 1700, for the support of designated uses identified in the standards.

## **B. 401 CERTIFICATION APPROVAL**

Based on the facts, findings and conditions noted below, the New Hampshire Department of Environmental Services (NHDES or DES) has determined that there is reasonable assurance that the Activity will not violate surface water quality standards. NHDES hereby issues this Certification, subject to the conditions in Section E of this Certification, in accordance with RSA 485-A:12, IV.

## **C. STATEMENT OF FACTS AND LAW**

- C-1.** NH RSA 485-A:12, III, states: "No activity, including construction and operation of facilities, that requires certification under section 401 of the Clean Water Act and that may result in a discharge, as that term is applied under section 401 of the Clean Water Act, to surface waters of the state may commence unless the department certifies that any such discharge complies with the state surface water quality standards applicable to the classification for the receiving surface water body. The department shall provide its response to a request for certification to the federal agency or authority responsible for issuing the license, permit, or registration that requires the certification under section 401 of the Clean Water Act. Certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide assurance that the proposed discharge complies with applicable surface water quality standards. The department may enforce compliance with any such conditions, modifications, or monitoring requirements as provided in RSA 485-A:22."
- C-2.** NH RSA 485-A: IV states: "No activity that involves surface water withdrawal or diversion of surface water that requires registration under RSA 488:3, that does not otherwise require the certification required under paragraph III, and which was not in active operation as of the effective date of this paragraph, may commence unless the department certifies that the surface water withdrawal or diversion of surface water complies with state surface water quality standards applicable to the classification for the surface water body. The certification shall include any conditions on, modifications to, or monitoring of the proposed activity necessary to provide reasonable assurance that the proposed activity complies with applicable surface water quality standards."

The effective date of NH RSA 485-A:IV is September 5, 2008.

- C-3.** NH RSA 488:3 regarding registration of withdrawals and discharges states the following:

- "I. No person shall withdraw or discharge a cumulative amount of more than 20,000 gallons of water per day, averaged over any 7-day period, or more than 600,000 gallons of water over any 30-day period, at a single real property or place of business without registering the withdrawal or discharge with the department. Transfers of such volume of water shall also be registered. Registration shall be in addition to any required permits.
- II. No registration shall be transferred to another person without written notification to the commissioner."
- C-4.** NH RSA 485-A:8 and Env-Wq 1700 (Surface Water Quality Standards), together fulfill the requirements of Section 303 of the Clean Water Act that the State of New Hampshire adopt water quality standards consistent with the provisions of the Act.
- C-5.** Env-Wq 1701.02, entitled "Applicability", states that these rules shall apply to:
- "(a) All surface waters; and  
(b) Any person who:  
(1) Causes any point or nonpoint source discharge of any pollutant to surface waters;  
(2) Undertakes hydrologic modifications, such as dam construction or water withdrawals; or  
(3) Undertakes any other activity that affects the beneficial uses or the water quality of surface waters."
- C-6.** Env-Wq 1703.01 entitled "Water Use Classifications; Designated Uses", states the following:
- "(a) All surface waters shall be classified as provided in RSA 485-A:8, based on the standards established therein for class A and class B waters. Each classification shall identify the most sensitive use it is intended to protect.
- (b) All surface waters shall be restored to meet the water quality criteria for their designated classification including existing and designated uses, and to maintain the chemical, physical, and biological integrity of surface waters.
- (c) All surface waters shall provide, wherever attainable, for the protection and propagation of fish, shellfish and wildlife, and for recreation in and on the surface waters.
- (d) Unless high or low flows are caused by naturally-occurring conditions, surface water quantity shall be maintained at levels that protect existing uses and designated uses."
- C-7.** Env-Wq 1702.44 defines surface waters as "surface waters of the state" as defined in NH RSA 485-A:2, XIV and waters of the United States as defined in 40 CFR 122.2.

NH RSA 485-A:2, XIV defines "surface waters of the state" as "perennial and seasonal streams, lakes, ponds and tidal waters within the jurisdiction of the state, including all streams, lakes, or ponds bordering on the state, marshes, water courses and other bodies of water, natural or artificial."

