New Hampshire Department of Transportation
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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 # 2019-404I-002

Activity Name	I-93, Exit 4A [NHDOT Project ID: Derry-Londonderry, IM-0931 (021), 13065]
Activity Location	Londonderry and Derry, New Hampshire
Affected Surface waters	Beaver Brook Beaver Lake Cat O Brook North and South Brook to Wheeler Pond Unnamed Brook Other unnamed brooks and wetlands
Owner/Applicant	New Hampshire Department of Transportation 7 Hazen Drive Concord, NH 03301
Applicable Federal and State permit(s)	see Finding D-17 of this Certification
DATE OF APPROVAL (subject to Conditions below)	May 28, 2020

A. INTRODUCTION

The New Hampshire Department of Transportation (NHDOT or Applicant) is proposing a new interchange on I-93 (known as Exit 4A) in Londonderry, NH with additional improvements on local roads in Derry and Londonderry, and other transportation improvements to reduce congestion and improve safety along NH Route 102, from I-93 Ext 4 easterly through downtown Derry (Activity). The Project is approximately 3.2 miles in length between the new, proposed I93 Exit 4A interchange and the eastern terminus in Derry. A more complete description of the Activity is provided in Finding D-1 of this Certification.

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

C. STATEMENT OF FACTS AND LAW

C-1. §401(a)(1) of the United States Clean Water Act (CWA) (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. §401(a)(3) of the CWA states the following: "The certification obtained pursuant to paragraph (1) of this subsection with respect to the construction of any facility shall fulfill the requirements of this subsection with respect to certification in connection with any other Federal license or permit required for the operation of such facility unless, after notice to the certifying State, agency, or Administrator, as the case may be, which shall be given by the Federal agency to whom application is made for such operating license or permit, the State, or if appropriate, the interstate agency or the Administrator, notifies such agency within sixty days after receipt of such notice that there is no longer reasonable assurance that there will be compliance with the applicable provisions of sections 301, 302, 303, 306, and 307 of this title because of changes since the construction license or permit certification was issued in (A) the construction or operation of the facility, (B) the characteristics of the waters into which such discharge is made, (C) the water quality criteria applicable to such waters or (D) applicable effluent limitations or other requirements. This paragraph shall be inapplicable in any case where the applicant for such operating license or permit has failed to provide the certifying State, or, if appropriate, the interstate agency or the Administrator, with notice of any proposed changes in the construction or operation of the facility with respect to which a construction license or permit has been granted, which changes may result in violation of section 301, 302, 303, 306, or 307 of this title."

C-3. §401(a)(4) of the CWA states the following: (4) Prior to the initial operation of any federally licensed or permitted facility or activity which may result in any discharge into the navigable waters and with respect to which a certification has been obtained pursuant to paragraph (1) of this subsection, which facility or activity is not subject to a Federal operating license or permit, the licensee or permittee shall provide an opportunity for such certifying State, or, if appropriate, the interstate agency or the Administrator to review the manner in which the facility or activity shall be operated or conducted for the purposes of assuring that applicable effluent limitations or other limitations or other applicable water quality requirements will not be violated. Upon notification by the certifying

State, or if appropriate, the interstate agency or the Administrator that the operation of any such federally licensed or permitted facility or activity will violate applicable effluent limitations or other limitations or other water quality requirements such Federal agency may, after public hearing, suspend such license or permit. If such license or permit is suspended, it shall remain suspended until notification is received from the certifying State, agency, or Administrator, as the case may be, that there is reasonable assurance that such facility or activity will not violate the applicable provisions of section 301, 302, 303, 306, or 307 of this title.

C-4. §401(d) of the CWA provides that: "Any certification provided under this section [401] 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 [enumerated provisions of the CWA]…and with any other appropriate requirement of State law set forth in such certification, and shall become a condition on any Federal license or permit subject to the provisions of this section."

C-5. According to a 1994 U.S. Supreme Court decision [1], §401(a) refers to a state certification that a "discharge" will comply with certain provisions of the CWA. However, §401(d) expands the State's authority in that it provides that any certification shall set forth "any effluent limitations and other limitations … necessary to assure that any applicant" will comply with various provisions of the Act and appropriate state law requirements. That is "…401(d) is most reasonable read as authorizing additional conditions and limitations on the activity as a whole once the threshold condition, the existence of a discharge, is satisfied".

C-6. 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-7. 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."

C-8. 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.

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[1] *PUD No. 1 of Jefferson County v. Washington Department of Ecology*, 511 U.S. 700, 712 (1994).

C-9. 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-10. 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-11. 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-12. 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-13. 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-14. Env-Wq 1702.05 states that ""Benthic community" mean the community of plants and animals that live on, over, or in the substrate of the surface water."

C-15. Env-Wq 1702.06 states that ""Benthic deposit" means any sludge, sediment, or other organic or inorganic accumulations on the bottom of the surface water."

C-16. 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-17. Env-Wq 1702.26 states that ""Mixing zone" means a defined area or volume of the surface water surrounding or adjacent to a wastewater discharge where the surface water, as a result of the discharge, might not meet all applicable water quality standards."

C-18. Env-Wq 1702.15 states that ""Cultural eutrophication" means the human-induced addition of wastes that contain nutrients to surface waters, resulting in excessive plant growth or a decrease in dissolved oxygen, or both."

C-19. 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-20. Env-Wq 1702.18 states that ""Discharge" means

(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-21. Env-Wq 1702.22 states that ""Existing uses" means those uses, other than assimilation waste transport, that actually occurred in the waterbody on or after November 28, 1975, whether or not they are included in the water quality standards."

C-22. Env-Wq 1702.33 states that ""Nuisance species" means any species of flora or fauna living in or near the water whose noxious characteristics or presence in sufficient number or mass prevent or interfere with a designated use of those surface waters."

C-23. Env-Wq 1702.38 states that ""Pollutant" means "pollutant" as defined in 40 CFR 122.2." According to 40 CFR 122.2, "pollutant" 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-24. The term "discharge", as applied under section 401 of the Clean Water Act means the potential for a discharge. It does not need to be a certainty, only that it may occur should the federal license or permit be granted. Further, the discharge does not need to involve the addition of pollutants (such as water released from the tailrace of a dam). As the U.S. Supreme Court has stated "[w]hen it applies to water, 'discharge' commonly means a 'flowing or issuing out'" and an addition of a pollutant is not "fundamental to any discharge" [2].

C-25. Env-Wq 1703.03 entitled "General Water Quality" includes the following:

(c)(1) "All surface waters shall be free from substances in kind or quantity that:

a. Settle to form harmful benthic deposits;
b. Float as foam, debris, scum or other visible substances;
c. Produce odor, color, taste or turbidity that is not naturally occurring and would render the surface water unsuitable for its designated uses;
d. Result in the dominance of nuisance species; or
e. Interfere with recreational activities."

C-26. Env-Wq 1703.06 includes water quality criteria for bacteria.

C-27. Env-Wq 1703.07 includes water quality criteria for dissolved oxygen.

C-28. Env-Wq 1703.08 entitled "Benthic Deposits" states the following:

"(a) Class A waters shall contain no benthic deposits, unless naturally occurring.
(b) Class B waters shall contain no benthic deposits that have a detrimental impact on the benthic community, unless naturally occurring."

C-29. Env-Wq, 1703.09, 1703.10 and 1703.12 include water quality criteria for oil and grease, color and slicks, odors, and surface floating solids respectively.

C-30. 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

[2] The Supreme Court case that is referred to is *S.D. Warren Co. v. Maine Board of Environmental Protection et al*, 547 U.S. 370, 126 S. Ct. 1853 (2006).

discharge or otherwise outside of the visible discharge, a violation of the turbidity standard shall be deemed to have occurred."

C-31. Env-Wq 1703.13 entitled "Temperature", states the following:

"(a) There shall be no change in temperature in class A waters, unless naturally occurring.
(b) Temperature in class B waters shall be in accordance with RSA 485-A:8, II, and VIII."

NH RSA-A:8, II states the following for Class B waters "[A]ny stream temperature increase associated with the discharge of treated sewage, waste or cooling water, water diversions, or releases shall not be such as to appreciably interfere with the uses assigned to this class."

NH RSA-A:8, VIII states the following: "In prescribing minimum treatment provisions for thermal wastes discharged to interstate waters, the department shall adhere to the water quality requirements and recommendations of the New Hampshire fish and game department, the New England Interstate Water Pollution Control Commission, or the United States Environmental Protection Agency, whichever requirements and recommendations provide the most effective level of thermal pollution control."

C-32. Env-Wq 1703.14, entitled "Nutrients", states the following:

"(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-33. Env-Wq 1703.18, entitled "pH", states the following:

"(a) The pH of Class A waters shall be as naturally occurs.
(b) As specified in RSA 485-A:8, II, the pH of Class B waters shall be 6.5 to 8.0, unless due to natural causes.
(c) As specified in RSA 485-A:8, III, the pH of waters in temporary partial use areas shall be 6.0 to 9.0 unless due to natural causes."

C-34. 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-35. Env-Wq 1703.21 entitled "Water Quality Criteria for Toxic Substances" states the following:

"(a) Unless naturally occurring or allowed under part Env-Wq 1707, all surface waters shall be free from toxic substances or chemical constituents in concentrations or combinations that:

(1) Injure or are inimical to plants, animals, humans or aquatic life; or

(2) Persist in the environment or accumulate in aquatic organisms to levels that result in harmful concentrations in:

a. Edible portions of fish, shellfish, or other aquatic life; or

b. Wildlife that might consume aquatic life."

C-36. Env-Wq 1707.01 entitled "Designation of Mixing Zones" states the following:

"(a) Because RSA 485-A:8, I prohibits the discharge of any sewage or other wastes into class A waters, mixing zones shall be prohibited in such waters.

(b) For class B waters, the department shall designate a limited area or volume of the surface water as a mixing zone if the applicant provides sufficient scientifically valid documentation to allow the department to independently determine that all criteria in Env-Wq 1707.02 have been met."

