

Nashua Municipal Airport- Boire Field  
Royce N. Rankin, Jr. Airport Manager  
93 Perimeter Road  
Nashua, New Hampshire 03063

## **WATER QUALITY CERTIFICATION**

### **In Fulfillment of**

### **Section 401 of the United States Clean Water Act (33 U.S.C 1341)**

### **WQC # 2009-002**

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<b>Activity Name</b>	Nashua Municipal Airport, Boire Field, Runway 14-32 Reconstruction
<b>Activity Location</b>	Nashua Municipal Airport, Boire Field, 93 Perimeter Road, Nashua, New Hampshire, 03063
<b>Affected Surface waters</b>	Spectacle Pond, Spectacle Brook, Pennichuck Brook, and several unnamed wetlands and brooks.
<b>Owner/Applicant</b>	Nashua Airport Authority Nashua Municipal Airport- Boire Field 93 Perimeter Road Nashua, New Hampshire 03063
<b>Appurtenant permit(s):</b>	U.S. Army Corps of Engineers # NAE 2010-00577 (Provisional) DES Wetlands Bureau Permit # 2010-00616 DES Alteration of Terrain Permit # AOT-0183
<b>DATE OF APPROVAL</b> (subject to Conditions below)	February 1, 2011

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### **A. INTRODUCTION**

The Nashua Municipal Airport – Boire Field (Applicant) proposes to reconstruct the existing Runway 14-32 in Nashua, New Hampshire. The runway improvements are being proposed in order to bring the Airport into compliance with FAA design and safety standards. A detailed description of the proposed Activity is provided in item D-1 below.

This 401 Water Quality Certification (401 WQC) documents laws, regulations, determinations and conditions related to the Activity for the attainment and maintenance of 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 findings and conditions noted below, the New Hampshire Department of Environmental Services (DES) has determined that any discharge associated with the Activity will not violate surface water quality standards, or cause additional degradation in surface waters not presently meeting water quality standards. DES hereby issues this 401 WQC subject to the conditions defined in Section E of this 401 Certification, in accordance with Section 401 of the United States Clean Water Act (33 U.S.C. 1341).

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

- C-1. Section 401 of the United States Clean Water Act (33 U.S.C. 1341) states, in part: "Any applicant for a federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters, shall provide the licensing or permitting agency a certification from the State in which the discharge originates or will originate...that any such discharge will comply with the applicable provisions of sections 301, 302, 303, 306, and 307 of this title....No license or permit shall be granted until the certification required by this section has been obtained or has been waived...No license or permit shall be granted if certification has been denied by the State..."
- C-2. Section 401 further states, in part "Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations...and shall become a condition on any Federal license or permit subject to the provisions of this section."
- C-3. Section 401 further states that "Such State or interstate agency shall establish procedures for public notice in the case of all applications for certification by it..."
- C-4. 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-5. NH RSA 485-A:8 and Env-Wq 1700 (Surface Water Quality Regulations, effective May 21, 2008) 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-6. Env-Wq 1701.02, entitled "Applicability", states that:
- "(a) These rules shall apply to all surface waters.
- (b) These rules shall apply to any person who causes point or nonpoint source discharge(s) of pollutants to surface waters, or who undertakes hydrologic modifications, such as dam construction or water withdrawals, or who undertakes any other activity that affects the beneficial uses or the level of water quality of surface waters."
- C-7. Env-Wq 1702.18 defines a discharge as:
- "a. The addition, introduction, leaking, spilling, or emitting of a pollutant to surface waters, either directly or indirectly through the groundwater, whether done intentionally, unintentionally, negligently, or otherwise; or
- b. The placing of a pollutant in a location where the pollutant is likely to enter surface waters."
- C-8. Env-Wq 1702.39 defines a pollutant as: "pollutant" as defined in 40 CFR 122.2. This means "dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, (except those regulated under the Atomic Energy Act of 1954, as amended (42 U.S.C. 2011 et seq.)), heat, wrecked or discarded equipment, rock, sand, cellar dirt, and industrial, municipal, and agricultural waste discharged into water."
- C-9. Env-Wq 1702.46 defines surface waters 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," and waters of the United States as defined in 40 CFR 122.2."
- C-10. Surface waters are navigable waters for the purposes of certification under Section 401 of the Clean Water Act. Surface waters are jurisdictional wetlands for the purposes of wetlands permitting under RSA 482-A.
- C-11. Env-Wq 1703.01 (c) states that "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."
- C-12. State surface waters are divided into Class A and Class B, pursuant to RSA 485-A:8, I, II and III. Class A and B fresh surface waters have the same designated uses (i.e., primary and secondary contact recreation, aquatic life, drinking water after adequate treatment, fish consumption, and wildlife) as described in