40 CFR 122.2 defines "waters of the United States".

- C-8.** NH RSA 482-A:2, X. defines "Wetlands" as "[a]n area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal conditions does support, a prevalence of vegetation typically adapted for life in saturated soil conditions."
- C-9.** Env-Wq 1702.07 states that "'Best management practices" means those practices that are determined, after problem assessment and examination of all alternative practices and technological, economic and institutional considerations, to be the most effective practicable means of preventing or reducing the amount of pollution generated by point or nonpoint sources to a level compatible with water quality goals."
- C-10.** Env-Wq 1702.08 states that "'Biological integrity" means the ability of an aquatic ecosystem to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region."
- C-11.** Env-Wq 1702.17 states that "'Designated uses" means those uses specified in water quality standards for each water body or segment whether or not such uses are presently occurring. The term includes the following:
- (a) Swimming and other recreation in and on the water, meaning the surface water is suitable for swimming, wading, boating of all types, fishing, surfing, and similar activities;
  - (b) Fish consumption, meaning the surface water can support a population of fish free from toxicants and pathogens that could pose a human health risk to consumers;
  - (c) Shellfish consumption, meaning the tidal surface water can support a population of shellfish free from toxicants and pathogens that could pose a human health risk to consumers;
  - (d) Aquatic life integrity, meaning the surface water can support aquatic life, including a balanced, integrated, and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of the region;
  - (e) Wildlife, meaning the surface water can provide habitat capable of supporting any life stage or activity of undomesticated fauna on a regular or periodic basis; and

- (f) Potential drinking water supply, meaning the surface water could be suitable for human intake and meet state and federal drinking water requirements after adequate treatment."

**C-12.** Env-Wq 1703.07 includes water quality criteria for dissolved oxygen.

**C-13.** Env-Wq 1703.11 entitled "Turbidity" states the following:

- "(a) Class A waters shall contain no turbidity, unless naturally occurring.
- (b) Class B waters shall not exceed naturally occurring conditions by more than 10 NTUs.
- (c) Turbidity in waters identified in RSA 485-A:8, III shall comply with the applicable long-term combined sewer overflow plan prepared in accordance with Env-Wq 1703.05(c).
- (d) For purposes of state enforcement actions, if a discharge causes or contributes to an increase in turbidity of 10 NTUs or more above the turbidity of the receiving water upstream of the discharge or otherwise outside of the visible discharge, a violation of the turbidity standard shall be deemed to have occurred."

**C-14.** Env-Wq 1703.19, entitled "Biological and Aquatic Community Integrity", states the following:

- "(a) All surface waters shall support and maintain a balanced, integrated and adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of similar natural habitats of a region.
- (b) Differences from naturally-occurring conditions shall be limited to non-detrimental differences in community structure and function."

**C-15.** Antidegradation provisions are included in Env-Wq 1702 and Env-Wq 1708.

- a. Env-Wq 1702.03 states that "'Antidegradation" means a provision of the water quality standards that maintains and protects existing water quality and uses.
- b. Env-Wq 1708.02 states that "Antidegradation shall apply to: (a) Any proposed new or increased activity, including point source and nonpoint source discharges of pollutants, that would lower water quality or adversely affect the existing or designated uses;(b) Any proposed increase in loadings to a waterbody when the proposal is associated with existing activities; (c) Any increase in flow alteration over an existing alteration; and (d) Any hydrologic modifications, such as dam construction and water withdrawals."
- c. Antidegradation applies to all parameters as evidenced by Env-Wq 1708.08 (a) (Assessing Waterbodies) which states " The applicant shall characterize the existing water quality and determine if there is remaining assimilative capacity for each parameter in question."

- d. According to Env-Wq 1708.03 (b), "A proposed discharge or activity shall not eliminate any existing uses or the water quality needed to maintain and protect those uses".
- e. Env-Wq 1702.04 states that "Assimilative capacity" means the amount of a pollutant or combination of pollutants that can safely be released to a waterbody without causing violations of applicable water quality criteria or negatively impacting uses."
- f. Env-Wq 1708.08 describes the process for assessing waterbodies to determine if there is remaining assimilative capacity for each parameter in question.
- g. Env-Wq 1708.09 entitled "Significant or Insignificant Determination" states the following: (a) Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, shall be considered a significant lowering of water quality. (b) The department shall not approve a discharge or activity that will cause a significant lowering of water quality unless the applicant demonstrates, in accordance with Env-Wq 1708.10, that the proposed lowering of water quality is necessary to achieve important economic or social development in the area where the waterbody is located.
- h. Env-Wq 1708.01(b)(1), in general, states that: For significant changes in water quality, where the quality of the surface waters exceeds levels necessary to support propagation of fish, shellfish, and wildlife, and recreation in and on the water, that quality shall be maintained and protected unless the department finds, after full satisfaction of the intergovernmental coordination and public participation provisions and the analysis required by Env-Wq 1708.10, that allowing lower water quality is necessary to accommodate important economic or social development in the area in which the surface waters are located. In allowing such degradation or lower water quality, the department shall assure water quality adequate to fully protect existing uses. Further, the department shall assure that the highest statutory and regulatory requirements shall be achieved for all new and existing point sources and that all cost effective and reasonable best management practices for nonpoint source control shall be implemented.
- i. Env-Wq 1708.01(b)(2), in general, states that: The department shall not approve any proposed discharge or activity that might cause degradation or lower water quality, without such conditions as are necessary to ensure that:
  - a) Water quality will be adequate to protect existing uses;
  - b) The highest statutory and regulatory requirements will be achieved for all new and existing point sources;
  - and c) All cost effective and reasonable best management practices for nonpoint source control will be implemented.