C-37. Env-Wq 1707.02 entitled "Criteria for Approval of Mixing Zones" states that "the department shall not approve a mixing zone unless the proposed mixing zone:

(a) Meets the criteria in Env-Wq 1703.03(c)(1);

(b) Does not interfere with biological communities or populations of indigenous species;

(c) Does not result in the accumulation of pollutants in the sediments or biota;

(d) Allows a zone of passage for swimming and drifting organisms;

(e) Does not interfere with existing and designated uses of the surface water;

(f) Does not impinge upon spawning grounds or nursery areas, or both, of any indigenous aquatic species;

(g) Does not result in the mortality of any plants, animals, humans, or aquatic life within the mixing zone;

(h) Does not exceed the chronic toxicity value of 1.0 TUc at the mixing zone boundary; and

(i) Does not result in an overlap with another mixing zone."

C-38. Env-Wq 1707.03 entitled "Conditions for Mixing Zones" states that "if the department approves a mixing zone, the department shall include such conditions as are needed to ensure that the criteria on which the approval is based are met."

C-39. Env-Wq 1707.04 entitled "Technical Standards" states that mixing zones "shall be established in accordance with "Technical Support Document for Water Quality-based Toxics Control", EPA/505/2-90-001, dated March 1991, available as noted in Appendix B."

C-40. 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-41. 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-42. 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-43. 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-44. RSA 483 authorizes the New Hampshire Rivers Management and Protection Program (RMPP) which includes the process for designating rivers for protection under the RMPP and requirements for any state agency considering any action affecting any river or segment designated under this chapter to notify the rivers coordinator prior to taking any such action.

C-45. 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-46. 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.

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-47. 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 are impaired by a pollutant and 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 2018 Section 303(d) List.

C-48. On December 20, 2007, EPA approved the Northeast Regional Mercury TMDL[3] which addressed mercury impairments in all New Hampshire fresh surface waters.

C-49. 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[4].

C-50. On June 1, 2012, EPA approved the Phosphorus TMDL for Hoods Pond[5] in Derry, New Hampshire.

C-51. On January 22, 2009, EPA approved the Chloride TMDL for Beaver Brook[6] in Derry and Londonderry, New Hampshire.

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[3] 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. See Northeast Regional Mercury TMDL.

[4] 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. See Statewide Bacteria TMDL.

[5] Total Maximum Daily Load for Phosphorus in Hoods Pond in Derry, New Hampshire. AECOM and New Hampshire Department of Environmental Services. May 2012. See TMDL for Phosphorus in Hoods Pond.

C-52. 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 not allowed as indicated in the following regulations 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".

Env-Wq 1708.08 (f) under Part Env-Wq 1708 Antidegradation, states that "Subject to (h) below, if the department determines, based on information submitted, that there is no remaining assimilative capacity for a specific parameter, no further degradation with regard to that parameter shall be allowed".

> Env-Wq 1708.08 (h) states that "Determinations made pursuant to (f) and (g) above, shall account for Env-Wq 1705.01, which requires the department to reserve no less than 10% of a surface water's assimilative capacity".

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-53. NHDES 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.

C-54. RSA 485-A:17 (Terrain Alteration), III authorizes NHDES to exempt other state agencies from the permit and fee provisions of RSA 485-A:17 provided the agency has incorporated protective practices in its projects which are substantially equivalent to the requirements established by NHDES under the terrain alteration statute. On July 8, 2011, NHDES and NHDOT signed a memorandum of agreement (MoA), with conditions, that exempts NHDOT from having to obtain a terrain alteration permit or to pay a terrain alteration permit fee. The exemption is indefinite in duration but shall be reviewed periodically by NHDES and NHDOT to ensure NHDOT's design, construction and maintenance practices are substantially equivalent to the terrain alteration requirements of RSA 485-A:17, Chapter Env-Wq 1500 and Chapter Env-Wq 1700.

C-55. Excerpts from Env-Wq 1507.07 (Long-Term Maintenance) of the Alteration of Terrain regulations (Env-Wq 1500) include the following:

(a) "In order to ensure the long-term effectiveness of approved stormwater practices, the applicant shall establish a mechanism to provide for on-going inspections and maintenance (I&M) of the practices for so long as the practices are reasonably expected to be used.

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[6] Total Maximum Daily Load (TMDL) Study for Waterbodies in the Vicinity of the I-93 Corridor from Massachusetts to Manchester, NH: Beaver Brook in Derry and Londonderry, NH. NHDES-R-WD-07-46. April 18, 2008. See Beaver Brook Chloride TMDL.

(b) Subject to (f), below, the mechanism shall include an I&M manual for the practices which includes, at a minimum:
  (1) The name of each responsible party who will implement the required reporting, inspection, and maintenance activities identified in the I&M manual;
  (2) The frequency of inspections;
  (3) An inspection checklist to be used during each inspection;
  (4) A requirement to photograph each practice that is subject to the I&M requirement at each inspection of that practice;
  (5) An I&M log to document each I&M activity;
  (6) A deicing log to track the amount and type of deicing materials applied to the site;
  (7) A plan showing the locations of all the stormwater practices described in the I&M manual; and
  (8) Actions to be taken if any invasive species begin to grow in the stormwater management practices.

(c) All record keeping required by the I&M manual shall be maintained by the responsible party(ies) and be made available to the department upon request.

(d) Upon the completion of all terrain alteration activities that direct stormwater to a particular practice, the responsible party(ies) shall initiate the I&M activities.

(e)The responsible party(ies) may contract with one or more third parties to conduct the I&M activities, but shall remain responsible for ensuring the long-term effectiveness of the stormwater practices.

(f) If a federal or state agency or a political subdivision of the state agrees to assume the responsibility for some or all components of the stormwater management system, the following shall apply:
  (1) The transferor responsible party(ies) shall document the transfer of responsibility in writing to the department;
  (2) No I&M manual shall be required for those components for which the agency or political subdivision assumes responsibility, unless required by the agency or political subdivision as a condition of accepting responsibility; and
  (3) The agency or political subdivision that agrees to assume responsibility shall document that maintenance activities are being performed as necessary to ensure the long-term effectiveness of those components of the stormwater management system for which the agency or political subdivision assumed responsibility."

C-56. Dredge and fill of jurisdictional wetlands require wetland permits or notification in accordance with RSA 482:A and Env-Wt 100-900. Wetland regulations (Env-Wt 300), state that no activity shall be constructed in such a way as to cause or contribute to a violation of the surface water quality standards specified in RSA 485-A:8 or Env-Wq 1700 [Env-Wt 307.02(a)(1)]. The regulations also require controls to minimize erosion to, and sedimentation and turbidity in, surface waters [Env-Wt 307.02 (b)]. On October 8, 2018 NHDES received an application from the Applicant for a Wetlands Permit (file number 2018-03134). On April 26, 2019, NHDES issued a Request for More Information (RFMI). On February 14, 2020, the Applicant submitted a response to the RFMI. On May 5, 2020, the NHDES Wetlands Bureau issued an "Approval Letter" which includes the Conditions that will be included in the Wetlands Permit, with the associated Findings for the Approval. A Wetlands Permit will be issued once the Aquatic Resource Mitigation (ARM) payment has been submitted.

C-57. The Shoreland Water Quality Protection Act (SWQPA) is authorized and implemented by RSA 483-B and Env-Wq 1400 respectively. The act establishes minimum standards for the subdivision, use and development of shorelands adjacent to the state's public water bodies and includes limits on impervious surfaces, a provision for a waterfront buffer in which vegetation removal is limited,

shoreland protection along rivers designated under RSA 483 (Designated Rivers), and the establishment of a permit requirement for many new construction, excavation and filling activities within the Protected Shoreland. The Protected Shoreline is defined in RSA 483-B:4, XV and in general includes all land located within 250 feet of the reference line for public waters (as defined in RSA 483-B:4, XV1). For river segments of third order or lower designated as protected under RSA 483:15 which are either designated after or for which specific exemptions are repealed after December 31, 2015, "protected shoreland" means all land located within 50 feet of the reference line (as defined in RSA 483-B:4, XVII) of public water. On February 14, 2020 NHDES received an application from the Applicant for a Shoreland Permit By Notification (File No. 2020-00269).

C-58. Env-Wq 402 (Groundwater Permits and Registration) implements RSA 485-A:13, I(a) and the permit program for the regulation and remediation of groundwater contamination from previous discharges or disposal of wastewater to groundwater authorized by RSA 485:3, X, by establishing standards, criteria, and procedures for groundwater discharge permits, discharge registrations, and holding tank registrations to prevent pollution and protect groundwater. Wastewater is defined as "…a fluid derived from domestic or non-domestic sources that is no longer used for its original intended purpose".

C-59. In accordance with RSA 485:A:12, III (see C-6), on February 21, 2020, NHDES received an application and supporting documentation from the Applicant for §401 Water Quality Certification in accordance with §401 of the Clean Water Act.

C-60. On May 2, 2006, NHDES issued a §401 Water Quality Certification (2002-007) to NHDOT for the Interstate 93 Improvements from Salem to Manchester, New Hampshire which is an active Certification.

C-61. In accordance with §404 of the Clean Water Act, the U.S. Army Corps of Engineers (ACOE or Corps) received an application from the Applicant for an individual §404 permit on February 21, 2020 for the discharge of dredged or fill material into waters of the United States. The ACOE has assigned the following file number to this project: ACOE File No. NAE-2005-03061.

C-62. On February 3, 2020, the Federal Highway Administration (FHA) issued a Final Environmental Impact Statement (FEIS) and Record of Decision (ROD) [7] for the proposed Project.

C-63. On February 5, 2019, NHDES issued a §401 WQC for the NPDES CGP (as modified) which was signed and issued by EPA on May 14, 2019. The 2019 WQC for the modified CGP issued in 2019 states the following: "The NH Department of Environmental Services reserves the right to modify this certification should the final issued permit contain conditions that conflict with applicable statutes and administrative rules. Further, should the permit coverage for an individual applicant be insufficient to achieve water quality standards, DES may prepare additional 401 certification conditions for that applicant. Any additional 401 certification conditions will follow all required public participation requirements." Activities must comply with the CGP if they "[d]isturb 1 or more acres of land, or will disturb less than 1 acre of land but is part of a common plan of development or sale that will ultimately disturb 1 or more acres of land". The CGP covers construction related stormwater discharges (including stormwater runoff, snowmelt runoff and surface runoff and drainage) as well other discharges, including but not limited to, construction dewatering that has been treated by an appropriate control. The CGP requires development of a Stormwater Pollution

[7] I-93 Exit 4A Final Environmental Impact Statement and Record of Decision. NHDOT Project Number: 13065. Federal Project Number: IM-0931(201). FHWA EIS # FHWA-NH-EIS-07-01-F. February, 2020. See Exit 4A EIS and ROD.