the DES Consolidated Assessment and Listing Methodology<sup>1</sup> (CALM) (provide reference). The major differences between Class A and B waters are that there can be no discharge of sewage or wastes into Class A waters (RSA 485-A:8, I), the bacteria and dissolved oxygen criteria are more stringent in Class A than Class B, and the criteria for benthic deposits (Env-Wq 1703.08), oil and grease (Env-Wq 1703.09), color (Env-Wq 1703.10), turbidity (Env-Wq 1703.11), slicks and odors (Env-Wq 1703.12), temperature (Env-Wq 1703.13), nutrients (Env-Wq 1703.14), and pH (Env-Wq 1703.18) for Class A waters only allow naturally occurring levels whereas in Class B waters, levels are allowed provided they do not impair any existing or designated use, unless naturally occurring.

C-13. Env-Wq 1703.14, entitled "Nutrients", states that

"a. Class A waters shall contain no phosphorous or nitrogen unless naturally occurring.

b. Class B waters shall contain no phosphorous or nitrogen in such concentrations that would impair any existing or designated uses, unless naturally occurring.

c. Existing discharges containing either phosphorous or nitrogen which encourage cultural eutrophication shall be treated to remove phosphorus or nitrogen to ensure attainment and maintenance of water quality standards.

d. There shall be no new or increased discharge of phosphorous into lakes or ponds.

e. There shall be no new or increased discharge(s) containing phosphorous or nitrogen to tributaries of lakes or ponds that would contribute to cultural eutrophication or growth of weeds or algae in such lakes and ponds."

C-14. Env-Wq 1703.19, entitled "Biological and Aquatic Community Integrity", states that

"a. The 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; and

b. Differences from naturally occurring conditions shall be limited to non-detrimental differences in community structure and function."

C-15. Env-Wq 1703.21 (a)(1) states that "Unless naturally occurring or allowed under part Env-Ws 1707, all surface waters shall be free from toxic substances or

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<sup>1</sup> 2010 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology. New Hampshire Department of Environmental Services. February 2010. Document No. NHDES-R-WD-10-3. Available at <http://des.nh.gov/organization/divisions/water/wmb/swqa/2010/index.htm>

chemical constituents in concentrations or combinations that injure or are inimical to plants, animals, humans or aquatic life.”

C-16. Env-Wq 1703.06 through 1703.11 contain standards relative to bacteria, dissolved oxygen, benthic deposits, oil and grease, and turbidity.

C-17. Env-Wq 1702.06 states ““Best management practices” means those practices which 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-18. 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 TMDL. For these water quality-impaired waters, states must establish Total Maximum Daily Loads (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 2010 Section 303(d) List which is available at <http://des.nh.gov/organization/divisions/water/wmb/swqa/2010/index.htm>.

C-19. On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL<sup>2</sup> which addressed mercury impairments in all New Hampshire fresh surface waters.

C-20. 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 is prohibited in accordance with the following:

- a. 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”.
- b. 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

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2. 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 Stated 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.

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-21. Antidegradation provisions are included in Env-Wq 1702 and Env-Wq 1708.

- a. Env-Wq 1702.02 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 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 1708.04 (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 1702.03 states that “Assimilative capacity” means the amount of a pollutant or 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. Determination of significant and insignificant discharges is described in Env-Wq 1708.09 which are, in part, based on the remaining assimilative capacity of pollutant.
- h. Env-Wq 1708.01 (b) states: “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 that, in accordance with Env-Wq 1708.10, 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 (c) states: “For insignificant 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. In allowing such degradation or lower water quality, the department shall assure water quality adequate to protect existing uses fully. 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”.

- j. Significant discharges require 1) a demonstration that the Activity will provide an important economic or social development (Env-Wq 1708.10), 2) an alternative analysis to determine if it is possible to achieve the important economic or social development without lowering water quality or with a reduced degree of degradation (Env-Wq 1708.10 (b)), and 3) opportunity for public comment and intergovernmental coordination (Env-Wq 1708.11).

