TOWN OF BRISTOL, NEW HAMPSHIRE

SEWER SERVICE TO NEWFOUND LAKE
BRISTOL, NEW HAMPSHIRE

USDA – RURAL DEVELOPMENT
ENVIRONMENTAL ASSESSMENT

March 2019

Prepared by:

UNDERWOOD engineers

Portsmouth, New Hampshire
FILE NO. 2353

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1.0 Purpose and Need

1.1. Project Description

The Town of Bristol, New Hampshire is proposing to expand its wastewater collection system to the residential neighborhoods near and adjacent to the Newfound Lake area. This proposed project entails a multi-phase implementation schedule over several years that will require coordination between local, state, and federal agencies to achieve. The Town began this effort in 2002 by contracting Camp Dresser and McKee (CDM) to conduct a Water Quality Improvements Study, which evaluated the existing wastewater treatment Plant (WWTP) and provided a conceptual plan for providing sewer service to the Newfound Lake area. In 2009, CDM completed a Preliminary Design Report (PDR) outlining a three-phase expansion plan of the sewer collection system including upgrades to the existing collection system and pump stations. In 2018, Underwood Engineers (UE) was contracted to update the 2009 PDR into a Preliminary Engineering Report (PER) to align with USDA Rural Development's Water & Waste Disposal Loan & Grant Program. In addition to the PER, RD requires that an environmental assessment (ER) of the project area be conducted.

The residential neighborhoods around Newfound Lake consist of individual homes, private housing developments, condo units, and camp grounds that range in usage from year-round to seasonal. A majority of these residences are currently served by the municipal water supply, but wastewater is managed through individual subsurface disposal systems. The topography in the project area is typical of a NH lake region with lake side units below road elevation and backlot units at higher elevations. The preliminary plan divides the project area into 10 subareas based on topography and the need for pump stations in low lying areas. The design includes a combination of gravity sewers, pressurized force mains, pump stations, and residential low-pressure sewer systems designed to deliver wastewater into the existing collection system. The plan also includes three sewer routing alternatives that will be further investigated to determine the most economical, environmentally sensitive, and socially equitable approach to meet the Town's needs and future development plans. A map of the sewer routing plan with the proposed subareas, sewer components, and routing alternatives is included as Figure 1.

1.2. Purpose and Need

The health of Newfound Lake and the surrounding watershed is vital to the Town's economic and recreational way-of-life. A well-known concern to the health of lakes in rural NH communities is the absence of modern wastewater management. Many residents located immediately adjacent to Newfound Lake live in densely populated neighborhoods, relying on individual subsurface disposal systems that do not meet current NHDES regulations, i.e. shoreland (DES, Env-Wq 1400) and surface water, drinking water well, or property line setback requirements (DES, Env-Wq 1000). A water quality study conducted in 2012-2013 by the University of New Hampshire (UNH) Center for Freshwater Biology and UNH Cooperative Extension found that Newfound Lake, as a whole, is characteristic of a high-quality water body. However, the study also found that the water quality of the southern end of the lake had lower water transparency, higher total phosphorus levels, and declining dissolved oxygen concentrations through the summer months (Craycraft & Schloss, 2013). These results may be an indication of the influence of development by way of stormwater runoff, septic system leaching, and fertilizer use around the southern end of Newfound Lake. Additional studies have determined that septic systems installed in close proximity to NH lakes in well-draining soils can contribute high phosphorus loads into the water column thereby contributing to water quality degradation (Schloss et al., 2009; TMDL Flint Pond, Hollis, NH, EPA, 2011; Conner and Bowser, 1997). The Town is proposing the expansion and necessary improvements to their municipal wastewater systems as a component to the long-term protection of Newfound Lake.

2.0 Alternatives Evaluated Including the Proposed Action

2.1. Proposed Action

The Sewer to Newfound Lake project would provide sewer service to over 1,350 residential units in some of the most densely populated areas of Bristol that are not on municipal sewer. The recommended plan consists of extending the existing sewer infrastructure to the Newfound Lake area, upgrading the existing wastewater collection system in designated areas, constructing new pumping stations, and completing wastewater treatment facility improvements as necessary. At project completion, over 60 percent of the Town will have the opportunity to connect to the Town's municipal sewer system.