Prevention Plan (SWPPP) that describes how the Activity will meet the requirements of the CGP. This includes identification of the stormwater team, a description of the nature of construction activities, emergency-related projects, identification of other site operators, the sequence and estimated dates of construction activities, a site map, identification of construction site pollutants and non-stormwater discharges, buffer documentation, a description of stormwater control measures, pollution prevention procedures, procedures for inspection, maintenance and corrective requirements, SWPPP Certification and Post-Authorization Additions to the SWPPP. According to the CGP the SWPPP must be made available to NHDES upon request.

C-64. On January 6, 2017, NHDES issued a §401 Water Quality Certification for the NPDES General Permits for Stormwater Discharges from Small Municipal Separate Stormwater Systems (i.e., MS4 permit [8]) which was signed and issued by EPA on January 18, 2017. The MS4 permit became effective July 1, 2018. The WQC issued in 2017 for the MS4 permit states the following: "The NH Department of Environmental Services reserves the right to modify this certification should the final issued permit contain conditions that conflict with applicable statutes and administrative rules. Further, should the permit coverage for an individual applicant be insufficient to achieve water quality standards, DES may prepare additional 401 certification conditions for that applicant. Any additional 401 certification conditions will follow all required public participation requirements."

A list of regulated communities and a map showing the geographic extent of MS4 regulated area (which includes the entire proposed Activity) is available on the EPA website [8].

The MS4 permit includes, but is not limited to, the following requirements:

a. "…develop, implement and enforce a SWMP" (Stormwater Management Plan) that "…describes the activities and measures that will be implemented to meet the terms and conditions of the permit" (Part 1.10 of the MS4) and "…make the SWMP immediately available to representatives from…a State agency…at the time of inspection or upon request" (Part 1.10.1 of the MS4).
b. "develop, implement and enforce a program to reduce the discharge of pollutants from the MS4 to the maximum extent practicable;…" (as described in Part 2.3 of the MS4)"… to protect water quality and to satisfy the appropriate water quality requirements of the Clean Water Act and the New Hampshire Water Quality Standards" (Part 2.0 of the MS4);
c. Comply with "Water Quality Based Effluent Limitations" that include "provisions to ensure that discharges from the small MS4 do not cause or contribute to an exceedance of water quality standards, in addition to requirements to reduce the discharge of pollutants to the maximum extent practicable" (Part 2.1 of the MS4):
d. Comply with Part 2.1.2 regarding "Increased Discharges" that includes requirements to address New Hampshire antidegradation regulations.
e. Comply with Part 2.2.1 regarding "Discharges Subject to Requirements Related to an Approved TMDL" which states that "For those TMDLs that specify a wasteload allocation or other requirements either individually or categorically for the MS4 discharge, the permittee shall comply with the applicable requirements of Appendix F" (Part 2.2.1.b of the MS4).

[8] The MS4 permit is available on the EPA MS4 website. "Guidance to New Hampshire MS4 permittees on aspects of the NH MS4 permit that reference the NH Department of Environmental Services" is available on the NHDES MS4 website.

f. Comply with Part 2.2.2 regarding "Discharge to Certain Water Quality Impaired Waters without an Approved TMDL" which states the following: "If there is a discharge from the MS4 to a water quality limited waterbody where pollutants typically found in stormwater (specifically nutrients (Total Nitrogen or Total Phosphorus), solids (Sedimentation/Siltation or Turbidity), bacteria/pathogens (Enterococcus, fecal coliform, or Escherichia Coli), chloride (Chloride), metals (Cadmium, Copper, Iron, Lead or Zinc) and oil and grease (Oil Slicks, Benzo(a) pyrene (PAHs)) are the cause of the impairment and there is not an approved TMDL, or the MS4 is located in a town listed in Part 2.2.2.a.-e. the permittee shall comply with the provisions in Appendix H applicable to it" (Part 2.2.2 of the MS4). Derry is listed in Part 2.2.2 a, b, c, d and e and Londonderry is listed in Part 2.2.2. d and e.

g. "…reduce the discharge of pollutants from the MS4 to the maximum extent practicable…" as described in Parts 2.3.2 through 2.3.7 of the MS4 which includes "Public Education and Outreach"(Part 2.3.2); "Public Involvement and Participation" (Part 2.3.3); an "Illicit Discharge Detection and Elimination (IDDE) Program" (Part 2.3.4) program; "Construction Site Stormwater Runoff Control" (Part 2.3.5); "Stormwater Management in New Development and Redevelopment (Post Construction Stormwater Management)" (Part 2.3.6); and "Good House Keeping and Pollution Prevention for Municipal Operations" (Part 2.3.7) which includes "Operations and Maintenance (O & M) Programs" (Part 2.3.7.1).

h. Comply with Part 3.0 regarding "Additional State Requirements" which includes, but is not limited to, the following:
    1. "…evaluate physical conditions, site design, and best management practices to promote ground water recharge and infiltration where feasible in the implementation of the control measures described in Part 2.3. The permittee shall address recharge and infiltration for the control measures as well as any reasons for electing not to implement recharge and infiltration. Loss of annual recharge to ground water should be minimized through use of infiltration to the maximum extent practicable" (Part 3.1 of the MS4).
    2. "When updating stormwater ordinances as required in Part 2.3.6 of the MS4, permittees must consider adding the provisions in… Env-Wq 1507.04 for groundwater recharge and … Env-Wq 1507.05 for channel protection and… Env-Wq 1507.06 for peak runoff control" (Part 3.1.3 of the MS4 which applies to MS4 communities).
    3. Part 3.2 regarding "New Hampshire Public Drinking Water Requirements" which include requirements for "MS4s that discharge to public drinking water sources and their source protection areas".

i. Comply with Part 4.0 regarding "Program Evaluation, Record Keeping and Reporting" that requires annual self-evaluations of the permittees "…compliance with the terms and conditions of this permit"(Part 4.1.1 of the MS4); "keeping all records required by this permit for a period of at least five years (Part 4.2.1 of the MS4); monitoring of outfalls (Part 4.3.1 of the MS4) and documenting "all monitoring results each year in the annual report" (Part 4.3.2 of the MS4) and "Annual Reporting" requirements (Part 4.4. of the MS4) which state that "The permittee shall submit an annual report" (Part 4.4.2 of the MS4).

j. Comply with Part 5.0 regarding "Non-Traditional MS4s".

k. Comply with Part 6.0 regarding 'Requirements for Transportation Agencies."
l. Comply with Appendix F "Requirements of Approved Total Maximum Daily Loads".
m. Comply with Appendix H "Requirements Related to Discharges to Certain Water Quality Limited Waterbodies".

C-65. On March 18, 2019, April 21, 2019, and June 12, 2019, the Applicant (NHDOT), the Town of Derry and the Town of Londonderry respectively, were granted authorization by EPA to discharge stormwater from their MS4 areas in accordance with applicable terms and conditions of the MS4 permit issued in 2017, including all applicable Appendices (see C-64).

C-66. On June 27, 2019, the Applicant published its Stormwater Management Plan (SWMP) as required by the EPA NPDES Small Municipal Separate Storm Sewer Systems General Permit (MS4), which is available on the NHDOT website.

C-67. On December 18, 2014, NHDES issued a §401 Water Quality Certification for the NPDES General Permits for Dewatering Activity Discharges (i.e., DGP [9]) which was signed an issued by EPA on March 26, 2015. The permit became effective April 26, 2015. The DGP authorizes discharges from uncontaminated water from construction dewatering intrusion and/or storm water accumulation which disturb less than one acre of land, and short and long term dewatering of foundation sumps to Class B surface waters. The permit specifies parameters that must be monitored, effluent limits and Best Management Practices (BMPs). The DGP also includes record-keeping and reporting requirements.

C-68. On January 30, 2017, NHDES issued a §401 Water Quality Certification for the NPDES General Permits for Remediation Activity Discharges (i.e., RGP [10]) which was signed and issued by EPA on March 9, 2017. The permit became effective April 9, 2017. The RGP authorizes discharges from the eight general remediation activity categories, including:

a. Petroleum-related site remediation;
b. Non-petroleum-related site remediation;
c. Contaminated site dewatering;
d. Pipeline and tank dewatering;
e. Aquifer pump testing;
f. Well development/rehabilitation;
g. Collection structure remediation/dewatering; and
h. Dredge-related dewatering.

For each category, the RGP specifies parameters that must be monitored, effluent limits and Best Management Practices (BMPs). The RGP also includes record-keeping and reporting requirements.

C-69. NHDES issued a draft section 401 Water Quality Certification for this Activity for public comment Two comments were received. A response to comments will be posted on the NHDES Website.

D. FINDINGS

[9] The DGP is available on the EPA DGP website.

[10] The RGP is available on the EPA RGP website.

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 Fact C-59). Additional information may be found on the Applicant's project website.

The Activity in this Certification includes the following project (i.e., facility): A new interchange on I-93 (known as Exit 4A) in Londonderry, NH with additional improvements on local roads in Derry and Londonderry, and other transportation improvements (i.e., facility) to reduce congestion and improve safety along NH Route 102, from I-93 Ext 4 easterly through downtown Derry (Activity) (see Figure 1). The Activity is approximately 3.2 miles in length between the new, proposed I93 Exit 4A interchange and the eastern terminus in Derry. There would be approximately 1 mile of new roadway construction on a new alignment and 2.2 miles of existing roadway reconstruction. The new alignment would originate from the new I-93 Exit 4A interchange location and travel southeast through a wooded area to Folsom Road, near its intersection with North High Street and Madden Road in Derry. It would then follow Folsom Road to Ross' Corner (Manchester Road/NH28) and continue on Tsienneto Road across NH 28 Bypass to its intersection with NH 102, adjacent to Beaver Lake. The Activity is known as Alternative A, and is fully described in the Section "3.6.2 Build Alternatives" of the I-93 Exit 4A Final Environmental Impact Statement/Record of Decision (FEIS/ROD) (see Fact C-62).

Section 6 of the Applicant's §401 Water Quality Certification application (see Fact C-59), includes affects to surface waters and wetlands related to design, construction and operation.