**C-16.** Env-Wq 1708.04 entitled "Protection of Water Quality in ORW" states that the following:

- "(a) Surface waters of national forests and surface waters designated as natural under NH RSA 483:7-a, I, shall be considered outstanding resource waters (ORW).

- (b) Subject to (c), below, water quality shall be maintained and protected in surface waters that constitute ORW.
- (c) The department shall allow a limited point or nonpoint source discharge to an ORW only if:
  - (1) The discharge will result in no more than temporary and short-term changes in water quality, wherein "temporary and short term" means that degradation is limited to the shortest possible time;
  - (2) The discharge will not permanently degrade water quality or result at any time in water quality lower than that necessary to protect the existing and designated uses in the ORW; and
  - (3) All practical means of minimizing water quality degradation are implemented."

**C-17.** Env-Wq 1708.06 entitled "Protection of Water Quality in High Quality Waters" states the following:

- "(a) Subject to (b) through (d) below, high quality waters shall be maintained and protected.
- (b) The department shall evaluate and authorize insignificant changes in water quality as specified in Env-Wq 1708.09.
- (c) The department shall allow degradation of significant increments of water quality, as determined in accordance with Env-Wq 1708.09, in high quality waters only if the applicant can demonstrate to the department, in accordance with Env-Wq 1708.10, that allowing the water quality degradation is necessary to accommodate important economic or social development in the area in which the receiving water is located.
- (d) If the waterbody is Class A Water, the requirements of Env-Wq 1708.05 shall also apply."

**C-18.** Env-Wq 1708.12 states the "" transfer" means the intentional conveyance of water from one surface water to another surface water for the purpose of increasing volume of water available for withdrawal from the receiving surface water. The term does not include the transfer of stormwater, for the purpose of managing stormwater during construction, between basins created or otherwise lawfully used for stormwater detention or treatment, or both, and does not include the discharge of stormwater from a detention or treatment basin to a surface water."

**C-19.** RSA 483 regarding Designated Rivers, states the following:

RSA 483:4, XVIII. "River corridor" means the river and the land area located within a distance of 1,320 feet of the normal high water mark or to the landward extent of the 100 year floodplain as designated by the Federal Emergency Management Agency, whichever distance is larger.

RSA 483:8-a, III. The duties of such committees shall be:

(a) To advise the commissioner, the advisory committee, the municipalities through which the designated river or segment flows, and municipalities within tributary drainage areas on matters pertaining to the management of the river or segment and tributary drainage areas. Municipal officials, boards, and agencies shall inform such committees of actions which they are considering in managing and regulating activities within designated river corridors.

(b) To consider and comment on any federal, state, or local governmental plans to approve, license, fund or construct facilities that would alter the resource values and characteristics for which the river or segment is designated.

RSA 483:10-b. Withholding of Section 401 Certification. – The general court finds that the development of any dam or channel alteration activities within a natural river or segment or the development of any new dam within a rural or community river or segment, except as provided in RSA 483:9-a, II and RSA 483:9-b, II, will alter the physical and chemical characteristics of that river and will constitute violation of the water quality standards established under RSA 485-A:8. The commissioner shall deny certification of any federally licensed or permitted activity on such designated rivers or segments under section 401 of the Federal Water Pollution Control Act, P.L. 92-500, as amended.

RSA 483:12-a State Action; Notification of Rivers Coordinator; Petition for Review

I. Any state agency considering any action affecting any river or segment designated under this chapter shall notify the rivers coordinator prior to taking any such action. Such agency shall forward to the rivers coordinator for review and comment copies of all notices of public hearings, or, where a public hearing is not required, a copy of the application for issuance of a permit, certificate, or license within the designated river or corridor under RSA 485-C, RSA 485-A, RSA 483-B, RSA 12-E, RSA 270:12, RSA 482, RSA 482-A, RSA 149-M, RSA 430, or RSA 147-A. If an agency is notified by the rivers coordinator that a proposed activity would violate a protection measure under RSA 483:9, 483:9-a, 483:9-aa, or 483:9-b, such agency shall deny the application.