2.2. Other Alternatives Evaluated

This Preliminary Engineering Report (PER) includes three routing alternatives for connecting the new sewer expansion areas to the existing collection system. These alternatives are being explored to determine the most economical, environmentally sensitive, and socially equitable approach to meet the Town's planning and development needs. These alternatives evaluate the route of the primary collector pipe that connects the expansion areas into the existing system. The sub-basin areas are generally the same with each alternative. A brief description of each alternative is as follows, see Figure 1:

- **Alternative 1:** The primary interceptor installed along Route 3A / Lake Street. This would be a 15" gravity sewer that connects into the existing system just north of the Crescent Street / Lake Street intersection.
- **Alternative 2:** The primary interceptor is an 8" cross-country force main from a new pump station on North Main Street, cross-country along Danforth Brook to Hall Road, south along Hall Road, and connecting into the existing system just north of the Hall Road / Danforth Brook Road intersection.
- **Alternative 3:** The primary interceptor is an 8" force main from a new pump station on North Main Street running south along North Main Street over a high point in the road. At

this point the pipe will change to a gravity sewer that will connect into the existing system at sewer manhole structure #0159.

2.3. No Action Alternative

The alternative to expanding the municipal sewer is continued reliance on individual subsurface disposal systems. All of the developed lots in the Newfound Lake Area are currently served by private on-site subsurface disposal systems. Some of these lots were developed prior to current NHDES setback and sizing regulations. As the area becomes more developed and houses transition from summer cottages to year-round homes, there is an increased potential for groundwater and surface water impairments through aging and undersized systems.

The Town conducted septic system surveys in 2002 (by CDM) and 2008 (by UE) of the Newfound Lake area residents. These surveys focused on system locations, functionality, and public support for municipal sewer service. The important takeaways from this survey are included in Table 1.

Table 1: Results of 2002 and 2008 Septic System Survey of Newfound Lake area residents.

Survey Question	2002	2008
Number of Questionnaires Sent	600	850
Number of Questionnaires Returned	175	436
Percent of Questionnaires Returned	30%	51%
Percent of Questionnaires Returned with Reported Septic System Problems	15%	8%
Percent of Questionnaires Returned Reporting Frequent Septic System Pumping	10%	47%
Percent of Questionnaires Returned in Favor of Municipal Sewer	57%	12%

The results of these septic system surveys support the “need” and benefit for municipal sewers provided for the Newfound Lake area. Therefore, the “do nothing” alternative was rejected from further consideration.

3.0 Affected Environment and Environmental Consequences

3.1. Land Ownership/Land Use/Important Farmland/Formally Classified Lands

3.1.1. Affected Environment

The sewer expansion will be constructed either within existing roadways or along privately-owned property within the Town of Bristol. All necessary easements and permits will be coordinated based on the final sewer routing alternative. There are no federally owned lands that will be affected by this project.

A map of the 2001 NH Land Cover Assessment is included as Figure 3 and a Town Zoning Map is included as Figure 4. The farmland classifications are mapped on Figure 5 and USGS soils classifications are mapped on Figure 6. Construction of the sewer piping and associated pumping stations will not alter land use or zoned uses in the project area.

A letter was sent to the Natural Resources Conservation Service, see Section 6.0, action will be taken as necessary, based on the response, to comply with the Farmland Protection Policy Act (FPPA).

3.1.2. Environmental Consequences

There are no anticipated environmental consequences, either short-term or long-term, to any important farmlands or federally classified lands.

3.1.3. Mitigation

The Town of Bristol noted that the Planning Board should be notified sixty days before the onset of construction, as a courtesy as municipal projects are exempt in the State of New Hampshire from Planning and/or Zoning Board approvals. There are no land use permit requirements for public utility work conducted in a town or state right-of-way or through an easement on private property. Appropriate mitigation measures will be taken as required by the Natural Resources Conservation Service.