The Activity is proposed to be "Design/Build" with construction anticipated to begin in August of 2021 and end in June of 2024. Because it is "Design/Build" final design plans will not be available until after a contractor is selected, therefore, this certification is based on the Base Technical Concept (BTC). Alternative Technical Concepts (ACT) proposed by the selected contractor, may require additional review.

Construction of the Activity is proposed to permanently impact approximately 5.61 acres of wetlands including the relocation of approximately 1,719 feet of Trolley Car Stream and result in approximately 39.4 acres of impervious area consisting of approximately 20.4 acres of new impervious area and 19.0 acres of redeveloped impervious area. Construction related discharges are discussed in Finding D-19 through D-22 of this Certification.

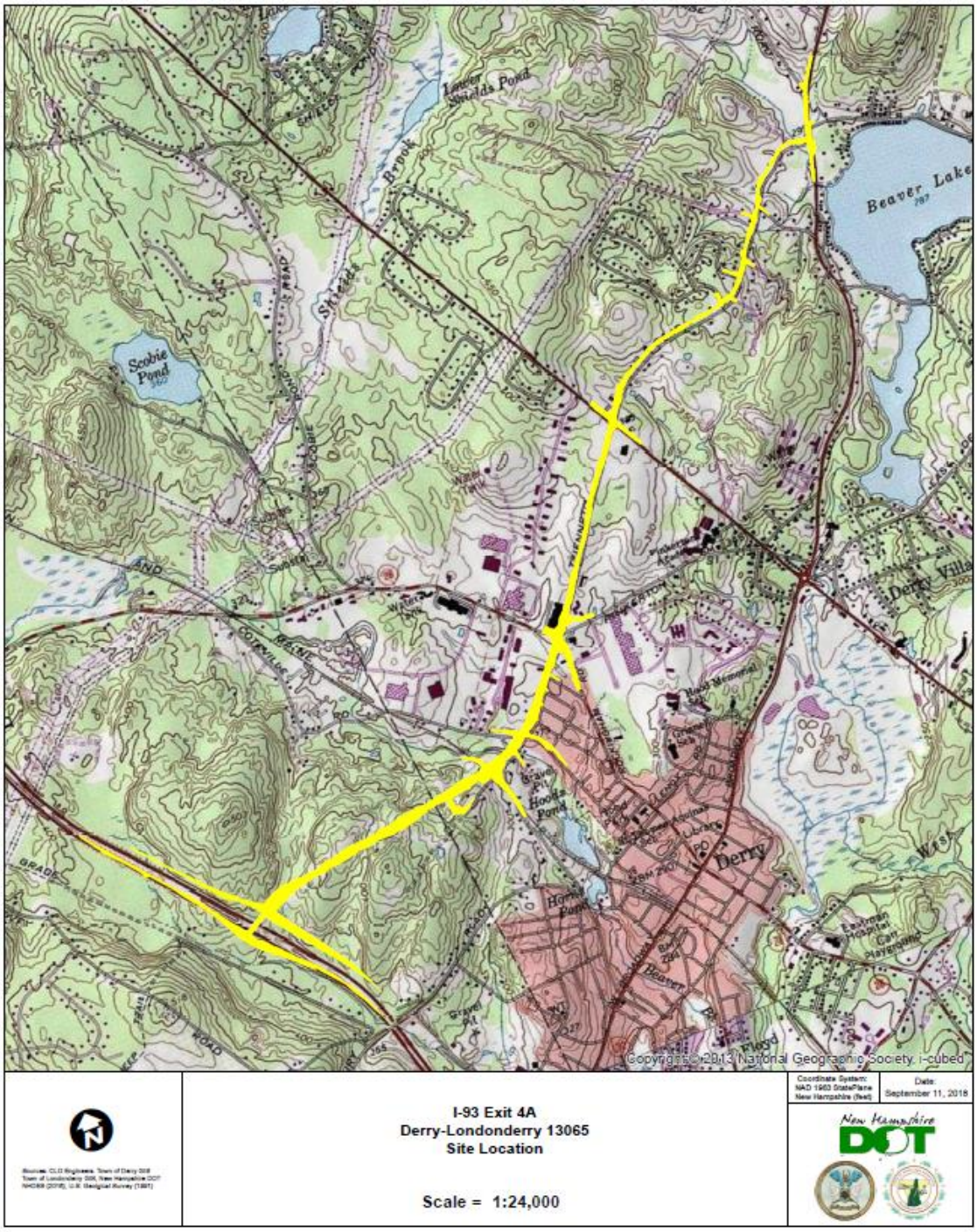
The Activity will construct and operate stormwater Best Management Practices (BMPs) which are expected to treat approximately 35.1 acres (89%) of the total impervious area included in the Activity. Table 1 shows the number and approximate area expected to be treated by each stormwater BMP type. Post construction discharges are discussed in Findings D-23 through D-33 of this Certification.

Table 1: Proposed Stormwater BMPs and Area Treated

Treatment Type (Stormwater BMPs)	Area Treated (sf)	Area Treated (acres)	% of Total Area Treated	Number of Stormwater BMPs
Dry Swale	103250	2.37	6.8%	5
Infiltration Basin	96580	2.22	6.3%	1
Pavement Removal	73460	1.69	4.8%	1
Swale	97730	2.24	6.4%	3

Treatment Type (Stormwater BMPs)	Area Treated (sf)	Area Treated (acres)	% of Total Area Treated	Number of Stormwater BMPs
Wet Extended Detention Basin	1157490	26.57	75.7%	9
Total	**1528510**	**35.09**	**100%**	**19**

Figure 1: Site Map (from NHDOT 401 Water Quality Certification Application)



D-2. The Activity is not within ¼ mile of a Designated River under the Designated Rivers Program (see Fact C-44). As such, the Activity is not within the jurisdiction of the Designated Rivers Program.

D-3. The surface waters in the vicinity of the Activity are not Outstanding Resource Waters (see Fact C-41).

D-4. The Activity does not involve any surface water withdrawals that exceed those specified in RSA 488:3 (see Fact C-45).

D-5. The Applicant is responsible for the Activity.

D-6. 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.

D-7. The named and unnamed streams and wetlands affected by the Activity, are surface waters under Env-Wq 1702.44 (see Fact C-11) and are therefore subject to New Hampshire Surface Water Quality Standards (Env-Wq 1700 – see Fact C-8). 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 Fact C-11). Surface waters that could be potentially affected by the Activity and their associated AU numbers (where available) include, but are not limited to those shown in Table 2.

Table 2: Surface Waters Potentially Impacted by the Activity

Assessment Unit ID	Description
NHLAK700061203-02-01	Beaver Lake
NHLAK700061203-03-01	Hoods Pond
NHRIV700061203-08	Cat O Brook North
NHRIV700061203-09	Beaver Brook
NHRIV700061203-11	Beaver Brook
NHRIV700061203-23	Brook to Wheeler Pond
NHRIV700061203-29	Cat O Brook South
NHRIV700061203-45	Unnamed Brook
	Other unnamed brooks and wetlands

D-8. 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 Fact C-19).

D-9. Discharges of fill into wetlands, stormwater runoff during construction and/or operation of the facility following construction, including snowmelt runoff, and groundwater flow from within the area affected by the Activity, are discharges as defined in Env-Wq 1702.18 (see Fact C-20). They are also discharges as applied under §401 of the Clean Water Act (see Fact C-24). If not properly controlled, such discharges may cause the permanent alteration of, or temporary impacts to surface water quality, quantity, or both.

D-10. The Activity requires an individual §404 permit from the U.S. Army Corps of Engineers (ACOE or Corps) (see Fact C-61), which is a federal permit. It is expected that the ACOE will issue a permit following issuance of the 401 Certification.

D-11. Because the Activity may result in a discharge (see Finding D-9) to navigable surface waters (see D-6) and requires a federal permit (see Finding D-10), a §401 Water Quality Certification is required in accordance with §401 of the Clean Water Act (see Fact C-1) and RSA 485-A:12, III (see Fact C-6). NHDES has received an application from the Applicant for §401 Water Quality Certification (see Fact C-59).

D-12. According to a 1994 U.S. Supreme Court decision [1], once the threshold condition, (i.e., existence of a discharge) is satisfied, §401(d) of the CWA allows a State to include additional conditions and limitations on the activity as a whole (i.e., construction and operation) to assure compliance with State surface water quality standards (see Fact C-5).

D-13. The project is "Design/Build" which means that final plans, drainage analyses and other supporting information will not be available until a Contractor is selected and that the plans and supporting information submitted with the §401 Water Quality Certification application (see Fact C-59) are preliminary and subject to change. NHDES may therefore need to review the final plans and supporting information prior to construction to ensure the Activity will comply with NH surface water quality standards (see Fact C-8).

D-14. The Activity includes dredge and fill of jurisdictional wetlands in New Hampshire and therefore requires a NHDES Wetlands Permit (or permits) (see Fact C-56). On May 5, 2020, the NHDES Wetlands Bureau issued an "Approval Letter" which includes the Conditions that will be included in the Wetlands Permit, with the associated Findings for the Approval. A Wetlands Permit will be issued once the Aquatic Resource Mitigation (ARM) payment has been submitted.

D-15. The project involves work within the protected shoreline of public waters and therefore requires a permit from the NHDES Shoreland program. The Applicant has submitted an application for a NHDES Shoreland Permit by Notification (see Fact C-57).

D-16. The entire project is subject to the requirements of the EPA CGP (see Fact C-63) and MS4 permits (see Fact C-64). As indicated in Facts C-63 and C-64, the §401 Water Quality Certifications for the CGP and MS4 permits state the following:

"Further, should the permit coverage for an individual applicant be insufficient to achieve water quality standards, DES may prepare additional 401 certification conditions for that applicant. Any additional 401 certification conditions will follow all required public participation requirements."

Due to the size of the proposed Activity, and the potential for surface water quality impacts associated with this project, this Certification, which has followed all applicable public participation requirements, is being used to provide additional conditions to ensure construction and operation of the project will comply with surface water quality standards as allowed by the §401 Water Quality Certifications for the CGP and MS4 permits.