C-22. Section C-21 h and C-21 i of this Certification includes excerpts from Env-Wq 1708.01 regarding antidegradation which state that “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”. In addition to being cost effective and reasonable, best management practices must be selected to ensure attainment of water quality standards in receiving waters as evidenced by the following:

- a. As stated in section C-17 of this Certification, “Best Management Practices” (BMPs) are defined in Env-Wq 1702.06 as “those practices which 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*” (italics added).
- b. Env-Wq 1708 (b) and (c) (see section C-21 h and C-21 i of this Certification) which states “In allowing such degradation or lower water quality, the department shall assure water quality adequate to fully protect existing uses”.

C-23. The Activity reviewed for this 401 Certification requires a federal wetlands permit under the federal Clean Water Act Section 404. The Applicant submitted an application to the U.S. Army Corps of Engineers (ACOE) on March 15, 2010. On April 20, 2010, the ACOE issued a public notice for the Activity. On August 30, 2010 the ACOE issued a provisional permit for the Activity.

C-24. The Applicant is responsible for the Activity, including construction and operation.

C-25. On May 6, 2010, the Applicant submitted an application and associated supplemental information for 401 Certification to DES which included the 401 application, plans (dated March 15, 2010) and applications submitted for DES Wetlands and Alteration of Terrain permit approvals, plans and application submitted for U.S. Army Corps of Engineers Section 404 approval, a Stormwater Management Report and a Pollutant Loading Analysis. The

Applicant submitted additional information in January 2011 (including a revised loading analysis) in response to comments received from DES.

- C-26. On March 15, 2010, the Applicant submitted an application for a DES Wetlands Permit. On September 13, 2010 the DES Wetlands Bureau issued Wetlands Permit #2010-00616 for alterations or impacts to jurisdictional wetlands associated with the Activity. The permit is contingent on approval of the 401 Certification and also states that any violations of the 401 Certification will also be considered a violation of the conditions of the Wetlands Permit.
- C-27. On March 15, 2010, the Applicant submitted an application for a DES Alteration of Terrain (AoT) permit. On October 15, 2010, the DES Alteration of Terrain Bureau issued permit # AOT-0183 for the proposed Activity.
- C-28. DES Alteration of Terrain regulations (Env-Wq 1500) include design criteria for stormwater best management practices (BMPs) as well as criteria for minimizing the hydrologic impacts of stormwater runoff both 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>). The pollutant loading guidance assumes all permanent stormwater practices (i.e., best management practices or BMPs) referenced in the loading analysis are designed in accordance with the Alteration of Terrain regulations (Env-Wq 1500).
- C-29. DES maintains an Environmental Monitoring Database (EMD) for all environmental data collected and received by DES. The EMD is accessible to the public on the World Wide Web and is designed to accept data from sources outside of DES.
- C-30. In accordance with section 401 of the CWA (see section C-3 ), DES issued a draft certification for public comment from December 2, 2010 to January 10, 2011.

#### **D. FINDINGS**

- D-1. The Activity reviewed for this 401 Certification includes the plans and information submitted with the 401 Certification application (see section C-25 of this Certification) and, in general, includes construction and operation of the following:
- a. Relocating, shifting and reconstructing Runway 14-32, to include:
    - 1) Relocation of the runway centerline 300' northeast of its current location; Shifting the runway 76' to the north so that the localizer critical area remains on Airport property;

- 2) Constructing a standard Runway Safety Area (RSA) that is 500 feet wide (centered on the runway centerline) that runs along the entire length of the runway and extends 1,000 feet beyond each runway end;
  - 3) Extending the runway to a total paved length of 6,000 feet by paving 350' of the Runway 32 end RSA and constructing a 150' extension to the Runway 14 end;
  - 4) Replacing the existing glideslope with an End-Fire Glideslope antenna array which can be located within the RSA; Repositioning the Medium-Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR) to accommodate the reconstructed runway's centerline location;
  - 5) Relocating all NAVAIDS and Landing Aids; and,
  - 6) Removing the existing runway pavement when the new runway is operational;
- b. Reconstructing and relocation the Parallel Taxiway so that its centerline is 400 feet from the new runway centerline and constructing standard Taxiway Safety Areas that are 79 feet wide (centered on the taxiway centerline), and removing the existing Parallel Taxiway;
  - c. Acquiring navigation easements over properties that have been identified as having obstructions to the Airport's Part 77 Approach and Transitional Surfaces, and TERPS Surfaces;
  - d. Removing vegetative obstructions to the Part 77 Approach and Transitional Surfaces, and TERPS Surfaces; and,
  - e. Installing obstruction lights on obstructions to the Part 77 Transitional Surface that cannot be removed, or otherwise mitigated.