**C-20.** NH RSA 485:61 regarding Rules for Water Conservation, states the following:

- I. The department shall adopt rules, pursuant to RSA 541-A, for water conservation practices for water users. These rules shall strike a reasonable balance between environmental, energy, and economic impacts and be consistent with current industry standards and practices for different types of water users.
- II. The water conservation rules in paragraph I of this section shall apply to all new permit applicants and applications for water withdrawals subject to the provisions of RSA 485:3, RSA 485:48, RSA 485-C:21 and section 401 of the Clean Water Act.
- III. Water conservation rules shall be consistent with applicable state or federal rules and regulations. Water Conservation Rules were adopted May 14, 2005 codified as Env-Wq 2101."



**C-21.** Env-Wq 2101.24 entitled "Water Conservation Plan Required", states that

"(a) The applicants for approval of a source that would be a conservation source shall submit a water conservation plan that demonstrates compliance with the applicable provisions of Env-Wq 2101.05 through Env-Wq 2101.22 in accordance with the following:"

"(5) For a new withdrawal from a surface water associated with a project requiring a 401 Water Quality Certification, the water conservation plan shall be submitted prior to or in conjunction with the application for a 401 Water Quality Certification pursuant to Section 401 of the federal Clean Water Act;

(6) For a new withdrawal from a surface water that requires water quality certification pursuant to RSA 485-A:12, IV, the water conservation plan shall be submitted prior to or in conjunction with the certification request".

Env-Wq 2101.23, entitled Waivers, allows DES to grant waivers of certain provisions in Env-Wq 2101 provided the person requesting the waiver submits a written request to DES that includes the information specified in Env-Wq 2101.23(d).

**C-22.** NH RSA 483:4 defines "interbasin transfer" and "river drainage basin" as follows:

XII. "Interbasin transfer" means any transfer of water for use from one river drainage basin to another.

XIX. "River drainage basin" means the Androscoggin, Coastal, Connecticut, Merrimack, Piscataqua, and Saco river basins as delineated on a map compiled by the department.

**C-23.** NH RSA 483:9 Natural Rivers Protection (at 9-a, 9-aa, and 9-b) states that no interbasin transfers from designated rural, rural-community, or community rivers or their segments shall be permitted.

**C-24.** In 2010, DES published guidance (hereinafter called the 2010 instream flow guidance or 2010 ISF guidance) for estimating instream flow requirements for the protection of aquatic life for situations. The guidance is available at: <http://des.nh.gov/organization/commissioner/pip/publications/wd/documents/wd-11-3.pdf>.

**C-25.** Section 303(d) of the Clean Water Act (33 U.S.C. 1313(d)) and the regulations promulgated thereunder (40 C.F.R. 130.0 – 40 C.F.R. 130.11) require states to identify and list surface waters that are violating state water quality standards (i.e., Section 303(d) List) that do not have an approved Total Maximum Daily Load (TMDL) for the pollutants causing impairment. For these water quality-impaired waters, states must establish TMDLs for the pollutants causing the impairments and submit the list of impaired surface waters and TMDLs to EPA for approval. TMDLs include source identification, determination of the allowable load and pollutant reductions (by source) necessary to meet the allowable load.

Once a TMDL is conducted, the pollutant/surface water is transferred to the list of impaired waters with approved TMDLs (known as Category 4A waters). The Section 303(d) List is, therefore, a subset of all impaired waters. The most recent Section 303(d) list of impaired waters is the 2016 Section 303(d) List. A list of all impaired waters is available at

[http://www2.des.state.nh.us/WaterShed\\_SWQA/WaterShed\\_SWQA.aspx](http://www2.des.state.nh.us/WaterShed_SWQA/WaterShed_SWQA.aspx)

**C-26.** On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL<sup>1</sup> which addressed mercury impairments in all New Hampshire fresh surface waters.

**C-27.** On September 21, 2010, EPA approved the Statewide Bacteria TMDL for 394 surface waters listed as impaired on the 2008 303(d) List of impaired waters<sup>2</sup>.

**C-28.** When a surface water does not meet water quality standards (i.e., when it is impaired), the addition of pollutants causing or contributing to impairment should be avoided as indicated in the following regulation and statute:

Env-Wq 1703.03 (a) states that "The presence of pollutants in the surface waters shall not justify further introduction of pollutants from point or nonpoint sources, alone or in any combination".

NH RSA 485-A:12 (I) (Enforcement of Classification) states that "After adoption of a given classification for a stream, lake, pond, tidal water, or section of such water, the department shall enforce such classification by appropriate action in the courts of the state, and it shall be unlawful for any person or persons to dispose of any sewage, industrial, or other wastes, either alone or in conjunction with any other person or persons, in such a manner as will lower the quality of the waters of the stream, lake, pond, tidal water, or section of such water below the minimum requirements of the adopted classification".

