NHDES Section 401 Water Quality Certification Application

Cambridge, New Hampshire
16304B
X-A004(699)
June 2022
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Application for Water Quality Certification Form
APPLICATION FOR WATER QUALITY
CERTIFICATION
Water Division
Water Quality Certification Program

RSA: 485-A: 12, III and IV

Date of Request
Date Request Received by NHDES _________________

I. Applicant Information

| Principal Place of Business of the Applicant | NH Department of Transportation |
| Mailing Address [Street, PO Box, RR, etc.] | 7 Hazen Drive |
| City/Town and ZIP Code | Concord, NH 03302 |
| Telephone No. | 603-271-3226 |
| Email Address | jonathan.a.evans@dot.nh.gov |
| Name and Title of Signatory Official | Timothy Dunn, PE, NHDOT Project Manager |

II. Project Information

| Name of Project | Dummer-Cambridge-Errol, 16304B |
| Name of Town and County | Cambridge (Unincorporated), Coos County |
| Name of Receiving Waterbody | Androscoggin River |
| Summary of Activity | The proposed NHDOT project is a roadway construction project involving an alignment shift of a 1.3-mile segment of NH Route 16. See attached Supplemental Information for additional details. |
III. Additional Submittal Information

PLEASE SUBMIT AS MUCH INFORMATION AS POSSIBLE IN ELECTRONIC FORMAT

Please provide an individual response to each bullet, below. If applicable information is contained in the application materials, please provide a reference to the specific section in the application materials that will represent the response to the individual bullets below.

- **Type of activity (e.g., construction, operation, other action such as water withdrawal) and the start and end dates of the activity.**
- **The characteristics of the activity: Whether the activity is associated with a discharge and/or water withdrawal and whether the discharge and/or withdrawal is proposed or occurring.**
- **The characteristics of the discharge and/or withdrawal:**
  - Flow rate (cfs).
  - Potential chemical, physical, biological constituents.
  - Frequency (e.g., daily, hourly).
  - Duration.
  - Temperature (Celsius).
  - Latitude and longitude (dd:mm:ss).

- **The existing and designated use(s) that are potentially affected by the proposed activities.** (Designated Uses are listed in the NHDES Consolidated Assessment and Listing Methodology.)
- **The provision(s) of surface water quality standards (Env-Wq 1700) that are applicable to the designated uses affected by the proposed activities.**
- **A pollutant loading analysis to show the difference between predevelopment and post-development pollutant loads for a typical year. The objective of the loading analysis is to show post-development pollutant loads do not exceed pre-development pollutant loads. Loading analysis guidance and a simple spreadsheet model will be provided by NHDES. The loading analysis will be used to determine appropriate stormwater management measures, which must be effectively designed, installed, and maintained to ensure compliance with surface water quality standards.**
- **A description of any other aspect of associated with construction and operation of the activity that would affect the chemical composition, temperature, flow, or physical aquatic habitat of the surface water.**
- **An original or color copy/reproduction of a United States Geological Survey Quadrangle Map that clearly shows the location of the activity and all potential discharge points.**
- **A copy of the final complete federal permit application or federal license application, including the federal permit, license, or project number.**
- **A copy of the NHDES wetlands permit (RSA 482-A:3), if necessary.**
- **A copy of the NHDES alteration of terrain permit (RSA 485-A:17), if necessary.**
- **A plan showing the proposed activities to scale including:**
  - The location(s) and boundaries of the activities.
  - The location(s), dimension(s), and type(s) of any existing and/or proposed structures.
  - The location(s), name(s), identification number(s), and extent of all potentially affected surface water bodies, including wetlands.
- **For projects that involve a new surface water withdrawal, provide the following:**
A copy of the water conservation plan (WCP) submitted to the NHDES Water Conservation Program and the status of NHDES approval.

A copy of a waiver approved by the NHDES Water Conservation Program that waives the requirement to submit a WCP prior to or in conjunction with the application for water quality certification.

- Pursuant to Env-Wq 2101, and unless a waiver is applied for and granted by NHDES, all applicants for water quality certification are required to submit a water conservation plan (WCP) for projects that involve a new withdrawal from a surface water prior to or in conjunction with this application. Contact the NHDES Water Conservation Program for guidance related to drafting a WCP and the review and approval process. Information regarding the WCP, including contact information, may be found at the NHDES Water Conservation website.

- If the project is located within ¼ (one quarter) mile of a designated river, as defined under RSA 483 (the Rivers Management and Protection Act), provide documentation showing that the Local River Management Advisory Committee (LAC) has been provided with a copy of this complete application. A list and map of the designated rivers, as well as contact information, may be found at the NHDES Rivers Management and Protection website.