D-17. Construction of the project and operation of the facility must comply with the following documents as well as the Conditions of this Certification. A brief summary of most is provided in Section C Facts and Laws of this Certification and are further discussed in the Findings below. Compliance with these documents and this Certification is expected to result in the Activity complying with State surface water quality standards (see Fact C-8):

- FHWA Record of Decision (ROD) and Final Environmental Impact Study (FEIS) (see Fact C-62),

- NHDES/NHDOT Memorandum of Agreement requiring NHDOT's design, construction and maintenance practices are substantially equivalent to the terrain alteration requirements (see Fact C-53 and Fact C-54),
- NHDES Wetlands Permit (see Fact C-56),
- NHDES Shoreland Permit by Notification (Fact C-57),
- NHDES Groundwater Discharge Permit and/or Registration (if necessary – see Fact C-58),
- U.S. Army Corps of Engineers §404 Permit (see Fact C-61),
- EPA NPDES Construction General Permit (CGP) (see Fact C-63),
- EPA NPDES Small Municipal Separate Storm Sewer Systems General Permit (MS4) (see Fact C-64, Fact C-65 and Fact C-66)
- EPA NPDES Dewatering General Permit (DGP) (see Fact C-67),
- EPA NPDES Remediation General Permit (RGP) (see Fact C-68).

Rare, Threatened and Endangered Species

D-18. The NHDES Wetlands permit (see Finding D-14) will require measures to protect any federal or state species that are listed as rare, threatened or endangered.

Discharges from Contaminated Sites

D-19. If not properly controlled, disturbance of contaminated sites associated with construction of the project or operation of the facility following construction may cause or contribute to violations of surface water quality standards (see Fact C-8).

D-20. To prevent Activity-related discharges from contaminated sites from causing or contributing to violations of state surface water quality standards (see Fact C-8), the ROD (section 4.4 – see Fact C-62), states that surface and groundwater discharges would be subject to meeting state surface water quality standards (see Fact C-8), the requirements of the EPA RGP (see Fact C-68), the EPA CGP (see Fact C-63) the EPA MS4 General Permit (see Fact C-64), as well as the NHDES Groundwater Discharge Permitting and Registration Program (see Fact C-58).

Construction Related Discharges

D-21. *Potential Construction Related Impacts on Surface Waters*: If not properly controlled, the disturbance of earth during construction of the facility may result in erosion of materials that temporarily increase turbidity levels in surface waters adjacent to and downstream from the area affected by the project, 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 project site that could negatively impact aquatic biota. In addition, leakage of fluids (e.g., oil, gas, transmission fluid, etc.) from construction equipment can also cause or contribute to violations of surface water quality standards (see C-8) if not properly controlled.

D-22. *Control of Construction Related Discharges:* To prevent construction related discharges associated with the construction of the project from causing or contributing to violations of surface water quality standards (see C-8) due to erosion and sedimentation and/or leakage from construction equipment:

a. The ROD (section 4.14.2 – see Fact C-62) states that a Stormwater Pollution Prevention Plan (SWPPP) consistent with NHDES Alteration of Terrain permitting requirements (see Fact C-53 and

Fact C-54) and the CGP (see Fact C-63) will be prepared and implemented. Measures will include diversion of upslope drainage (where appropriate); installation of temporary erosion and sediment control devices such as straw mulch, wood chips, erosion control blankets, check dams, and silt fences; proper installation, inspection (at least weekly and after threshold rain events) and maintenance of erosion controls, and maintenance of a buffer strip of vegetation near streams. In addition, mechanisms to avoid and control chemical leaks and spills from construction equipment will be instituted.

b. Part 2.3.5 of the MS4 permit (see Fact C-64) includes a requirement to develop a Construction Site Control program that is separate and distinct from the CGP.

c. The NHDES Wetlands permit (see Fact C-56) will include conditions to prevent violations of state surface water quality standards (see Fact C-8) due to construction related erosion and sedimentation and spills from construction equipment as well as control of invasive species. The NHDES Wetlands permit will also address mitigation due to wetland impacts, including, but not limited to, the proposed relocation of approximately 1,719 feet of the Trolley Car Stream as well as control of invasive species.

d. As indicated in Finding D-16, NHDES can require additional requirements to help ensure that construction or operation of the Project complies with State surface water quality standards. For example, with regards to construction, NHDES may require turbidity monitoring and reporting to ensure turbidity water quality standards are not violated during construction.

Discharges Associated with Operation of the Constructed Facility

D-23. *General:* Post Construction Discharges associated with operation of the facility after it is constructed will be addressed through the various documents listed in Finding D-17 and as further described in the Findings below.

D-24. *Potential Post Construction Water Quality Impacts*: The Activity includes the addition of approximately 9.1 lane miles (20.4 acres) of impervious area (FEIS, Table ES-1 and Finding D-1). If not properly controlled, the increase in impervious area can cause post construction violations of the antidegradation provisions of the surface water quality standards (see Fact C-40) due to hydrologic alterations (i.e., increased flow and/or increased deposition) and eventual transport to surface waters of pollutants such as nutrients (i.e., phosphorus and nitrogen), chlorides (from road salt), total suspended solids (which is associated with turbidity), various metals (i.e., lead, zinc, etc.), and petroleum aromatic hydrocarbons (PAHs).

Operation of the facility after it is constructed will include the application of de-icing chemicals containing chloride (i.e., road salt) in the cold-weather months to help ensure the roads are safe to travel. Road salt is typically the primary source of chlorides in fresh surface waters and can be toxic to aquatic life and affect drinking water quality[11]. Because chloride is a conservative chemical that cannot be treated by conventional stormwater BMPs, it persists in the environment. Limiting the use of road salt is the best way to reduce chloride concentrations in fresh surface waters and groundwater. A review of measures taken or underway to reduce chloride in the Beaver Brook watershed is provided in Finding D-32.

[11] NH surface water quality regulations (Env-Wq 1700) and drinking water regulations (Env-Dw 706) include numerical criteria for chloride to prevent toxicity to aquatic life and to maintain the quality of potable water sources respectively.

D-25. *NHDES may add conditions to MS4 Permit*: The MS4 permit recognizes that NHDES may add conditions when necessary to ensure surface water quality standards are met (see Fact C-64, Finding D-16, Finding D-28 and Finding D-29). For example, to ensure that the operation of the Project will comply with surface water quality standards, NHDES may require pollutant loading analyses for stormwater treatment BMPs to ensure that they will adequately treat post-construction discharges so that they comply with surface water quality standards. Documentation may include, but not be limited to, pollutant loading analyses and supporting documentation utilizing a method acceptable to NHDES, that shows the net (i.e., post-construction minus the pre-construction) stormwater pollutant loading for total suspended solids and total phosphorus at each stormwater discharge point as well as to Hoods Pond and Beaver Lake. Based on these analyses, NHDES may require additional or different stormwater treatment best management practices than those proposed by the Applicant.

D-26. *Excerpts from the ROD*: According to the ROD (section 4.5.1, p. ROD-9 – see Fact C-62):

a. "Final design plans will show the location, type, and specifications of stormwater treatment BMPs for the Project. Stormwater treatment will be designed to meet all regulatory criteria, including the requirements of the 2017 NH Small MS4 general permit". The MS4 permit is discussed in Fact C-64 of this Certification.

b. "Project roadway segments that are new development are expected to be fully treated for stormwater and will meet either the Water Quality Volume retention criteria or the specified total suspended solids (TSS) and total phosphorus (TP) removal efficiencies detailed in Part 2.3.6 of the MS4 permit. Roadway redevelopment areas are also expected to be fully treated and will meet either the Water Quality Volume retention or BMP treatment criteria or the specified TSS and TP removal efficiencies detailed in Part 2.3.6 of the MS4 permit."

c. "The Selected Alternative would result in development and/or redevelopment in the Beaver Lake watershed, which is shown on the latest 303(d) list (NHDES, 2017b) as impaired for aquatic life due to TP, chlorophyll a, DO saturation, and pH. When stormwater plans are finalized, they must be consistent with the requirement in Part 2.3.6 of the MS4 permit that either no new or increased stormwater discharges will be introduced to Beaver Lake."

d. "The Selected Alternative would have development and/or redevelopment road segments with potential stormwater impacts to tributaries of Hoods Pond, which is subject to the Hoods Pond phosphorus total maximum daily load (TMDL). The Project would be required to develop and/or adopt a lake phosphorus control plan or other approved management plan consistent with the requirements of the MS4 permit to demonstrate conformance with the water quality goals of the Hoods Pond phosphorus TMDL, including TP load reductions in Shields Brook watershed."

D-27. *Hydrologic Alterations:* The NHDES Alteration of Terrain regulations (see Fact C-53) include requirements to minimize the hydrologic impacts of stormwater runoff during and after construction. NHDES and NHDOT have signed a memorandum of agreement (MoA), with conditions, that requires NHDOT's design, construction and maintenance to be substantially equivalent with terrain alteration requirements (see Fact C-54).

D-28. *Control of Increased Discharges (including Increased Pollutant Loading):* If not properly controlled, the Activity may result in increased discharges and/or pollutant loadings and is therefore subject to NHDES antidegradation regulations (Env-Wq 1708). Parts 2.1.2 (see below) and 6.4 (see Finding D-29) of the MS4 permit (see Fact C-64) recognizes that NHDES antidegradation regulations need to be

followed and that any additional conditions or requirements specified by NHDES shall be incorporated in the MS4 by reference and the Permittee shall comply with all such requirements (see Fact C-64).

Part 2.1.2 of the MS4 permit (see Fact C-64) also states that there "… shall be no new or increased discharges from the MS4 to impaired waters listed in categories 5 or 4b on the most recent EPA-approved New Hampshire Integrated Report of waters listed pursuant to Clean Water Act section 303(d) and 305(b) unless the permittee demonstrates that there is no net increase in loading from the MS4 to the impaired water of the pollutant(s) for which the waterbody is impaired." Compliance can be demonstrated by "…either: 1. Documenting that the pollutant(s) for which the waterbody is impaired is not present in the MS4's discharge and retain documentation of this finding with the SWMP; or 2. Documenting that the total load of the pollutant(s) of concern from the MS4 to any impaired portion of the receiving water will not increase as a result of the activity and retain documentation of this finding in the SWMP. Part 2.1.2 of the MS4 also states that "Unless otherwise determined by the Permittee, USEPA or by NH DES that additional demonstration is necessary, compliance with the requirements of Part 2.2.2 and Part 2.3.6 of this permit, including all reporting and documentation requirements, shall be considered as demonstrating no net increase as required by this Part."