**C-29.** NH RSA 482-A (Fill and Dredge in Wetlands) requires any person who excavates, removes, fills, dredges or constructs any structures in or on any bank, flat, marsh, or swamp in and adjacent to any waters of the state to obtain a wetlands permit from DES [NH RSA 482-A:3 I (a)].

**C-30.** NH RSA 485-A:17 and Env-Wq 1500 requires a NHDES Alteration of Terrain (AoT) permit depending on the area of land that will be altered. The regulations include design criteria for stormwater best management practices (BMPs) as well as criteria for minimizing the hydrologic impacts of stormwater runoff both

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<sup>1</sup> Northeast Regional Mercury Total Maximum Daily Load. Connecticut Department of Environmental Protection, Maine Department of Environmental Protection, Massachusetts Department of Environmental Protection, New Hampshire Department of Environmental Services, New York State Department of Environmental Conservation, Rhode Island Department of Environmental Management, Vermont Department of Environmental Conservation, New England Interstate Water Pollution Control Commission. October 24, 2007.

<sup>2</sup> Final Report, New Hampshire Statewide Total Maximum Daily Load (TMDL) for Bacteria Impaired Waters. Prepared by FB Environmental Associates, Inc. for the New Hampshire Department of Environmental Services. September, 2010.

during and after construction. Further, BMP design details as well as guidance for preparing pollutant loading analyses using the "Simple Method" are provided in *The New Hampshire Stormwater Manual* (<http://des.nh.gov/organization/divisions/water/stormwater/manual.htm>).

**C-31.** On July 11, 2019, NHDES received an application for a Water Quality Certification under RSA 485-A:12,IV. Supplemental information was received from that time until September 11, 2019.

**C-32.** NHDES issued a draft Water Quality Certification for public comment from September 20, 2019 to 4 pm on October 23, 2019. No comments were received.

#### **D. FINDINGS**

**D-1.** *Activity Description:* The proposed Activity is described in the text and plans provided in the application for Section 401 Water Quality Certification filed by the Applicant (see C-31) and in information provided later.

The Activity involves the withdrawal of up to 300,000 gallons per day (gpd), or 0.464 cubic feet per second (cfs), from the Upper Ammonoosuc River in Groveton, New Hampshire for the purpose of extracting hydrogen from the water to use as fuel for power generation. Water will be withdrawn through the existing intake/trash rack structure at the Brooklyn Hydro Dam (NHDES Dam No. D182003, FERC No. 13806) with a 0.27" x 0.27 " mesh screen installed on the downstream side of the trash rack to prevent impingement and entrainment of fish and other aquatic life. This withdrawal is "consumptive" meaning that none of the water will be returned to the river.

As shown in Figure 1, the water will then flow south through approximately 160 feet of existing concrete pipe ranging in size from 36 to 42 inches in diameter. Approximately 1020 feet of new 24 inch HDPE pipe will then be installed to convey the water south from the end of the existing concrete pipe to the existing building where the hydrogen will be produced (facility).

The intake water will be filtered through a sand filter in concrete tanks located within the facility. Silt produced by filtering will be transported to Beattie Enterprises gravel pit which is licensed to handle environmental clean up material.

The facility will not have a water return to the river. Metering will be on the intake. Water that is still available after the process of producing the hydrogen has occurred, will be returned into the process to use in the production of additional gas, and may lead to a reduction in the amount of water used. This gas is then combusted in the reciprocating engines, which will produce power for distribution to the localized grid in the industrial site.

The Activity will not result in an increase in impervious area as no new buildings, parking areas, roads, etc. are proposed. According to the Applicant, the Activity will not involve any new discharges to surface waters.

Construction of the pipeline is estimated to take approximately 2 weeks to complete. Operation of the facility will commence approximately 3 to 5 months after completion of the piping installation.



Figure 1: Google Earth aerial image showing the approximate location of the water line and existing building where hydrogen will be produced.