**Signature – MUST BE SIGNED AND DATED BY APPLICANT**

To the best of my knowledge, the data and information described above, which I have submitted to the New Hampshire Department of Environmental Services, is true and correct. I understand that an approval of the requested water quality certification based upon incorrect data may be subject to revocation of the certification. I have complied with all local regulations or ordinances relative to the proposed activity and have obtained or will obtain, prior to the commencement of any work, all other approvals that may be required.

Signed: _____
Date: ______

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Application for Water Quality Certification Form
Supplemental Information
SUPPLEMENTAL INFORMATION

Project Overview

The New Hampshire Department of Transportation (NHDOT) is proposing a roadway improvement project along a 1.3-mile segment of NH Route 16 (NH 16) located in Cambridge, New Hampshire. Cambridge is an unincorporated township located in Coos County. The southern terminus of the project is located approximately 1,000’ east of the Dummer-Cambridge town line, and the project continues north along NH 16 for approximately 1.3 miles (see attached Figure 1 – USGS Location Map and Figure 2 – Tax Map). The project is located along a remote, rural segment of NH 16 approximately 17.5 miles north of Berlin, New Hampshire, and approximately 10 miles south of the intersection of NH Route 26 (Main Street) in Errol, New Hampshire. The Androscoggin River parallels the roadway and is located immediately east of NH 16 throughout the entire length of the project corridor. The 13 Mile Woods Community Forest is located adjacent to the project corridor to the west. The proposed project involves a roadway realignment ranging from approximately 15’ to 385’ to the west, away from the Androscoggin River.

The purpose of the proposed project is to address the poor condition of the pavement and road base and provide a sustainable roadway that maintains the connectivity of the corridor, minimizes long-term maintenance and safety concerns resulting from the proximity of the Androscoggin River, and preserves the scenic quality of the surrounding area.

The need for this project is evidenced by the following:

- Maintaining NH 16 as a safe, reliable corridor is essential to this region of the state. NH 16 is one of two major north-south corridors in the North Country. Tourism, outdoor recreation, logging, manufacturing, and other economically vital industries rely on NH 16 on a daily basis, as do local residents, with most commuting to jobs located to the south in Berlin and Gorham. The 2015 North Country Council Regional Transportation Plan identifies NH 16 as a regional priority in the Berlin-Gorham socioeconomic center.
The section of NH 16 within the project area was constructed in the late 1950s/early 1960s with only minor resurfacing since that time. The road was never formally designed and constructed and there is no structural base under the roadbed. Due to the condition of the road and the influence of the river on the roadbed, frost heaving can be severe in the spring. This creates a safety concern for the traveling public, results in excessive wear and tear on vehicles, and hinders winter maintenance. The condition of the road is determined by its roughness. The International Roughness Index (IRI) measures the vertical movement, or bumpiness, that occurs along a route, with pavement in good condition having an IRI of less than 95. The IRI throughout much of the project area is classified as poor, with values between 170 and 350. Addressing the poor pavement condition of NH 16 is listed as a priority in the 2015 North Country Council Regional Transportation Plan.

Due to the poor condition of the roadway, the NHDOT must implement seasonal load weight restrictions along this section of NH 16 for approximately two months every year. In 2018, weight restrictions were in place from the first week of March to the second week of May. The maximum vehicle weight allowed on the posted road is 15 tons, with most loaded trucks prohibited and required to use lengthier alternative routes (US Route 3/NH 26).

The slopes between NH 16 and the Androscoggin River have a history of instability, and a number of slope failures have occurred in recent years to the north and south of the project area. Evidence of slope instability has been observed within the project area in the last year. Slope failures cause concern for public safety, require traffic delays or detours during repairs, and result in negative impacts to the river from sedimentation and loss of riparian habitat.

The following information addresses Section III, Additional Submittal Information, listed on the Application for Water Quality Certification.

1. **Type of Activity:**
   The proposed activity involves the realignment and construction of a 1.3-mile segment of NH 16 in Cambridge, NH, with the new roadway alignment shifting from approximately 15’ to 385’ to the west of the existing alignment, away from the Androscoggin River. The Androscoggin River is the primary water body in the project area. Two unnamed perennial tributaries to the river pass under NH 16 within the project limits. Extensive wetland systems exist along the length of the project to the west of NH 16.

   The project is currently scheduled to advertise for bids in January 2023, with construction anticipated to begin in early spring 2023. The duration of construction is expected to be 2 years.