3.2. Floodplains

3.2.1. Affected Environment

The new sewer collection system would primarily be located within Zone X (Areas determined to be outside the 500-year floodplain), as depicted in the FEMA Flood Insurance Rate Maps (FIRM) Figure 7.1 - Figure 7.3. Sewer routing is mainly along existing roadways (Figure 1), which include bridge crossings of several watercourses. These bridge crossings are designated as potential flood areas and are defined by FEMA as follows:

- Zone A are special flood hazard areas subject to inundation by the 100-year flood, also known as the base flood, with no base flood elevation determined. Locations along the proposed sewer routing alternatives include:
    - West Shore Road crosses over Fowler River
    - Riverdale Road crosses over Newfound River
    - Lake Street (Rte. 3A) crosses over Newfound River in two locations
    - Hall Road crosses Danforth Brook (Alternative 2 only)
    - Central Street Pumping Station where improvements to the existing infrastructure are recommended.
- Zone AE are special flood hazard areas subject to inundation by the 100-year flood, where base flood elevations are determined. Locations along the proposed sewer routing alternatives include:
    - West Shore Road crosses over Newfound River
- Zone X are areas subject to the 500-year flood and/or 100-year flood with average depths of less than one foot, has a drainage area less than one square mile, and/or areas protected by levees from 100-year flood. Locations along the proposed sewer routing alternatives include:
    - West Shore Road crosses over Black Brook

3.2.2. Environmental Consequences

Potential impacts on flood levels or the floodway areas are not anticipated from construction of the sewer expansion project. Installation of sewers within these areas will be designed to reduce any short or long-term impacts.

3.2.3. Mitigation

Sewer installations at watercourse crossings will consist of either pipe suspension from the bridges, utilize trenchless installation techniques (i.e. directional drilling, pipe bursting, etc.), or other approved method to minimize short and long-term impacts to the floodway areas. The appropriate state and federal agencies will be consulted and all necessary permitting will be completed, as necessary.

3.3. Wetlands / Water Resources / Water Quality Issues

3.3.1. Affected Environment

As noted above, the proposed work will take place primarily within existing roadways and on adjacent property. NHDES Wetlands Bureau will be consulted during the design phase of the project and all necessary permits will be submitted for approval. State approved installation techniques will minimize short-term impacts to wetlands and/or water bodies along the sewer route. A map of the water resources found within the project area is presented on Figure 8 for reference. The specific project areas where wetlands are prominent include:

- The northwest section of Bristol in the lake area includes designated wetlands along West Shore Road, Mountain Road, and between West Shore Road and Newfound Lake.
- Danforth Brook between North Main Street and Hall Road.

3.3.2. Environmental Consequences

The project is not anticipated to impact existing wetlands, except where temporary disturbances are needed. Although not anticipated, if permanent impacts are needed then all necessary permits will be obtained.

3.3.3. Mitigation

Measures to mitigate temporary impacts to wetland resource areas include erosion and sedimentation controls, e.g. silt fence and hay bales, silt socks, silt curtains, and sheeting in water, to prevent siltation of down gradient wetlands and water bodies. Trenchless sewer installation techniques, e.g. directional drilling, pipe bursting, will be considered to avoid any major disruptions along Danforth Brook, large wetland areas, or river crossings. Pump stations will be sited outside of delineated wetland areas, whenever possible. Plans will be in place to restore any areas impacted by construction activities to the extent feasible, e.g. restoring existing contours, re-seeding as necessary.

3.4. Coastal Resources

3.4.1. Affected Environment

There are no coastal resources with the project area. A letter was sent to the NHDES Shoreland Program relative to the 250ft shoreland setback criteria. The project will comply with the Shoreland Program's requirements.

3.4.2. Environmental Consequences

There are no anticipated environmental consequences to any protected shorelands as a result of the proposed project.

3.4.3. Mitigation

Appropriate mitigation measures will be taken as required by the NHDES Shoreland Program.

3.5. Biological Resources

3.5.1. Affected Environment

On-line tools were used to conduct an initial screening of endangered species, threatened species, and critical habitats within the project area. The US Fish & Wildlife Service's Information for Planning and Consultation (IPaC) tool identified the presence of the

northern long-eared bat, which is considered to be threatened across large areas of the northern regions of the United States. The IPaC site generates an automated letter and official species list, which is included in Section 6.0. The NH Natural Heritage Bureau's (NHB) DataCheck tool was used to conduct a statewide screening of state listed endangered species and identified "potential impacts" from the project activities. A letter was sent to NH NHB for additional information. NHB's response is included in Section 6.0, which identified two sensitive species within the project area along the Newfound River and directed us to contact NH Fish & Game (NHFG) Department. A letter was sent to NHFG, which is included in Section 6.0. NHFG identified two hibernacula with records of northern long-eared bats within the project area. These areas are located to the west of Route 3A (Lake Street) and are presented in Figure 9.