The Activity will result in permanent impact to 11.63± acres of wetland, and temporary vegetation (tree) removal impacts to 10.3± acres of wetland. In addition the Activity is expected to result in an increase of approximately 3.01 acres (4.05%) in impervious surfaces (excluding wetlands).

According to the 401 Certification application, the proposed drainage system consists of overland flow over vegetated (grass) buffers, subsurface infiltration and detention areas, catch basins and high density polyethylene pipe to convey the stormwater. Permanent stormwater treatment is primarily provided by relatively flat (less than 5 percent slope) grass vegetated buffers which treat non-channelized stormwater flow (i.e., overland flow) on either side of the runway and taxiways and a subsurface infiltration area.

Construction of the runway is anticipated to take approximately 300 calendar days, over two construction seasons with a winter shut down. Reconstruction of the parallel taxiway is currently scheduled for 2015-2016. On January 18, 2011, the Applicant indicated that the all permanent BMPs will be installed under the first phase.

- D-2. The Activity requires water quality certification under Section 401 of the federal Clean Water Act.

- D-3. Storm water runoff, including snowmelt, and groundwater flow to surface waters from within the area affected by the Activity during warm and cold-weather conditions are discharges under the definitions of Env-Wq 1702.18.
- D-4. Discharges from the Activity may cause permanent alteration of, or temporary impacts to surface waters.
- D-5. Surface waters which could be potentially impacted by stormwater runoff from the Activity include Class A and Class B waters. According to the 401 Certification, the approximate boundary between Class A and B surface waters is Deerwood Drive located on the northwestern portion of the property. Therefore Class A and Class B water quality criteria apply to different parts of the Activity.
- D-6. Named and unnamed, streams, rivers, lakes, ponds and wetlands, potentially affected by any Activity, are surface waters under Env-Wq 1702.46. DES has assigned Assessment Unit (AU) identification numbers to surface waters that appear on 1:24,000 scale hydrography. Consequently, not all surface waters currently have an AU number. Surface waters that do not have an AU number are still considered surface waters of the State in accordance with Env-Wq 1702.46 (see section C-9 of this Certification). Surface waters that could be potentially affected by this Activity and their associated AU numbers (where available) include the following:

<b>Surface Water Name and AU Numbers</b>	<b>Class</b>	<b>Description</b>
Unnamed Wetlands #1  AU numbers: None assigned.	A	Wetland area northwest of Deerwood Drive which, according to the 401 Certification application, is the approximate boundary between Class A and B watersheds. This wetlands flows northwest (and potentially northeast) to a portion of the Pennichuck Brook watershed which is Class A (i.e., from the outlet of Pennichuck Pond to the Tinker Road crossing of Pennichuck Brook.)
Unnamed wetlands #2  AU numbers: None assigned.	B	Wetland area just southeast of Deerwood Drive. The northeasterly portion of this wetland appears to flow northeast towards Unnamed Brook #1 (see below) and the northwesterly portion appears to flow into an existing closed drainage system which outlets into Spectacle Pond.

Surface Water Name and AU Numbers	Class	Description
Unnamed Brook #1 (and associated wetlands)  AU numbers:  NHRIV700061001-14 which flows into NHIMP700061001-06 which flows into NHRIV700061001-09.	B	This unnamed brook (and associated wetlands) flows northeasterly under the railroad tracks to the portion of Pennichuck Brook that is Class B. Three AU numbers have been assigned to this brook.
Spectacle Pond and Spectacle Brook  No AU numbers	B	Stormwater from a large portion of the Activity flows southeasterly to an existing closed drainage system which discharges to Spectacle Pond and Spectacle Brook to the west of Perimeter Road. Spectacle Brook eventually discharges to the Nashua River.