D-29. Part 6.4 of the MS4 permit regarding "New Discharges" for Transportation Agencies states the following: "Any transportation MS4 facility that is a "new discharger" and discharges to a waterbody that is in attainment is subject to New Hampshire antidegradation regulations at N.H. Code Admin. R. Part Env-Wq 1708. The permittee shall comply with the provisions of N.H. Code Admin. R. Part Env-Wq 1708.04 and N.H. Code Admin. R. Part Env-Wq 1708.06 including information submittal requirements and obtaining authorization for new discharges as appropriate[21]. Any authorization of new discharges by NHDES shall be incorporated into the permittee's SWMP. If an applicable NHDES approval specifies additional conditions or requirements, then those requirements are incorporated into this permit by reference. The permittee must comply with all such requirements". Footnote 21 says "Contact NHDES for guidance on compliance". On May 18, 2018, NHDES issued "Guidance to New Hampshire MS4 permittees on aspects of the NH MS4 permit that reference the NH Department of Environmental Services" (see Fact C-64, footnote 8). The guidance states "If a project within an MS4 area is subject to and meets the applicable NHDES Alteration of Terrain (AoT) requirements (Env-Wq 1500, as amended), then the project will be considered to have met the antidegradation provisions". According to the Applicant, the Project will be exempt from direct AoT permitting, but will meet substantially equivalent requirements as detailed in a Memorandum of Agreement between NHDOT and NHDES (see Fact C-54). The Project will therefore, according to the Applicant, be considered to have met state Antidegradation provisions through subject MS4 permit guidance.

The 2018 NHDES guidance document mentioned above applies to MS4 projects unless NHDES believes additional conditions are necessary to ensure the project will comply with State surface water quality standards. As noted above, NHDES included the condition in the §401 Water Quality Certifications for the CGP and the MS4 permits that allows NHDES to include additional conditions (see Finding D-16). Conditions in a Water Quality Certification have precedence over guidance.

D-30. *List of Surface Water Impairments:* According to the 2018 305(b)/303(d) lists of impaired waters (see Fact C-47), the surface waters in the vicinity of the proposed Activity shown in Table 3 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:

Table 3- Existing Known Impairments in Waters Potentially Impacted by the Activity

Assessment Unit (AU)	**Waterbody Name**	**Cause of Impairment (Designated Use Impaired)**
NHLAK700061203-02-01	Beaver Lake	Chlorophyll-a (AL) Phosphorus Total (AL) pH (AL) **Mercury (FC)**
NHLAK700061203-03-01	Hoods Pond	**Hepatotoxic Cyanobacteria (PCR)**[12] **Mercury (FC)**
NHRIV700061203-08	Cat O Brook North	**Mercury (FC)**
NHRIV700061203-09	Beaver Brook	Benthic Macroinvertebrate Bioassessment (AL) pH (AL) **Chloride (AL)** ***Escherichia coli* (PCR)** **Mercury (FC)**
NHRIV700061203-11	Beaver Brook	**Chloride (AL)** **Mercury (FC)**
NHRIV700061203-23	Brook to Wheeler Pond	**Mercury (FC)**
NHRIV700061203-29	Cat O Brook South	**Mercury (FC)**
NHRIV700061203-45	Unnamed Brook	**Mercury (FC)**
	Other unnamed brooks and wetlands	**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. 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 Fact C-52).

D-31. *Impaired Waters without a TMDL (Beaver Lake):* A portion of the proposed project discharges to Beaver Lake. Beaver Lake is listed as being impaired for chlorophyll-a, total phosphorus, pH and mercury (see Finding D-30, Table 3). Elevated phosphorus levels can lead to elevated chlorophyll-a levels which can impact dissolved oxygen levels needed for aquatic life and recreational uses such as swimming. According to the ROD (see Fact C-62) "When stormwater plans are finalized, they must be consistent with the requirement in Part 2.3.6 of the MS4 permit that either no new or increased stormwater discharges will be introduced to Beaver Lake".

The FEIS (section 4.11.3 on p. 4-123 – see Fact C-62) states that the following:

> "When stormwater plans are finalized, they must be consistent with the requirement in Part 2.3.6 of the MS4 permit that either no new or increased stormwater discharges would be

[12] In 2008, Hoods Pond was listed as impaired for cyanobacteria. In 2012, a phosphorus TMDL was conducted and approved by EPA to address the cyanobacteria impairment. In the 2018 assessment, cyanobacteria is shown as being in category 3-ND (Insufficient Information – No Data) which suggests that more data should be collected to determine if Hoods Pond is impaired for nutrient-related response parameters such as cyanobacteria and chlorophyll-a.

introduced to Beaver Lake. The latter condition can be easily met for the redevelopment roadway segments of the Build Alternatives where the planned use of stormwater BMPs would result in treatment of currently untreated stormwater areas (e.g., Tsienneto Road and NH 102) and should easily offset the effects of minor road widening pavement increases."

D-32. *Impaired Waters With Total Maximum Daily Load (TMDL) Studies*

a. *TMDL – General*: A Total Maximum Daily Load (TMDL) establishes the maximum amount of a pollutant that can be allowed in a waterbody to achieve water quality standards for all designated uses. TMDL studies identify the sources of the pollutant(s) of concern and allocate the allowable pollutant load amongst the sources. A TMDL is determined as: TMDL = WLA + LA + MOS where "WLA" is the waste load allocation for point sources of a pollutant; "LA" is the load allocation for nonpoint sources of a pollutant; and "MOS" is the margin of safety to account for uncertainty and unknowns. All TMDLs are subject to public review and comment and review and approval by EPA[13].

b. *Mercury TMDL*: As indicated in Finding D-30, Table **3**, all fresh surface water in New Hampshire are impaired for mercury due to concentrations found in fish tissue which have resulted in a statewide fish consumption advisory. In 2007, EPA approved the Northeast Regional Mercury TMDL which addressed mercury impairments in all New Hampshire fresh surface waters (see Fact C-48). 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.

c. *Bacteria TMDLs and Implementation*: Beaver Brook (NHRIV700061203-09) is listed as impaired for bacteria (*Escherichia coli*) (see Finding D-30, Table 3). In 2010, EPA approved the Statewide Bacteria TMDL for 394 surface waters (see Fact C-49). Appendix F of the MS4 permit (see Fact C-64) includes measures that must, as a minimum, be implemented to reduce bacteria levels in these surface waters.

d. *Hoods Pond Phosphorus TMDL and Implementation*: Hoods Pond is an impoundment on Shields Brook. A portion of the proposed project discharges within the Hoods Pond watershed. In 2012, EPA approved the Phosphorus TMDL for Hoods Pond in Derry, New Hampshire (see Fact C-50). The TMDL was conducted because of the presence of hepatotoxic cyanobacteria which was impairing the primary contact recreation (i.e. swimming) designated use. Elevated phosphorus levels can contribute to elevated cyanobacteria levels. The TMDL suggests that in order to reduce cyanobacteria blooms, phosphorus loads in 2012 need to be reduced by approximately 75%.

   Appendix F of the MS4 permit includes measures that must, as a minimum, be implemented to reduce phosphorus levels in Hoods Pond. According to Appendix F, and Part 2.2.2.f. of the MS4 permit, the requirements in Appendix F apply to MS4s that discharge to waterbodies "listed on Table F-2 in Appendix F or their tributaries". Because Hoods Pond is listed in Table F-2 of Appendix and because the proposed project discharges to tributaries of Hoods Pond, Appendix F applies. However, for reasons indicated in footnote 12, it may be appropriate to collect more data to determine if Hoods Pond is impaired for nutrient related response parameters such as

[13] General TMDL information and specific information regarding NH TMDL studies is available on the NHDES TMDL website.

cyanobacteria and chlorophyll-a and if the load reductions specified in the Hoods Pond TMDL are still appropriate.

The ROD (see Fact C-62 and Finding D-26) states that the proposed project "…will be required to develop and/or adopt a lake phosphorus control plan or other approved management plan consistent with the requirements of the MS4 permit to demonstrate conformance with the water quality goals of the Hoods Pond phosphorus TMDL, including TP load reductions in Shields Brook watershed".

The FEIS (section 4.11.3 on p. 4-123 – see Fact C-62) states the following:

> "It is expected that the Project stormwater management plan can be consistent with the waste load allocation goals of the Hoods Pond TMDL, which amounts to a 76 percent reduction of TP load in Shields Brook watershed. Currently, stormwater treatment BMPs are not used in the Project area within the Hoods Pond watershed. The provisions for BMP treatment of stormwater in new development and redevelopment projects specified in Part 2.3.6 of the MS4 permit and the Project plans that include treating currently untreated stormwater areas should result in a net decrease in pollutants in the Hoods Pond watershed. Final stormwater plans would have to ensure that the Project stormwater treatment plans are consistent with Hoods Pond phosphorus TMDL goals."

e. *Beaver Brook Chloride TMDL and Implementation:*

1. *TMDL:* In 2008, the NHDES prepared TMDL studies for four waterbodies in southern New Hampshire that were adjacent to I-93. One of those TMDLs was for Beaver Brook, AU NHRIV700061203-16 in Derry and Londonderry, which includes the surface waters within the Upper Beaver Brook Watershed where the Activity is proposed (see Fact C-51). According to the Beaver Brook Chloride TMDL, the majority (~95%) of chloride loading in the watershed is associated with de-icing activities for public and private roadways and parking lots. The TMDL was set as a load duration curve based on the chronic water quality standard (230 mg/L Cl) reduced by 10%, to include a 10% margin of safety, (207 mg/L Cl) multiplied by each streamflow value in a four-day average flow duration curve determined by NHDES. The load duration curve expresses the TMDL in tons of chloride per day that can be imported to the watershed at a given flow and meet the chronic water quality standard. Of the daily salt import total expressed by the TMDL, 66% is reserved for the WLA (MS4 permittees) and 34% is reserved for the LA (nonpoint sources). NHDES has also expressed the TMDL for Beaver Brook as an alternative form, the percent reduction goal, which establishes an annual salt load allocation in tons of salt per year. The annual salt load allocation is not the TMDL (the TMDL is the load duration curve), but is used for implementing the TMDL by establishing a longer term goal (i.e. versus daily criteria) for watershed salt imports that can be expected to meet water quality standards. Based on empirical water quality data and annual salt imports from all salt sources in the watershed and including a 10% margin of safety, NHDES set the annual Upper Beaver Brook watershed salt load allocation at 9,069 tons of salt per year. The TMDL report also sets forth the process by which each sector would be allocated an annual quantity of salt to be applied (the "salt load"). The recommended salt loads were negotiated via a Salt Reduction Workgroup, with representatives from each sector of salt applicators. Recommended salt loads per sector were established in the "Chloride Reduction Implementation Plan for Beaver Brook – Derry, Londonderry,

Auburn, Chester, NH" [14]. (The information above is primarily based on information in the Chloride Technical Report included as Appendix G in the FEIS).