There are no anticipated impacts to bald and golden eagle habitats or migratory bird nesting grounds or corridors. As noted, this project will be primarily within the roadways with the majority of the infrastructure in the subsurface environment.

3.5.2. Environmental Consequences

There are no anticipated adverse biological environmental consequences, either short-term or long-term, to any biological resources in the project area. Project activities that are near the hibernacula areas include construction within the roadway corridor. Minimal tree removal is anticipated for this section of the project.

3.5.3. Mitigation

Additional consultation with NHFG and NHB will be conducted to identify and mitigate potential impacts to biological resources within the project area during the final design phase. The final sewer routing and construction plan will incorporate measures to avoid any impacts to state and federally listed biological resources, whenever possible.

3.6. Cultural Resources and Historic Properties

3.6.1. Affected Environment

Review of Division of Historical Resources records identified three properties previously listed for historical significance. The properties include Bristol Town Hall, Central Square Historic District, and Minot-Sleeper Library, which are all located in the Town's downtown area, see Figure 9. This area is currently served by the Town's existing wastewater collection system. To accommodate the anticipated increase in wastewater flows, system improvements associated with each routing alternative is expected in and around these historical resources.

A letter and Request for Project Review (RPR) form were sent to NH DHR for additional screening of the project area to determine if any potential impacts are anticipated. The letter and DHR response are included in Section 6.0. Initial DHR response concluded that archaeological sites are located with the proposed project area and that portions of the proposed cross-country route are considered archaeologically sensitive. A Phase 1A survey will need to be conducted of the project areas to identify potential impacts to archaeological resources.

3.6.2. Environmental Consequences

There are no anticipated consequences, either short-term or long-term, to any cultural resources within the project area.

3.6.3. Mitigation

A Phase 1A survey will be conducted of the project areas as directed by DHR. Additional consultation with DHR will be conducted during the final design phase if there are potential impacts to cultural resources from project activities. Bristol Historic District Commission has also been contacted and coordination with their programs will be incorporated during final design phases.

3.7. Aesthetics

3.7.1. Affected Environment

All sewer piping work will be below ground (except for a few potential bridge crossings) and therefore, does not present potential visual aesthetic impacts. The pumping stations will be located along the edge of the roadway and designed to fit into the surrounding environment so visual impacts will be minimal.

3.7.2. Environmental Consequences

There are no long-term impacts anticipated due to construction activities.

3.7.3. Mitigation

The short-term impacts will be construction related and all areas will be restored to match the pre-existing conditions and the surrounding landscape. Pumping stations will be designed to fit into the surrounding area.

3.8. Socio-Economic/Environmental Justice Issues

3.8.1. Affected Environment

This project is not located in a minority or low-income community. No disproportionately high or adverse human health impacts are anticipated from this project.

3.8.2. Environmental Consequences

The project will not pose a disproportionately high and adverse human health or environmental effects to any minority or low-income populations.

3.8.3. Mitigation

No mitigation of any adverse human health or environmental effects to any minority or low-income populations is necessary.

3.9. Miscellaneous Issues (Air Quality, Noise, Vibration)

3.9.1. Affected Environment

The proposed project area is not within an EPA designated nonattainment area for criteria air pollutants. Dust, noise, and vibration will increase temporarily during construction from equipment and construction vehicles. It will be the contractual responsibility of the contractor to comply with the Occupational Safety and Health Administration noise standards for construction equipment.

As noted in the response from the Town of Bristol Land Use Enforcement / Health Inspector in Section 6.0, the Town has general noise restrictions. Municipal projects are exempt from the ordinance, provided that the abutters have been given prior notice of the project. The noise requirements will be included in the contract documents.

3.9.2. Environmental Consequences

Any miscellaneous environmental consequences resulting from project activities will be short-term, and will occur only during the actual construction of the proposed project. These could include construction noise, dust, and minor changes in air quality due to the operation of the construction equipment.

3.9.3. Mitigation

The contract documents will outline specific requirements for traffic control, working hours, dust control, and coordination with public officials.

3.10. Intergovernmental Review

3.10.1. Affected Environment

A letter was sent to the State of New Hampshire Office of Strategic Initiatives (NHOSI) to initiate the intergovernmental review process. The letter and NHOSI response are included in Section 6.0. The response is a letter of acknowledgement that the review process has

begun and will be completed by the suspense date, January 4, 2019. NHOSI will notify the Town in the event that more time is required.