D-7. According to the 2010 list of impaired waters (see section C-18 of this Certification), the following surface waters in the vicinity of the proposed Activity which have assigned AU numbers are listed as impaired. All impairments, with the exception of those highlighted in bold (which have approved TMDLs), are on the Section 303(d) List:

Assessment Unit (AU)	Waterbody Name	Cause of Impairment (Designated Use Impaired)
NHRIV700061001-14	Unnamed Brook	<b>Mercury (FC)</b>
NHIMP700061001-06	Unnamed Brook	<b>Mercury (FC)</b>
NHRIV700061001-09.	Unnamed Brook to Pennichuck Brook	Dissolved Oxygen (AL), pH (AL) Mercury (FC)
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 impairments are on the Section 303(d) List.		

D-8. The Activity includes dredge and fill of wetlands. The 401 Certification decision relies, in part, on an approved permit from the DES Wetlands Bureau for the potential construction-related impacts to jurisdictional wetlands. Through its processing and issuance, the DES wetlands permit will address the dredge and fill impacts to jurisdictional wetlands.

D-9. The Activity includes alteration of terrain which may impact surface waters. The 401 Certification decision relies, in part, on an approved permit from the DES Alteration of Terrain Bureau for the potential construction and/or operation-related impacts of stormwater from the Activity on surface waters.

Through its processing, and issuance, the DES Alteration of Terrain permit will address many of the potential impacts of stormwater on receiving surface waters due to construction and operation of the Activity.

- D-10. The alteration of terrain associated with the Activity includes an increase in impervious surfaces. The increase in impervious area and its use can result in increased deposition of pollutants such as chlorides, sediments, nutrients (phosphorus and nitrogen), various metals (i.e., lead, zinc, etc), bacteria and petroleum aromatic hydrocarbons (PAHs). These pollutants can then be mobilized and transported from impervious surfaces to surface waters and can potentially cause or contribute to violations of surface water quality standards.
- D-11. The Activity includes operation of an airport, which can involve use of de-icing chemicals (such as propylene glycol and its derivatives) to prevent buildup of ice on the aircraft in the winter months. If runoff containing de-icing chemicals are allowed to enter surface waters it can be harmful to aquatic life and result in water quality violations. In the application for 401 Certification, the Applicant has stated that "the Airport does not utilize any de-icing or anti-icing chemicals".
- D-12. Increases in impervious surfaces can also result in increased flow and volume of stormwater runoff and reductions in groundwater recharge due to increases in impervious surfaces. Such hydrologic alterations could violate the antidegradation provisions of the state surface water quality regulations (see section D-13 of this Certification). The Alteration of Terrain regulations (Env-Wq 1500) include provisions to prevent degradation associated with hydrologic alterations. In specific, Env-Wq 1507.05 and Env-Wq 1507.06 address stormwater flow and Env-Wq 1507.04 addresses groundwater recharge. Compliance with these regulations is expected to prevent hydrologic related violations of the antidegradation provisions of the state surface water quality regulations. As indicated in section C-27 of this Certification, the Applicant has received an Alteration of Terrain permit which demonstrates compliance with the Alteration of Terrain regulations including the specific regulations mentioned above.
- D-13. Since the Activity includes new discharges of pollutants and increases in flow alteration (i.e., due to increased impervious cover), the antidegradation provisions of Env-Wq 1708 apply (see section C-21 of this 401 Certification).
- D-14. As stated in section C-20 of this Certification, 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 is prohibited. That is, existing loadings must be held. Further, as stated in C-18 of this Certification, TMDLs must be conducted for any surface water listed on the Section 303(d) List. The TMDL includes source identification, determination of the allowable load and reductions (by source) necessary to meet the allowable load. For waters with an approved TMDL, pollutant reductions per the TMDL are required. For pollutants causing an impairment without a TMDL, loadings of the pollutant causing impairment must be held such that there are no increased loadings until such time as a TMDL is prepared.

For all other pollutants (i.e., those not known to be causing impairment) which are likely to be discharged from the Activity, Applicants can either hold existing loadings (i.e., no degradation), or request to degrade the water in accordance with the antidegradation provisions of Env-Wq 1700. As stated in section C-21 of this Certification, if an Activity is going to degrade a surface water, Env-Wq 1708 requires Applicants to 1) determine the remaining assimilative capacity of the pollutant(s) of concern (which may require monitoring), 2) determine if the discharge is "significant" or insignificant (which will likely require modeling to predict the percent of the remaining assimilative capacity used by the Activity) 3), if "significant", provide justification that the Activity provides an important economic or social benefit including an alternative analysis to minimize the degradation, and 4) provide opportunity for public comment and intergovernmental agency coordination. This information is then submitted to DES who will then render a decision to approve or deny the requested degradation.