2. *Implementation:* Chloride mitigation in the Upper Beaver Brook watershed is addressed in the 2017 MS4 permit (see Fact C-64). In 2019, the Applicant, as well as the Towns of Derry and Londonderry, were granted authorization by EPA to discharge stormwater from their MS4 areas in accordance with applicable terms and conditions of the 2017 MS4 permit including all applicable Appendices (see Fact C-65). Appendix F and Appendix H of the MS4 permit include salt reduction and tracking requirements for municipal as well as privately maintained surfaces that are very similar. Appendix F applies to discharges that discharge directly to the waterbody segment(s) [i.e., assessment unit(s)] named in the EPA approved chloride TMDL. The requirements in Appendix H apply to discharges that discharge directly to a waterbody assessment unit that is impaired for chloride but is not specifically named in an EPA approved chloride TMDL[15].

A requirement of the 2017 MS4 permit is for permittees that discharge into a waterbody subject to an approved chloride TMDL to develop a chloride reduction plan by July 2019, as detailed in Appendix F of the MS4 permit. The Beaver Brook chloride TMDL specifies a maximum total daily load for chloride of which 66% is reserved for the wasteload allocation (WLA) for point sources (i.e. MS4 permittees) and 34% is reserved for the load allocation (LA) for nonpoint sources (see section e.1. of this Finding). The alternative expression of the TMDL sets an annual total salt load allocation for the Upper Beaver Brook watershed at 9,069 tons/year. The Exit 4A Project would be operated under the MS4 permit and therefore would be subject to the conditions in Appendix F of the MS4 permit including the requirement to reduce chloride discharges to support achievement of the WLA included in the applicable approved TMDL. Because the Beaver Brook chloride TMDL has a fixed annual salt load allocation distributed among current sectors, and because the MS4 permit requires permittees to support achievement of the applicable TMDL WLA, any new development in the watershed would require load reductions elsewhere in the watershed to be consistent with the TMDL and MS4 permit conditions. Development projects such as the proposed Activity can occur in the Upper Beaver Brook watershed as long as the 9,069 tons/year salt load allocation is not exceeded as a result of the development. The means of reducing chlorides and supporting achievement of the WLA for permitted stormwater discharges, subject to a chloride TMDL is specified in Parts 2.1.2 through 2.3.6 and Appendix F of the MS4 permit. Through adherence to the conditions of the MS4 permit and the associated Water Quality Certification (see Fact C-64), new or increased discharges can be authorized while ensuring that such discharges do not cause or contribute to an exceedance of water quality standards. (This paragraph is primarily based on information in the Part 4.5.2 of the ROD- see Fact C-62).

The Exit 4A Project will contribute an additional salt load to Beaver Brook, estimated to be 99.4 tons/year (from Appendix G of the FEIS – see Fact C-62). This load represents 1 percent of the 9,069 tons/year Upper Beaver Brook watershed salt load allocation. This additional salt load is expected to be offset by the Applicant and the Towns of Derry and

[14] Chloride Reduction Implementation Plan for Beaver Brook, Derry, Londonderry, Auburn, Chester, NH. NHDES, Watershed Management Bureau, Concord, NH. August, 2011.
[15] From correspondence with EPA NPDES permitting staff on April 9, 2020.

Londonderry through the execution of chloride reduction plans, as required in the MS4 permit.

The 2011 TMDL chloride reduction implementation plan[14] developed in support of the Beaver Brook chloride TMDL, outlines a number of BMPs that can be used to achieve significant reductions in salt use by the various salt users in the watershed as discussed in Section 2.3 of Appendix G of the FEIS (see Fact C-62). Many of the same salt reduction activities identified in the TMDL implementation plan are also identified in Appendix F of the MS4 permit as recommended components of a permittees required Chloride Reduction Plan. The salt reduction BMPs identified in the 2011 TMDL chloride reduction implementation plan [14] are summarized in Table 4 including the associated % chloride reduction potential for each BMP and the implementation status to date by the Applicant and the Towns. More detailed descriptions of salt reduction measures implemented by the Applicant and the Towns are provided in Section 2.3 of Appendix G of the FEIS (see Fact C-62). As demonstrated in Table 4, many salt applicator BMPs which are planned or already implemented in the watershed have the potential to reduce salt use, during the specified operation, by as much as 30-50%. These actions also address the salt reduction activities listed in Appendix F of the MS4 and therefore will likely be included as core components of the required Chloride Reduction Plans for Applicant and the Towns and will likely be extended to any future actions requiring chloride mitigation, including the proposed Exit 4A Project. (This paragraph is primarily based on Appendix G of the FEIS - see Fact C-62).

Table 4. Chloride BMPs (from Table 9 in Appendix G for the FEIS)

Chloride Reduction BMPs	Definition	Potential % Chloride Reduction [a]	Implementation Status
Pre-Wetting	Application of salt brine or proprietary chemical to dry salt as it is being applied to the roadway	20% - 30%	NHDOT – Implemented Derry – Implemented Londonderry - Implemented
Pre-Treating	Application of salt brine or proprietary chemical to dry salt either before, during, or after it has been loaded into the truck	10% - 30%	NHDOT – Planned Derry – Planned Londonderry – Not Planned
Anti-Icing	Application of salt brine or proprietary chemical up to 48 hours in advance of onset of storm	10% - 30%	NHDOT – Implemented Derry – Planned Londonderry – Not Planned
Zero-Velocity Spreaders	Spreader ejects salt particles at the same velocity of the forward motion of the truck's traveling speed, allowing salt to drop as if the spreading vehicle was standing still.	10% - 50%	NHDOT – Not Planned Derry – Not Planned Londonderry – Not Planned

Chloride Reduction BMPs	Definition	Potential % Chloride Reduction [a]	Implementation Status
Groundspeed Oriented Spreader Controls	Allows accurate dispensation of prescribed salt application rates irrespective of vehicle speed. Controls can be integrated to automatically vary application with ground temperature. Controller units can integrate GIS and wirelessly download application rate data for review.	10% - 30% [b]	NHDOT – Implemented Derry – Implemented Londonderry - Implemented
Equipment Calibration	Ensures equipment application of chlorides is accurate.	5% - 20%	NHDOT – Implemented Derry – Implemented Londonderry - Implemented
In-Cab Air/Ground Temp. Sensor	Installation of pavement and air temperature sensors with in-cab readout.	1% - 10% [b]	NHDOT – Implemented Derry – Implemented Londonderry - Implemented
Training, improved storage and handling practices	Training staff about various best management practices, improving storage and handling practices for loading and unloading salt.	10% - 25% [b]	NHDOT – Implemented Derry – Implemented Londonderry - Implemented
Notes: a. Reductions assumed do not take into account existing practices. b. Highly dependent on existing procedures and level of adoption.			

To monitor the effectiveness of chloride reduction efforts, the Applicant, Derry, and Londonderry have committed to providing funds for NHDES to continue the in-stream chloride TMDL monitoring program in the Upper Beaver Brook watershed as proposed in an NHDES memo dated November 30, 2018, titled "Revised I93 TMDL Implementation Monitoring Plan." Chloride monitoring will be funded for a period of five years. If water quality standards exceedances are indicated by the chloride monitoring program, NHDOT and the Towns will work with NHDES and EPA on appropriate next steps to achieve the Beaver Brook chloride TMDL. (This paragraph is primarily based on section 4.5.2 of the ROD - see Fact C-62).

D-33. *Long-Term Maintenance of Stormwater System:* the Applicant (NHDOT), Derry and Londonderry will be responsible for the post construction long-term maintenance practices of the stormwater system (including stormwater treatment BMPs) associated with the project in accordance with Part 2.3.6 of the MS4 which requires such maintenance practices to be in accordance with NHDES Alteration of Terrain regulations (see Fact C-55 and Fact C-64).

D-34. *Commitment to On-going Coordination:* The Applicant has committed to on-going and continuous coordination with NHDES throughout the design-build process in order to ensure that the potential for unanticipated environmental degradation is minimized, to include providing NHDES with pre-decisional copies of water quality-related design and construction information for review and comment. The NHDOT has also committed to incorporating all comments received from NHDES necessary to ensure surface water quality standards are met into the design and construction of the project.

E. WATER QUALITY CERTIFICATION CONDITIONS

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

E-1. **Compliance with Certification Conditions:** The Activity shall 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 differ from information submitted with the §401 Water Quality Certification application (see Fact C-59) and which could have a significant or material effect on the conditions of 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 all Applicable Permits and Related Documents:** The Applicant shall comply with all applicable permits and related documents associated with, or resulting from the Activity, including, but not limited to, those listed in Finding D-17 of this Certification. Should there be any discrepancies between permit requirements, the more stringent requirement as it relates to compliance with New Hampshire surface water quality standards shall apply.