3.10.2. Environmental Consequences

No impacts are anticipated.

3.10.3. Mitigation

Appropriate mitigation measures will be taken as required by the NHOSI.

3.11. Corridor Analysis

3.11.1. Affected Environment

Four sewer routing alternatives have been evaluated to determine the most suitable route for the proposed sewer extension project. Environmental, social, and economic factors have been considered in the evaluation and are included in the Preliminary Engineering Report.

Land owners that may be impacted by this project have been notified to inform them of the project. An open line of communication has been established between Town officials and the property owners in order to address any concerns that may arise. At this stage, the property owners will be provided opportunities to engage with the project, vote on the project, and establish legal agreements with the Town to define the extent of impacts that are acceptable to both parties.

4.0 Cumulative Effects

The majority of the work for this project will be within the roadway ROW with most of the new sewer being installed in the road subbase. The impacts associated with specific resources have been discussed in each resource section of Section 3.0. Primarily the impacts are associated with construction activities and will be addressed through construction best management practices (BMP). The impacts from construction activities, such as temporary disturbance from noise, vibrations, dust, construction site runoff, and aesthetics will be managed by establishing set hours of construction operations, wetting exposed ground during dry weather conditions, constructing and maintaining erosion and sediment control boundaries, and stabilizing and seeding bare ground after construction is complete. These are standard construction BMP procedures that will be followed to minimize the cumulative short-term impacts from construction activities.

The phases of the project that propose cross-country sewer routing (i.e. Alternative 2, Phase 1) will have additional environmental impacts that will be managed through standard BMPs. All State and/or Federal agencies are currently being consulted (Section 6.0) and will continue to be consulted to ensure proper permitting and mitigation practices are employed. The anticipated impacts such as tree cutting and wetland impacts have a potential cumulative effect on the northern long-eared bat (NLEB) and wetland flora and fauna. Through discussion with NH Fish and Game department impacts to the NLEB can be avoided through appropriate construction scheduling. The recommended approach is to conduct all tree cutting activities between December 1st and April 1st, (see NHFG correspondence in Section 6.0). Wetland impacts can be reduced or eliminated through appropriate sewer routing outside of delineated wetlands or by employing directional drilling techniques. These options will be further considered during final design phase.

Potential impacts associated with river crossings will be mitigated through pipe suspension or directional drilling techniques that can avoid any long-term impacts to wetlands, floodplains, or water resources. The presence of historical and cultural resources will be determined by a Phase 1A survey of the proposed project area. Results of this study will inform the appropriate mitigation measures to be conducted to avoid any impacts.

The long-term cumulative effects of the project on the surrounding environment are generally beneficial. The positive effects include the reduction in septic system usage throughout area watersheds. This can reduce the amount of septic system effluent from entering the local groundwater system, which in turn can have a positive effect on groundwater and surface water resources. Removal of septic systems within the Town's wellhead protection areas helps to mitigate potential drinking water contamination. Removal of septic systems from lakefront properties is one component in the long-term strategy to protect Newfound Lake from water quality degradation due to excessive phosphorus loading. Providing municipal sewer can potentially increase home and property values. This can be positive for the homeowners, but could also result in larger homes as space will not be required for individual septic systems. Larger homes can result in more energy usage and an increase in stormwater runoff. These impacts can be managed onsite through proper design as directed through the Town's site plan regulations. As noted in the PER, the additional number of users on the municipal system will result in increased flow and loading to the WWTF. The early phases (Phase 1 and 2) of the project generate flows that are manageable by the current system design, but the later phases (Phase 3 and 4) may require a WWTF evaluation to determine treatment capacity. The effects of the increased loading from Phase 3 and 4 may eventually require upgrades within the facility and/or additional O&M costs. These upgrades and/or costs are anticipated to be manageable by the Town.

5.0 Summary of Mitigation

Table 5-1 provides a summary of the environmental resources, the identified impact and the proposed mitigation measures.