If an Applicant wishes to demonstrate that the Activity will not cause degradation (i.e., no additional loading) due to pollutants, DES allows Applicant's to submit loading analyses in accordance with guidance included in the DES Stormwater Manual (see section C-26 of this Certification). The guidance allows use of the "Simple Method" for calculating loads before and after construction. At this time, DES uses total suspended solids (TSS), total nitrogen (TN) and total phosphorus (TP) as surrogates for all other parameters. That is, if the loadings for TSS, TN and TP are held to pre-construction levels, it is assumed that loadings of all other parameters which can be removed by structural BMPs, are held as well. The pollutant loading guidance also assumes that all permanent stormwater practices (i.e., best management practices or BMPs) referenced in the loading analysis are designed and maintained in accordance with the Alteration of Terrain regulations (Env-Wq 1500).

Some parameters, such as chlorides cannot be treated by structural BMPs because they are conservative and relatively untreatable substances that persist in the environment. De-icing chemicals containing chloride (i.e., road salt) are a primary source of chlorides in fresh surface waters. Because they cannot be treated by structural BMPs, chlorides cannot be addressed by typical loading analyses.

- D-15. To address antidegradation requirements for parameters that can be addressed by structural BMPs, the Applicant has selected the option of conducting a pollutant loading analysis that demonstrates no additional loading of pollutants (see section D-14 of this Certification). As discussed in section C-25 of this Certification, the Applicant has submitted a pollutant loading analysis. In January 2011, the Applicant submitted a revised pollutant loading analysis based on comments received from DES in December 2010 and January 2011. Considering the accuracy of the model, the revised analysis indicates that there should be no increase in the loading of pollutants (that are treatable by structural BMPs) to the various surface waters receiving stormwater runoff from the Activity. DES therefore approved the pollutant loading analysis on January 31, 2011.

D-16. During construction, the disturbance of earth, such as the placement of fill on the Activity site, may temporarily increase turbidity levels in surface waters adjacent to and downstream from the area affected by the Activity, particularly during wet weather events, and may contribute to long-term sediment retention in and/or transport through the surface water adjacent to and downstream from the Activity site. During construction, erosion control inspections and turbidity monitoring can be required to control turbidity.

The Applicant has received an Alteration of Terrain permit (see section C-27) which requires inspection and maintenance of BMPs during construction.

To ensure that water quality criteria for turbidity are not violated during construction, turbidity monitoring can be required.

D-17. Maintenance of paved surfaces during the winter often involves application of sand and de-icing chemicals that contain chloride (i.e. rock salt), which is potential water quality concern. Chlorides are conservative substances that persist in the environment. Frequent application of road salt can result in levels of chloride in surface waters that are harmful to aquatic life. In the 401 Application, the Applicant stated that the Applicant " does not use sand or salt to treat its runways, taxiways, or apron areas, as these materials are damaging to aircraft". The Applicant does not address whether sand and/or road salt is used on the impervious surfaces used by pedestrians and automobiles (i.e. roads, parking areas, sidewalks etc.). However, since the Activity does not involve any change to the impervious surfaces for automobiles and pedestrians, construction or operation of the Activity is not expected to result in any increase in the amount of sand and/or road salt used.

D-18. Operation of Activities involving alteration of terrain can result in discharges to surface waters of nutrients such as phosphorus and nitrogen due to frequent application of fertilizer. Leaching of the nutrients into surface waters can cause excessive aquatic plant growth and impairment of aquatic life and contact recreational uses such as swimming or wading. The 401 Certification application states that "no fertilizer is used on the grassy areas surrounding the runway and taxiways". That being said, a one time application of fertilizer during the construction phase to stimulate plant growth, promote stabilization and prevent erosion of disturbed soils, is usually acceptable from a water quality standpoint. Studies at the University of New Hampshire indicate that many soils in New Hampshire already have sufficient levels of phosphorus to initiate and sustain plant growth. Further, fertilizers with slow release nitrogen are often recommended to prevent runoff of excess nitrogen into surface waters and the need to re-fertilize. Therefore, limiting fertilizer use to a one time application during the construction phase coupled with a requirements to use and apply fertilizer with the lowest levels of phosphorus and slow release nitrogen as possible based on soil tests, is not expected to result in any significant impacts to surface water quality.