**D-2. Responsibility:** The Applicant is responsible for the Activity.

**D-3. Potentially Affected Surface Waters:** The named and unnamed streams and wetlands affected by the Activity, are surface waters under Env-Wq 1702.44 (see C-7) and are therefore subject to New Hampshire Surface Water Quality Standards (Env-Wq 1700 – see C-4). NHDES has assigned Assessment Unit (AU) identification numbers to many, but not all surface waters. Surface waters that do not have an AU number are considered surface waters of the State in accordance with Env-Wq 1702.44 (see C-7). Surface waters that could be potentially affected by the Activity and their associated AU numbers (where available) include, but are not limited to the following:

Assessment Unit ID	Description
NHIMP801010707-03	Brooklyn Dam Impoundment on the Upper Ammonoosuc River
NHIMP801010707-04	Weston Dam Impoundment on the Upper Ammonoosuc River

**D-4. Class of Waters and Designated Uses:** The potentially affected surface waters are Class B waterbodies; therefore Class B New Hampshire surface water quality standards apply to the Activity. Class B waterways are considered suitable for aquatic life, primary and secondary contact recreation, fish consumption, wildlife, and, after adequate treatment, as a water supply (see C-11).

- D-5. *NHDES Wetlands Permit Determination:*** According to the Applicant, the Activity does not involve dredge or fill of jurisdictional wetlands in New Hampshire, and therefore does not require a NHDES wetlands permit (see C-29).
- D-6. *NHDES AoT Permit Determination:*** According to the Applicant, the Activity does not require a NHDES Alteration of Terrain (AoT) permit (see C-30).
- D-7. *CWA Section 401 Water Quality Certification Determination:*** A Clean Water Act (CWA) Section 401 Water Quality Certification is not required because the project does not require a federal license or permit (such as an U.S. Army Corps of Engineers, Section 404 permit to discharge dredged or fill material in waters of the United States). RSA 485-A:12, III, therefore does not apply to the proposed Activity (see C-1).
- D-8. *Registration Under RSA 488:3 Determination:*** According to NHDES staff in the Water Use Registration and Reporting program<sup>3</sup>, the proposed withdrawal of 300,000 gpd from the Upper Ammonoosuc River (see D-1) requires registration in accordance with RSA 488:3 (see C-3).
- D-9. *Timframe when Withdrawal will be in Operation Determination:*** The proposed withdrawal will be a new withdrawal that is expected to begin operation in 2020 (i.e., after September 5, 2008 which is the effective date of RSA 485-A:12, IV) provided all necessary approvals are obtained by that time.
- D-10. *Water Quality Certification under RSA 485-A:12,IV Determination:*** Because the Activity
- does not require a CWA section 401 Water Quality Certification (see D-7);
  - involves a withdrawal from a surface water (see D-3);
  - requires registration under RSA 488:3 (see D-8 ); and
  - is new (and was therefore not in active operation as of September 5, 2008 -- see C-2 and D-9),
- water quality certification under RSA 485-A:12, IV (see C-2) is required.
- D-11. *Designated Rivers Determination:*** The Activity is not within ¼ mile of a Designated River under the Designated Rivers Program (see C-19). As such, the Activity is not within the jurisdiction of the Designated Rivers Program.
- D-12. *Outstanding Resource Waters Determination:*** The potentially impacted surface waters in the vicinity of the Activity are not Outstanding Resource Waters (see C-16).
- D-13. *Interbasin Transfer Determination:*** The Activity does not involve an interbasin transfer as defined in RSA 483:4 (see C-22).
- D-14. *Transfer of Water Determination:*** The Activity does not involve a "transfer" of water as defined in Env-Wq 1708.12 (a) (see C-18).

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<sup>3</sup> NHDES Water Use Registration and Reporting Program link:  
<https://www.des.nh.gov/organization/divisions/water/dwgb/dwspp/wurpp/index.htm>

**D-15. NHDES Water Conservation Plan Determination:** According to staff in the NHDES Water Conservation Program, the proposed withdrawal from the Upper Ammonoosuc River does not require a water conservation plan (see C-20 and C-21).

**D-16. Impaired Surface Waters and Parameters which are Fully Supporting:** According to the 2018 305(b)/303(d) list of impaired waters (see C-25), the following surface waters in the vicinity of the proposed Activity are listed as impaired. All known impairments, with the exception of those highlighted in bold (which have approved TMDLs), are on the Section 303(d) List. The table below also shows that these surface waters are currently meeting dissolved oxygen criteria for the protection of aquatic life.

<b>Assessment Unit (AU)</b>	<b>Description</b>	<b>Cause of Impairment (Designated Use Impaired)</b>	<b>Parameters which are fully supporting Designated Uses</b>
NHIMP801010707-03 (withdrawal is in this AU)	Brooklyn Dam Impoundment on the Upper Ammonoosuc River	<b>Mercury (FC)</b>	Dissolved Oxygen (AL)
NHIMP801010707-04 (downstream of the proposed withdrawal)	Weston Dam impoundment on the Upper Ammonoosuc River	<b>Mercury (FC)</b>	Dissolved Oxygen (AL)

Notes: AL = Aquatic Life, PCR = Primary Recreation, SCR = Secondary Recreation, FC = Fish Consumption, SFC = Shellfish Consumption Impairments highlighted in bold have approved TMDLs. All other known impairments are on the Section 303(d) List. All fresh surface waters are impaired mercury due to elevated levels of mercury in fish tissue which has resulted in statewide fish consumption advisory.