Section	Environmental Resource	Identified Impact	Mitigation Measure
3.1	Land Use	None	Notify Planning Board 60 days prior to onset of construction
3.2	Floodplain	River Crossings	Sewer suspension to existing bridges and/or directional drilling techniques
3.3	Wetlands / Water Resources	Alternative 2 – cross-country force main Within ¼-mile of Pemigewasset River	Wetlands permit for any work within jurisdictional resources. As required by NHDES Wetlands Bureau NH Stream Crossing Rules (Env-Wt 900)
3.4	Coastal	None	As required by NH Shorelands Program
3.5	Biological	Tree cutting associated with northern long-eared bat hibernacula	Tree cutting during winter months as recommended by NHFG Department
3.6	Cultural and Historic	Improvement to cross-country pipe through Central Square Historic District Archaeological sites along proposed sewer route	As required by NH Division of Historical Resources Conduct a Phase 1A survey to determine impacts
3.7	Aesthetics	Short-term impacts during construction	Design approach
3.8	Socio-economic / Environmental Justice	None	None
3.9	Miscellaneous (Air / Noise / Vibration)	Short-term impacts during construction	Construction Specifications
3.10	Intergovernmental Review	None anticipated	As required by NH Office of Strategic Initiatives
3.11	Corridor Analysis	Construction and sewer easements with private land owners	Legal agreements between Town and land owners to clarify acceptable parameters

6.0 Coordination, Consultation and Correspondence

All correspondence is presented in order of response received from the applicable agency, followed by the request made by Underwood Engineers.

1. Town of Bristol, New Hampshire
2. New Hampshire Division of Historical Resources
3. New Hampshire Department of Environmental Services Wetlands Bureau
4. New Hampshire Shoreland Program
5. New Hampshire Natural Heritage Bureau
6. New Hampshire Fish and Game Department
7. US Department of the Interior Fish and Wildlife Service
8. New Hampshire Resources Conservation Service
9. New Hampshire Office of Strategic Initiatives / Intergovernmental Review Process

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2353.05-4

November 13, 2018

Ms. Christina Goodwin
Land Use Manager
Town of Bristol
230 Lake Street
Bristol, New Hampshire 03222

Re: Town of Bristol – Sewer to Newfound Lake Infrastructure Expansion
Environmental Review for USDA RD Application
Bristol, New Hampshire

Dear Ms. Goodwin,

As you are aware, the Town of Bristol, New Hampshire is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) for the United States Department of Agriculture (USDA), Rural Utilities Service (RUS). The purpose of the environmental review is to assess the environmental impacts of the proposed sewer infrastructure expansion project. The project is intended to connect a large population of the Town near and adjacent to Newfound Lake to the existing wastewater collection system in an attempt to increase public health and safety by preserving the water quality of the lake and adjacent natural resources.

As you will note in the attached narrative and maps, the project is currently in the preliminary engineering phase and includes three sewer routing alternatives. These alternatives include new infrastructure, i.e. pipes, pump stations and river crossings, as well as upgrades to the Town's existing wastewater collection system. The new infrastructure alternatives include work in both the roadway right-of-way as well as cross-country sewers across private property.

We are requesting assistance of the Town in reviewing this project to ensure that construction activities are consistent with program goals. As part of the RD application process, please advise us of any of the following:

- Confirm that proposed activities are consistent with existing land use and/or classifications.
- Noise level / restrictions due to construction activities.
- Proposed action items with the Town's Zoning / Planning Board that may impact the progression of the project.

We would appreciate a response within 30 days. If you require additional information or wish to discuss the project, please contact me at (603) 436-6192.

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

Very truly yours,

UNDERWOOD ENGINEERS, INC.

for

Phil MacDonald, P.E.
Project Manager

Timothy Puls, P.E.
Project Engineer

Encl.

- Project Narrative
- Map of Sewer Routing Alternatives
- Land Cover
- Zoning Map

Cc: Nicholas Coates, Town Administrator, Bristol, NH

Sewer to Newfound Lake Project
Bristol, New Hampshire
November 12, 2018

PROJECT BACKGROUND

The Town of Bristol, New Hampshire is proposing to expand its wastewater collection system to the residential neighborhoods near and adjacent to Newfound Lake. This proposed project entails a multi-phase implementation schedule over several years that will require both local and federal funding to achieve. The Town began this effort in 2002 by contracting Camp Dresser and McKee (CDM) to conduct a Water Quality Improvements Study, which evaluated the existing wastewater treatment Plant (WWTP) and provided a conceptual plan for providing sewer service to the Newfound Lake area. In 2009, CDM completed a Preliminary Design Report (PDR) outlining a three-phase expansion plan of the sewer collection system including upgrades to the existing collection system and pump stations. In 2018, Underwood Engineers (UE) was contracted to update the 2009 PDR into a Preliminary Engineering Report (PER) to align the plan with USDA Rural Development (RD) grant funding application criteria. In addition to the PER, RD requires that an environmental assessment (EA) of the project area be conducted.