D-19. Improper application of pesticides (such as herbicides and insecticides) can harm aquatic life and result in surface water quality violations. To prevent

degradation of surface waters due to pesticide application, a condition can be added prohibiting the use of pesticides.

- D-20. As stated in section C-19 of this Certification, a TMDL was approved by EPA in 2007 for mercury impairments in New Hampshire fresh surface waters. All surface waters in New Hampshire are impaired because of a statewide fish consumption advisory due to levels of mercury in fish tissue. The vast majority of the mercury is believed to be due to atmospheric deposition. The TMDL calls for an 87% to 98% reduction in anthropogenic atmospheric deposition of mercury. The TMDL does not call for a specific reduction in stormwater loads due to activities such as those proposed in this Certification. Rather, reductions in stormwater mercury load are expected to be achieved through reductions in atmospheric deposition, which is believed to be the primary source of mercury in stormwater (page 36 of TMDL). Increased impervious area flowing directly to surface waters can increase the volume of stormwater runoff. Consequently, until atmospheric loadings are reduced, an increase in stormwater runoff can result in an increase in mercury loading reaching surface waters via stormwater runoff. It is expected, however, that the requirement to hold loadings for the surrogate pollutants discussed in section D-14 of this Certification, coupled with the requirements to satisfy peak flow and groundwater recharge requirements in the Alteration of Terrain permit (see section D-12 of this Certification), will be adequate to prevent any increase in mercury loadings (as well as other pollutants which can be removed by structural BMPs) to surface waters due to stormwater associated with the Activity.
- D-21. To ensure that permanent best management practices (BMPs) will always function as intended in the long term, development and implementation of a BMP inspection and maintenance plan can be required. On January 18, 2011, the Applicant informed DES that the grass meadow buffers adjacent to the runway and taxiway will be mowed no more than approximately 3 times per year and that the grass will not be cut lower than approximately 3 inches.
- D-22. Confirmation that operation of the Activity does not cause or contribute to surface water quality violations can be determined by development and implementation of a surface water monitoring plan with appropriate quality assurance/ quality control provisions.
- D-23. As stated in section C-30, a draft Certification was issued for public comment from December 2, 2010 to January 10, 2011. No comments were received.

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

Unless otherwise authorized by DES, the following conditions shall apply.

- E-1. The Activity shall not cause or contribute to a violation of surface water quality standards. DES may modify this 401 Certification to include additional conditions to ensure the Activity complies with surface water quality standards, when authorized by law, and after notice and opportunity for hearing, should DES determine that surface water quality standards are being violated as a result of the Activity.

- E-2. The Applicant shall allow DES to inspect the Activity and its effects on affected surface waters at any time to monitor compliance with the conditions of this 401 Certification.
- E-3. The Applicant shall consult with DES regarding any proposed modifications to the Activity, including construction or operation, to determine whether this 401 Certification requires modification in the future.
- E-4. The Applicant shall comply with the conditions of DES Wetlands Bureau Permit #2010-00616, including any amendments and shall comply with DES wetlands rules and regulations. The conditions shall become conditions of this 401 Certification upon issuance of this 401 Certification.
- E-5. The Applicant shall comply with the conditions of DES Alteration of Terrain Bureau Permit #AOT-0183, including any amendments and shall comply with DES Alteration of Terrain regulations. The conditions shall become conditions of this 401 Certification upon issuance of this 401 Certification.
- E-6. The Applicant shall not use any surface waters (as defined in section C-9 of this Certification) for treatment of stormwater runoff unless otherwise permitted by the DES Wetlands Bureau and the DES Watershed Management Bureau.
- E-7. The Applicant shall not apply sand or deicers (including but not limited to, road salt containing chlorides) to treat airport runways, taxiways, or apron areas.
- E-8. Construction and/or operation of the Activity shall not include application of aircraft de-icing / anti-icing chemicals (i.e., propylene glycol, etc.).
- E-9. Construction and/or operation of the Activity shall not include application of pesticides (i.e., herbicides, insecticides, etc.).
- E-10. Fertilizer shall not be applied on the vegetated areas surrounding the runway, taxiways and apron areas except if needed to stabilize and prevent erosion of disturbed soils during the construction phase. Prior to applying fertilizer for this one time application, the Applicant shall test the soils and only use fertilizer with either with low or no phosphorus and as low levels of slow release nitrogen as possible. If fertilizer is used, the Applicant shall maintain records of soil test results and information on the fertilizer used (brand, amount, phosphorus and nitrogen content, etc.) and submit this information to DES within 72 hours of receiving a request from DES.
- E-11. The Applicant shall construct all permanent stormwater treatment practices (i.e., grass meadow buffers, infiltration basins, etc.) under the first phase of construction so that post development pollutant loads will not exceed pre development loads during and after construction.
- E-12. The Applicant shall implement the construction BMP inspection and maintenance requirements approved as part of the DES Alteration of Terrain permit.
- E-13. Prior to construction the Applicant shall submit a long term inspection and maintenance plan for the permanent stormwater BMPs that addresses the