2. **Characteristics of the Activity:**
   Stormwater runoff is the only discharge associated with the proposed project. The project does not propose any point source discharges or water withdrawals.

   The proposed roadway typical will provide two 11’ travel lanes and two 4’ shoulders. This represents an increase in paved shoulder width from 1 to 4 feet, adding +/-3 feet to either side and increasing the road width by 6 feet, on average. The pavement width of the new road will be 30 feet. The increased shoulder width is proposed to meet current design standards and to address safety concerns associated with a
posted speed limit of 50 mph on a minor rural arterial highway that carries traffic consisting of 14% trucks. Pavement from the abandoned section of roadway will be removed. The proposed project will result in a net increase of 0.5 acres of impervious area, for a total area of 4.75 acres.

Under existing conditions, stormwater runoff currently sheet flows off both sides of the roadway into adjacent wetlands and upland areas that drain to the Androscoggin River. There is no existing stormwater treatment in the project area. Some segments of the NH 16 in the project area are located within 15 feet of the Androscoggin.

Under proposed conditions, stormwater runoff will sheet flow off the edge of the pavement directly into a vegetated roadway buffer, discussed in more detail below, with the new edge of pavement ranging from 45’ to 450’ from the river. The buffer that will result from the proposed alignment will be approximately 20.5 acres in size along the length of the project. The amount of pavement that will be directed into the vegetated buffer (1.22 acres) is more than double the amount of pavement that will be added by the project (0.5 acres).

As described in Section 6 below, the proposed vegetated buffer will provide stormwater treatment and will minimize the potential pollutant load increase that could result from the proposed project. The section of the Androscoggin River adjacent to the project is Assessment Unit NHRIV400010602-04, and the two unnamed tributaries in the project area are NHRIV400010602-28 and NHRIV400010602-08. None of the three Assessment Units in the project has any listed Category 5 surface water impairments. Mercury is listed as a Category 4A impairment. In the Northeast, over 10,000 lakes, ponds, and reservoirs, and over 46,000 river miles are listed as impaired for fish consumption primarily due to atmospheric deposition of mercury. The mercury impairment is addressed in the Northeast Regional Mercury TMDL study. The proposed project will have no effect on the existing mercury impairment of the surface waters within the project limits.

3. **Characteristics of the Discharge and/or Withdrawal:**

During construction of the project, adherence to the EPA’s Construction General Permit, including the implementation of a Stormwater Pollution Prevention Plan, will minimize or avoid impacts to water quality and the associated designated uses within the project area.

Following construction of the project, the new alignment of the roadway and the presence of a vegetated buffer between the road and river will result in negligible changes in water quality and the designated uses of the project area’s surface waters. Section 6 below provides more detail on the pollutant loading analysis.

4. **Existing & Designated Use(s) Potentially Affected by the Proposed Activities:**

The Androscoggin River and its tributaries have the following existing and designated uses: aquatic life integrity; fish consumption; potential drinking water supply; swimming and other recreation; and wildlife habitat.

5. **Applicable Surface Water Quality Standard Provisions (Env-Wq 1700):**

The Androscoggin River and its tributaries are classified as Class B waters. There are no water quality standards applicable to this classification or specific designated uses that are pertinent to this project. The
The proposed project is, however, subject to Part Env-Wq 1708, the antidegradation provisions of the surface water quality standards. Antidegradation provisions are intended to ensure that existing and designated uses of surface waters are maintained and protected.

Based on pollutant loading analysis, discussed in the section below, the project is not anticipated to adversely affect the existing and designated uses of the Androscoggin River or its tributaries.

6. **Pollutant Loading Analysis:**

Of the 4.75 acres of proposed pavement resulting from the project, approximately 1.22 acres of pavement will be directed to vegetated roadway buffers meeting the design guidelines contained in the NHDES Stormwater Manual. Figure 1 in Appendix D highlights the pavement areas within the project limits that will be directed to vegetated roadway buffers. The amount of pavement that will be directed to vegetated roadway buffers (1.22 acres) is more than double the amount of pavement that will be added by the project (0.5 acre). The vegetated roadway buffer will be located along the east side of the roadway once the road is shifted to the west. Stormwater will sheet flow off the edge of pavement directly into the buffer.

Of the roadway length that will be directed to the vegetated buffer, approximately 1895 feet will consist of one travel lane plus shoulder and approximately 929 feet of roadway will consist of two-lanes or full roadway width. Where the roadway is normal crown along the centerline, only the east side of the roadway can be directed to the vegetated buffer while the entire roadway width can be directed to the vegetated buffer where the roadway is superelevated through a curve.