PROJECT NARRATIVE

The Town undertook the Newfound Lake sewer expansion project to address a growing recognition that increased development in the Newfound Lake area could have serious environmental, economic and quality-of-life consequences for Bristol, including:

- Drinking Water Quality -- The Town operates three drinking water supply wells: Well Site One and Two (located on West Shore Road on the north side and south sides of the Fowler River, respectively) and the Storm Center Well (located on Danforth Brook Road). Water quality from these wells is excellent and, consequently, only minimal treatment of the raw water (sodium hydroxide addition for corrosion control) is required. Degradation in water quality due to development within the well head protection area would force the Town to either implement new, more-costly forms of raw water treatment or abandon these wells and seek development of new wells in another part of town, which would be both costly and difficult to permit.

- Newfound Lake Water Quality -- Newfound Lake is known for being the clearest lake in New Hampshire and one of the clearest lakes in the United States - degradation to this important resource due to development within the lake watershed would adversely impact quality of life for the many residents that use the lake for recreational purposes and economically impact the many local businesses that rely on lake-related tourism for their livelihood.

The Town is pursuing this project as a commitment to the responsible stewardship of Newfound Lake. The recent transformation in the scale and nature of development in the lake area will inevitably impact the water quality of the lake unless protective measures are taken. The Newfound Lake area, particularly along the shore of the lake, is the most densely populated area of Bristol and many of the existing septic systems are either aging or inadequate. Many of the existing housing lots are generally too small to support a septic system that would be compliant with New

Hampshire Department of Environmental Services (NHDES) regulations and many of these lots have "grandfathered" exceptions to the existing zoning laws. This situation clearly represents a significant potential for contamination resulting from septic systems that are overloaded, failing or at the end of their useful life.

The Newfound sewer expansion plan would provide sewer service to over 1,200 residential units adjacent to and near Newfound Lake. The residential units consist of permanent residences, condo units, and camp grounds that range in usage from year-round to seasonal. The preliminary plan divides the project area into 10 subareas based on topography and the need for pump stations to lift wastewater over high elevations. The topography in the project area is typical of a NH lake region with lake side units at lower elevations than the roads and backlot units at much higher elevations. The preliminary design includes a combination of gravity sewers, pressurized force mains, pump stations, and residential low-pressure sewer systems designed to deliver wastewater into the existing collection system. The plan also includes sewer routing alternatives that are evaluated to determine the most economical, environmentally sensitive, and socially equitable approach to meet the Town's needs and future development plans. The following maps are attached to assist with the intent of the design, showing the full extent of the project area and sewer routing alternatives.

- USGS 7.5' Topographic Map
- Sewer Routing Alternatives
- Land Cover Map
- Zoning Map

TOWN OF BRISTOL
230 Lake Street, Bristol, NH 03222

January 10, 2019

Underwood Engineers, Inc.
ATT: Phil MacDonald, P.E.
25 Vaughan Mall
Portsmouth, New Hampshire 03801

Re: ***UE Project #2353.05-4***
Sewer to Newfound Lake

Dear Mr. MacDonald,

I have received your correspondence dated November 13th, 2018. Please be advised that the proposed activities in relation to the **Sewer to Newfound Lake** infrastructure expansion are consistent with existing land uses in the zones affected by the areas of construction.

With regard to the noise level associated with the construction of the sewer lines, the Town of Bristol does have general noise restrictions under the Disorderly Actions Ordinance, enforced by the Police Department, which may affect the time of the construction activity. Municipal maintenance work is exempt from the ordinance. However, the Police Chief is empowered to issue a temporary special permit to allow construction work between the hours of 10PM and 7AM, Monday through Saturday, and 10PM and 8AM on Sundays.

Municipal projects are exempt from Planning and/or Zoning Board approvals. However, notification to the Planning Board must be made sixty (60) days before the onset of construction, as a courtesy. There is no land use permit requirement for public utility work conducted in a town or state right-of-way or through an easement on private property.