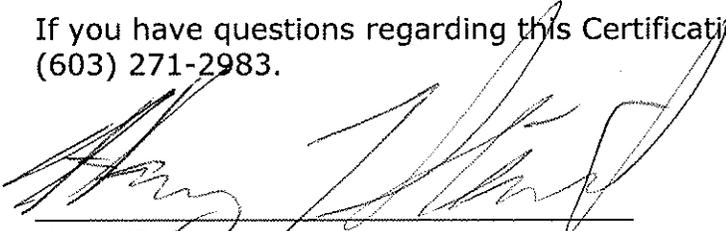
requirements of Env-Wq 1507.08. The plan shall state that the grass adjacent to the runway and taxiway (i.e., the meadow buffer BMPs) shall be mowed as infrequently as possible (i.e., no more than approximately 3 times per year) and kept as long as possible (no shorter than approximately 3 inches) to maintain the pollutant removal efficiency of the grass meadow buffers. The Applicant shall receive DES approval of the plan prior to construction and then implement the plan. The Applicant shall maintain records of such maintenance activities and submit them to DES within 72 hours of receiving a request from DES.

- E-14. Prior to construction, the Applicant shall submit a turbidity sampling and analysis plan for soil erosion control during construction. The plan shall be in accordance with the following guidance developed by DES, in consultation with NHDOT: Inter-Department Communication dated February 2, 2009 from Paul Currier, (DES) to Charles Hood (NHDOT) regarding Amendment of the November 16, 2006 Guidance for BMP Inspection and Maintenance, and Turbidity Sampling and Analysis Plans for I-93 Expansion Project Water Quality Certification. The Applicant shall obtain DES' written approval of the turbidity sampling plan prior to construction. The Applicant shall then implement the approved plan.
- E-15. Prior to construction, the Applicant shall submit a surface water monitoring plan to DES for approval and then implement the approved plan. The purpose of the plan is to document existing conditions in affected surface waters, determine compliance with water quality standards and determine if long term BMPs are functioning as intended. The plan shall include sampling and analysis protocols, provisions for quality assurance and quality control (QA/QC) and stipulate that all water quality data will be provided in an electronic format that can be automatically uploaded into the DES Environmental Database (EMD). The Applicant shall obtain DES' written approval of the sampling plan prior to construction. The Applicant shall then implement the approved plan.

#### **F. APPEAL**

If you are aggrieved by this decision, you may appeal the decision to the Water Council. Any appeal must be filed within 30 days of the date of this decision, and must conform to the requirements of Env-Wq 200. Inquiries regarding appeal procedures should be directed to NHDES Council Appeals Clerk, 29 Hazen Drive, PO Box 95, Concord, NH 03302-0095; telephone (603) 271-6072.

If you have questions regarding this Certification, please contact Gregg Comstock at (603) 271-2983.



Harry T. Stewart  
Director, DES Water Division

cc: Erika Mark, ACOE  
Nashua Mayor's Office  
Gino Infascelli, DES Wetlands Bureau  
Ridge Mauck, DES Alteration of Terrain Bureau  
Carol Henderson, NH Fish and Game  
Carol Niewola, NHDOT Bureau of Aeronautics