When a surface water does not meet water quality standards (i.e., when it is impaired), the addition of pollutants causing or contributing to impairment should be avoided (see C-28). As noted above, all fresh surface waters in New Hampshire are impaired for mercury due to concentrations found in fish tissue which have resulted in a statewide fish consumption advisory. On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL which addressed mercury impairments in all New Hampshire fresh surface waters (see C-26). The primary source of mercury is atmospheric deposition from in-state and out-of-state emissions. The proposed Activity is not expected to have a significant impact on mercury levels in fish tissue.

**D-17. Fishery Type Determination:** According to representatives of the New Hampshire Fish and Game Department (NHFGD), the Upper Ammonoosuc River is a coldwater fishery.

**D-18. Impacts of Water Withdrawals:** Depending on their magnitude, duration and frequency, withdrawals from a surface water can adversely impact designated uses (see C-11) of the surface water, including, but not limited to, the aquatic life designated use.

**D-19. Antidegradation Determination:** Env-Wq 1708.02 states that antidegradation applies to hydrologic alterations, including withdrawals (see C-15.b). The Activity proposes to withdraw a maximum of 300,000 gpd (0.464 cfs) from the Upper Ammonoosuc River. There is a United States Geological Survey (USGS) river gage (number 01130000) located on the Upper Ammonoosuc River approximately 2.75 miles upstream of proposed intake with a drainage area of 232 square miles. According to the NHDES Water Use Registration and Reporting database, there are no known withdrawals between this USGS gage and the proposed intake.

Env-Wq 1708.09 entitled "Significant or Insignificant Determination" states the following: (a) Any discharge or activity that is projected to use 20% or more of the remaining assimilative capacity for a water quality parameter, in terms of either concentration or mass of pollutants, or volume or flow rate for water quantity, shall be considered a significant lowering of water quality.

The 7Q10 low flow<sup>4</sup> at this gage is approximately 47.4 cfs. Using the USGS StreamStats program<sup>5</sup>, drainage area to the proposed withdrawal intake is 240.9 square miles and the 7Q10 low flow is 67.2 cfs. Compared to the 7Q10 flow, the proposed withdrawal represents 0.7% of the 7Q10 flow.

The 2010 NH Instream Flow guidance (see C-24) includes several methods for establishing minimum allowable flow for the protection of aquatic life. All of the desktop methods in the guidance recommend minimum flows much greater than the 7Q10 low flow. For example, the New England Aquatic Base (NEAB) Flow method recommends a minimum flow of 0.5 cfs/square mile of drainage area, which, for the proposed withdrawal location, equates to approximately 121 cfs. Compared to the NEAB flow, the proposed withdrawal of 0.464 cfs represents only 0.3% which is not expected to have a measurable impact on aquatic life in the river. Because this is so much lower than 20%, the withdrawal is not considered to "significant" based on flow for the purposes of antidegradation regulation Env-Wq 1708.09. A similar conclusion can be made based on volume.

To ensure that the impact of the withdrawal on the river will be minimal under all river flows (and not "significant" per Env-Wq 1708.09), a condition can be added that limits the withdrawal to no more than 1% of the inflow to the Brooklyn dam. This means that when inflow at the Brooklyn dam is greater than 46.4 cfs ( $=0.464/0.01$ ), a maximum of 0.464 cfs (300,000 gpd) can be withdrawn. When inflow at the dam falls below 46.4 cfs, the rate of withdrawal from the river would need to be reduced to 1% of the inflow (see condition E-9). Based on the ratio of drainage areas at USGS gage 01130000 and at the dam of 0.96 ( $=232/240.9$ ) a flow at the dam of 46.4 cfs is approximately equal to a flow 44.5 cfs at the gage ( $=0.96 \times 46.4$ ). Based on flow records at USGS gage 01130000 from 1990 to mid-September 2019, flow at the gage is less than 44.5 cfs less than 1% of the time.

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<sup>4</sup> The 7Q10 low flow is the average seven day low flow that occurs, on average, once every ten years.