E-8. **Construction Documents:** Upon receipt from the Contractor, the Applicant shall provide NHDES with the 80% design submission, and 100% (final) design submission, including supporting information, in electronic and, if requested, paper format. The Applicant shall allow NHDES a minimum of 21 days from the date NHDES receives each submission to review and provide written comments on the submission. The Applicant shall submit written responses to NHDES' comments that are acceptable to NHDES. The supporting information shall include, but not be limited to, the information in items a through d below. The Applicant may submit a written request to NHDES to waive some or all of the items below if changes from the previous design submission are minimal.

a. Administrative documentation for compliance with effluent limitations as specified in Part 2.3.6 of the MS4 permit.

b. A summary of any changes to 1) stream relocation design, and 2) stormwater drainage system design and layout, including all surface water crossings and stormwater treatment BMPs.

c. Drainage/grading plans showing each outfall shown in the stormwater routing diagram specified above in item c. of this Condition, and the portions of each roadway which drains to each outfall (i.e., similar to the "Water Quality Plans" provided with the § 401 Water Quality Certification application).

d. An excel spreadsheet showing the following for each outfall shown in the routing diagram specified below in item d.5. of this Condition.
   1. The BMP treatment type (if any);
   2. for all roads that drain to each outfall provide
      - the road name,
      - the beginning and ending station,
      - the existing impervious area,
      - the new impervious area (in square feet),
      - the treated impervious area,
      - the untreated impervious area, and
      - the impervious area that is removed;
   3. for each outfall provide
      - the total existing impervious area,
      - the total new impervious area,
      - the total treated impervious area,
      - the total untreated impervious area, and
      - the total impervious area that is removed;
   4. the receiving water name for each outfall;
   5. the upstream and downstream outfall identification number (including a stormwater outfall routing diagram showing each treated and untreated outfall, the name of the receiving waters that they drain to, the outfalls which are upstream and downstream, and the outfalls which drain to Hoods Pond and Beaver Lake);
   6. if the BMP is tributary to Hoods Pond; and
   7. If the BMP is tributary to Beaver Lake.

E-9. **Compliance with this Certification:** Within 30 days of receiving a written request from NHDES, the Applicant shall provide documentation demonstrating compliance with this Certification (or parts of this Certification as directed by NHDES). Should NHDES identify areas of noncompliance, NHDES will advise the Applicant in writing. The Applicant shall then consult with NHDES and correct the areas of noncompliance in a manner acceptable to NHDES.

E-10. **Stormwater Pollution Prevention Plan (SWPPP) and BMP Inspection Reports:** The Applicant shall provide a copy of the SWPPP and/or BMP construction BMP inspection reports required by the NPDES Construction General Permit (CGP) within 48 hours of receiving a written request from NHDES.

E-11. **BMP Inspection, Discharge Turbidity Monitoring and Reporting Plan and Reports:** Prior to construction, the Applicant shall submit to NHDES for comment, a BMP Inspection, Discharge Turbidity Monitoring and Reporting Plan (Plan) that complies with the NPDES Construction General Permit (CGP) and Attachment A of this Certification. The Plan, which shall be included in the Storm Water Pollution Prevention Plan (SWPPP), shall include, but not be limited to:

a. individual(s) responsible for inspecting the site and their qualifications;
b. provisions to measure and report precipitation;

c. how forecasted precipitation will be determined for the purpose of determining pre-storm inspections;
d. frequency of inspection, including increased inspection frequency for sensitive waters;
e. locations of discharge points declared in the Notice of Intent for the CGP;
f. locations of surface waters as defined in Env-Wq 1702.44 of the NH surface water quality standards (which include "Waters of the United States"- see Fact C-11) immediately adjacent to the site;
g. make, model and accuracy of turbidity meters; and
h. quality assurance/quality control (QA/QC) provisions and sampling protocols.

Turbidity monitoring and inspection reports shall be submitted to NHDES within 48 hours of receiving a written request (e.g., email) from NHDES.

E-12. **Water Quality Monitor**: The Applicant shall use an Independent Environmental Monitor (Monitor) to ensure that construction of the Activity complies with NH surface water quality standards. The Monitor shall have at least five years of experience with water quality monitoring of large linear construction projects. Qualifications of the Monitor shall be submitted to NHDES for review and the Monitor ultimately used shall be acceptable to NHDES. The Applicant shall consult with NHDES to develop a water quality monitoring work scope that is acceptable to NHDES prior to the start of construction. The work scope shall include, but not be limited to, turbidity monitoring in surface waters receiving discharge from the Activity to determine compliance with the turbidity water quality criteria in Env-Wq 1703.11 of the NH surface water quality standards.

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.

Approved electronically by email (see Attachment B of this Certification)

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

cc via email:
Michael Hicks, USACOE
David Caron, Town Administrator, Derry
Kevin Smith, Town Manager, Londonderry
Carol Henderson, NHFGD
Beth Alafat, USEPA

Attachment A:
Contract Provisions Regarding Inspections and Turbidity Monitoring Required by NHDOT that are in Addition to CGP Requirements

In addition to all required actions specified in the Construction General Permit (CGP), the Contractor shall comply with the following additional provisions required by the New Hampshire Department of Transportation (NHDOT):

A-1. Pre-storm BMP inspections: The Contractor shall conduct a pre-storm inspection of all erosion control and stormwater BMPs in accordance with all applicable CGP and NHDES Alteration of Terrain (AoT) regulation no less than weekly and no more than 24 hours prior to the start of any forecasted precipitation event of 0.5 inches or more in a 24-hour period that is predicted to occur during the work week, or no sooner than Friday if the forecasted precipitation event is predicted to occur during the weekend when work is not occurring.

A-2. Specification for portable turbidity meters:

- Turbidity Range: 0.01 to 1100 NTU
- Accuracy: ±2% < 100 NTU; ±3% > 100 NTU
- Resolution: .01 NTU < 10 NTU; .1 NTU < 100 NTU; 1NTU; < 1100 NTU
- Analytical Method: ISO 7027
- Must be rechargeable and have a charger
- Contain twelve (12) sampling vials;
- Have a calibration kit
- Meter shall be provided to NHDOT for approval.

A-3. Turbidity Monitoring Quality Assurance/Quality Control Protocols: Portable turbidity meters shall be recalibrated daily prior to collection of the first sample with results recorded on the field data sheet. At least one duplicate sample shall be taken for every 10 samples taken each day that turbidity monitoring occurs, with results and identification of the duplicate sample clearly identified and recorded on the field data sheet (i.e., 1 duplicate for between 1 and 10 samples, another duplicate for between 11 and 20 samples and so on). If the relative difference between the duplicate measurement and the original measurement exceeds 10%, recalibrate the turbidity meter and re-measure turbidity. At least one blank sample shall be taken for every 10 samples taken each day that turbidity monitoring occurs and recorded on the field data sheet. Blank samples shall be taken by filling a sample container with deionized water and measuring the turbidity immediately after. Turbidity samples shall be taken in accordance with the following protocols:

- Rinse sampling container three times with water from the waterbody.
- Submerge sampling container a minimum of an arm's length upstream and allow the container to fill.
- Do not collect any water immediately adjacent to legs or boots.
- Ensure that any introduced air bubbles are removed prior to analysis.
- Immediately cap the sample container.

A-4. Inspection and Turbidity Monitoring of Sensitive Discharge Locations: Where earth has been disturbed and is not yet stabilized at the "sensitive discharge locations" shown in Table A-1, inspections shall be conducted at least weekly, and within 24 hours following a precipitation notice of 0.25 inches or greater.

If notified during non-business hours, the inspection shall occur within two hours of the start of the next regular business day.

Table A-1: Sensitive Discharge Locations

ID	AU
003	NHRIV700061203-23 BROOK TO WHEELER POND
025	NHRIV700061203-11 BEAVER BROOK
046	NHRIV700061203-29 CAT O BROOK SOUTH
049	NHRIV700061203-08 CAT O BROOK NORTH
052	NHLAK700061203-02-01 BAVER LAKE

The Contractor shall take turbidity samples of every discharge at each sensitive discharge location and include the results in the inspection report. Turbidity monitoring shall commence within two hours of a precipitation notice of 0.25 inches or greater and continue every two hours during regular business hours while there is discharge. Turbidity monitoring of the discharges may cease after the precipitation event ends and turbidity values in the discharge are less than or equal to 33 NTU, or after the discharge ends. If notified during non-business hours, turbidity monitoring (if there is a discharge) shall occur within two hours of the start of the next regular business day. The turbidity monitoring discussed herein is in addition to the turbidity monitoring specified in Part 9.1.1 of the CGP.

A-5. Summary of inspection findings including compliance with Part 9.1.1.c of the CGP: The Contractor shall a) record all turbidity measurements for each active discharge point, b) record the results of daily checks for visible turbidity (i.e., plumes) attributed to the discharge in all receiving surface waters as defined in Env-Wq 1702.44 of the NH surface water quality standards, which include “Waters of the United States”, c) record forecasted precipitation amounts, the applicable precipitation gauge reading that triggered the inspection and actual precipitation amounts for each event d) identify any incident of noncompliance, and e) based on the inspection results, complete any necessary maintenance or corrective actions. If visible plumes are observed in the receiving water and/or an exceedance occurs in the discharge of the turbidity thresholds specified in Part 9.1.1.c of the CGP (i.e., greater than the acute exceedance threshold of 66 NTU at any time and/or greater than the chronic monthly average exceedance threshold of 33 NTU) the Contractor shall complete any necessary maintenance under Part 2.1.4 and/or corrective action under Part 5 of the CGP.

Attachment B
Email from Thomas E. O'Donovan, P.E., Director, NHDES Water Division
Approving WQC #2019-404I-002

From: O'Donovan, Thomas
Sent: Thursday, May 28, 2020 1:43 PM
To: Comstock, Gregg
Cc: Diers, Ted
Subject: RE: Exit 4A WQC ready for approval

Gregg, Approved, and thanks.

Thomas E. O'Donovan, PE, PMP
Director, Water Division
New Hampshire, Department of Environmental Services

"The mission of the Department of Environmental Services is to help sustain a high quality of life for all citizens by protecting and restoring the environment and public health in New Hampshire."

From: Comstock, Gregg <Gregg.Comstock@des.nh.gov>
Sent: Thursday, May 28, 2020 1:16 PM
To: O'Donovan, Thomas <Thomas.ODonovan@des.nh.gov>
Cc: Diers, Ted <Ted.Diers@des.nh.gov>
Subject: Exit 4A WQC ready for approval
Importance: High

Tom,
Water Quality Certification (WQC # 2019-404I-002) for the NHDOT Exit 4A project in Londonderry and Derry, NH is ready for your review and approval. Please send me an email indicating your approval (which I will attach at the end of the WQC) today.

Should you have any questions, please do not hesitate to contact me.

Thank you.

Gregg

Gregg Comstock, P.E.
Supervisor, Water Quality Planning Section
Watershed Management Bureau
Water Division, NH Department of Environmental Services
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