NHDES’s Simple Method Pollutant Loading Spreadsheet was utilized to estimate pollutant loadings associated with the pre-development and post-development condition. The pollutant removal efficiencies for paved areas where one travel lane will sheet flow directly to a 50-foot vegetated buffer and where two travel lanes will sheet flow directly to an 80-foot vegetated buffer were assumed to be 73%, 45% and 40% for Total Suspended Solids (TSS), Total Phosphorus (TP), and Total Nitrogen (TN) respectively, which are consistent with the NHDES Stormwater Manual.

Based on the results of this analysis, the proposed project is expected to reduce the total suspended solids (TSS) load by 9.3% or 431 lbs/year and reduce the Total Phosphorus (TP) load by 1.3% or 0.2 lbs/year. The total nitrogen (TN) load is expected to increase slightly by 0.2% or 0.1 lbs/year. The negligible changes in TP and TN are within the expected accuracy of this modeling procedure and can be considered essentially the same when comparing the pre-development and post-development conditions. Also, given the size of the Androscoggin River and its watershed, the minimal amount of increase in nitrogen is not expected to impact the water quality of such a large water body. The project is located within the Stearns Brook-Androscoggin River HUC10 watershed, which is 162,000 acres in size. The watershed is nearly entirely forested and approximately 34% of the overall watershed area is permanently protected from development, including the entire length of the project area.

See Appendix D for the complete Pollutant Loading Analysis.
7. **Construction and Operation:**

As noted above, during construction of the project, adherence to the EPA’s Construction General Permit, including the implementation of a Stormwater Pollution Prevention Plan, will minimize or avoid impacts to water quality.

The project will include the replacement of existing culverts on the two tributaries to the Androscoggin. The proposed structures consist of a 5’ wide x 4’ high box culvert at the southern stream crossing and a 6’W x 6’H box culvert at the northern crossing. Both structures will be embedded 1 foot with simulated streambed material. A total of 143 linear feet of stream channel will be reconstructed as part of the roadway realignment and stream crossing replacements. Natural streambed material will be placed within bankfull width. Existing streambed material is sandy, mucky material. Proposed simulated streambed material will be round or sub-rounded stone comprised mostly of gravel. The 2:1 side slope along each channel requires stone for stabilization but will be covered and seeded to bankfull elevation. Plantings will be installed parallel to the top of the bank along each channel.

The proposed project will result in 2.4 lane miles, a slight decrease from existing due to reduced curves along the new alignment. According to the NHDOT Winter Maintenance Snow and Ice Policy (2001), the typical application rate of road salt is 250 to 300 pounds per lane mile. This would equate to approximately 780 pounds of road salt applied within the 1.3-mile project area during any given treatment. The proposed alignment will be slightly shorter than the existing alignment, decreasing lane miles slightly and potentially resulting in a slight decrease in road salt to around 720 pounds per application. Based on the chloride levels just north of the project area in Bear Brook and the Androscoggin River, a 12-fold increase in chloride concentration would be required before acute or chronic water quality exceedances would be expected to occur in the river and more than a 1,000-fold increase would be required in the tributaries. This level of increase in chloride concentrations is not expected to occur, in part because the total lane miles would be decreasing over the existing condition, and in part because the improved pavement surface will allow for more efficient winter maintenance.

8. **USGS Location Map:**

See Figure 1 in Appendix A.

9. **Copy of Final Complete Federal Permit Application:**

See Appendix E.

10. **Copy of the NHDES Wetlands Permit:**

See Appendix F.

11. **Copy of the NHDES Alteration of Terrain Permit**

Not applicable – NHDOT does not apply for AOT Permits.
12. **Abutters:**

Parcel ID: 1619-0009-0000 - TOWN OF ERROL, PO BOX 100 (13 Mile Woods), Errol, NH 03579
Parcel ID: 1619-001.2-0000 - WEYERHAEUSER COMPANY, PO BOX 89, Fairfield, ME 04937

See Figure 2 in Appendix A for parcel locations.

13. **Project Plans:**

See Appendix C.

14. **New Surface Water Withdrawal Plans:**

Not applicable

15. **NH Designated Rivers:**

Not applicable
Appendix A. Project Location
Appendix B. Watershed Map
Stream L
295 acres
(0.46 square miles)

Stream E
100 acres
(0.16 square miles)

16304B Project Area
Roads
Rivers & Streams
16304B Stream Crossing Locations
Tier (Watershed Size)

1

2

Existing Twin 18" CMP & HDPE Pipe

Existing 24" CMP

Androscoggin River

Sugar Hill