<sup>5</sup> USGS StreamStats program link: <https://streamstats.usgs.gov/ss/>

## **E. WATER QUALITY CERTIFICATION CONDITIONS**

Unless otherwise authorized by NHDES, the following conditions shall apply:

- E-1. Compliance with Certification Conditions:** The Applicant shall construct and operate the Activity to comply with this Certification.
- E-2. Compliance with Water Quality Standards:** The Activity shall not cause or contribute to a violation of New Hampshire surface water quality standards.
- E-3. Modification of Certification:** The conditions of this Certification may be amended and additional terms and conditions added as necessary to ensure compliance with New Hampshire surface water quality standards, when authorized by law, and, if necessary, after notice and opportunity for hearing.
- E-4. Proposed Modifications to the Activity:** The Applicant shall consult with and receive prior written approval from NHDES regarding any proposed modifications to the Activity that could have a significant or material effect on the conditions of this Certification including any changes to project operation or approved plans required by this Certification. If necessary, NHDES may modify the Certification in accordance with condition E-3 of this Certification.
- E-5. Compliance Inspections:** In accordance with applicable laws, the Applicant shall allow NHDES to inspect the Activity and affected surface waters to monitor compliance with the conditions of this Certification.
- E-6. Transfer of Certification:** Should this Certification be transferred to a new owner, contact information for the new owner (including name, address, phone number and email) shall be provided to NHDES within 30 days of the transfer.
- E-7. Compliance with Other Permits:** The Applicant shall comply with all applicable permits associated with the Activity.
- E-8. Erosion and Sediment Control During Construction:** The Applicant shall hire a Certified Professional in Erosion and Sediment Control or a Professional Engineer licensed in New Hampshire to inspect the site from the start of alteration of terrain activities associated with construction until all disturbed areas are properly stabilized. Inspections shall be conducted at least once a week, and if possible, during any ½ inch or greater rain event (i.e. ½ inch of precipitation or more within a 24 hour period) or if unable to be present during such a storm, inspect the site within 24 hours of this event. Daily inspection reports shall be maintained and submitted to NHDES within 24 hours of receiving a written request from NHDES.
- E-9. Maximum Withdrawal Rate:** The withdrawal rate from the Upper Ammonoosuc River shall not exceed 300,000 gallons per day (0.464 cfs) at any time and shall at no time be greater than 1% of the river inflow (see D-19) at the Brooklyn dam where inflow is equal to the flow at USGS gage 01130000 multiplied by 1.038 (the ratio of the drainage area at the intake of 240.9 square miles to the drainage area at the gage of 232 square miles). The Applicant shall keep electronic daily records demonstrating compliance with this condition and



shall submit these records to NHDES within 24 hours of receiving a written request from NHDES.

**E-10. Withdrawal Intake:** The Applicant shall install and regularly maintain a 0.27" x 0.27" mesh screen on the downstream side of the trash rack at the intake to prevent impingement and entrainment of fish and other aquatic life. Prior to withdrawal, the Applicant shall provide NHDES and the New Hampshire Fish and Game Department with photos of the intake showing the installed mesh screen.

**E-11. Water Use Reporting:** The Applicant shall register all withdrawals and discharges associated with the Activity with the NHDES Water Use Registration and Reporting program<sup>3</sup>.

**E-12. Measurement of Withdrawal:** The Applicant shall install meter(s) and accessory equipment as necessary to accurately and automatically measure and record the amount of water withdrawn from the Upper Ammonoosuc River for reporting to the Water Use Registration and Reporting program<sup>3</sup> and for demonstrating compliance with condition E-9 of this certification. Prior to withdrawal, the Applicant shall provide a plan to NHDES for approval describing how this will be accomplished. The Applicant shall then implement the approved plan prior to withdrawal.

## F. APPEAL

Any person aggrieved by this decision may appeal to the N.H. Water Council ("Council") by filing an appeal that meets the requirements specified in RSA 21-O:14 and the rules adopted by the Council, Env-WC 100-200. The appeal must be filed directly with the Council within 30 days of the date of this decision and must set forth fully every ground upon which it is claimed that the decision complained of is unlawful or unreasonable. Only those grounds set forth in the notice of appeal can be considered by the Council.

Information about the Council, including a link to the Council's rules, is available at <http://nhec.nh.gov/> (or more directly at <http://nhec.nh.gov/water/index.htm>). Copies of the rules also are available from the NHDES Public Information Center at (603) 271-2975.

If you have questions regarding this Certification, please contact Gregg Comstock at (603) 271-2983 or [Gregg.Comstock@des.nh.gov](mailto:Gregg.Comstock@des.nh.gov).



Thomas E. O'Donovan, P.E.  
Director, NHDES Water Division

cc via email:  
Christopher Wheelock, Chairman Northumberland Board of Selectmen  
Carol Henderson, NHFGD