If you have any questions, please let me know.

Sincerely,

Christina Goodwin
Land Use Manager
Town of Bristol, New Hampshire

Cc: Nicholas Coates, Town Administrator, Bristol, NH

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2353.05-4

November 6, 2018

Ms. Elizabeth Muzzey
NH State Historic Preservation Officer & Director
New Hampshire Division of Historical Resources
19 Pillsbury Street
Concord, New Hampshire 03301-3570

Re: NHDHR Request for Project Review
Environmental Review for Sewer to Newfound Lake Project
Bristol, New Hampshire

Dear Ms. Muzzey,

The Town of Bristol, New Hampshire is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) for the United States Department of Agriculture (USDA), Rural Utilities Service (RUS). The purpose of the Environmental Review is to assess the environmental impacts of a proposed sewer infrastructure expansion project located in Grafton County within the state of New Hampshire. The project is intended to connect a large population of the Town near and adjacent to Newfound Lake to the wastewater and collection infrastructure in an attempt to increase public health and safety by preserving the water quality of the lake and adjacent natural resources.

As you will note in the attached narrative and maps, the project is currently in the preliminary engineering phase and includes three sewer routing alternatives. These alternatives include new infrastructure, i.e. pipes, pump stations and river crossings, as well as upgrades to the Town's existing wastewater collection system. The new infrastructure alternatives include work in both the roadway right-of-way as well as cross-country sewers across private property.

We are requesting assistance of your office in identifying historic properties that are listed or eligible for listing on the National Register of Historic Places that may be affected by this project. Please provide any recommendations you may have to mitigate or avoid impacts to any affected properties. To note, a previous Request for Project Review form was submitted on November 18, 2009 by Wright-Pierce and was listed with a R&C #1483. A copy of this RPR form has been attached for reference. This sewer routing plan is similar in scope and scale to the 2009 design.

We would appreciate a response within 30 days. If you require additional information or wish to discuss the project, please contact me at (603) 436-6192.

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

Very truly yours,
UNDERWOOD ENGINEERS, INC.

Phil MacDonald, P.E.
Project Manager

Timothy Puls, P.E.
Project Engineer

Encl.

- Project Map – 7.5' USGS Topographic Quadrangle
- Project Narrative
- Request for Project Review Form
- Request for Project Review Table 1
- 2009 Request for Project Review Form, R&C # 1483
- Project Area Maps
    - Land Features
    - Historical Places (Previously Listed)
    - General Soil Types
    - Wetlands and Waterbodies
- Proposed Sewer Plan
- Photo Pages

cc: Nicholas Coates, Town Administrator, Bristol, NH

NH DOT Project and Number and/or Project Title: Sewer to Newfound Lake, Bristol, New Hampshire; Environmental Review pursuant to USDA RD Grant Application				DHR R&C #:
RPR Table 1: PREVIOUSLY SURVEYED OR LISTED PROPERTIES				
NH DHR Property Name / Historic District Name	NH DHR Inventory #	National Register-listed, Eligible, or Not Eligible	Date of Determination (mm/dd/yy)	National Register Criteria of Significance (if applicable)
Bristol Town Hall	15000668	Listed	09/29/15	
Central Square Historic District	83001139	Listed	03/24/83	
Minot-Sleeper Library	88001434	Listed	09/15/88	
**Add rows as necessary				

Please mail the completed form and required material to:

New Hampshire Division of Historical Resources
State Historic Preservation Office
Attention: Review & Compliance
19 Pillsbury Street, Concord, NH 03301-3570

RECEIVED
NOV 07 2018

DHR Use Only	
R&C #	10209
Log In Date	___/___/___
Response Date	___/___/___
Sent Date	___/___/___

Request for Project Review by the New Hampshire Division of Historical Resources

RECEIVED
DEC - 6 2018
UNDERWOOD ENGINEERS
PORTSMOUTH, NH

☒ This is a new submittal
☐ This is additional information relating to DHR Review & Compliance (R&C) #:

GENERAL PROJECT INFORMATION

Project Title Town of Bristol - Sewer to Newfound Lake

Project Location Bristol, NH

City/Town Bristol Tax Map Lot #

NH State Plane - Feet Geographic Coordinates: Easting 964919 Northing 407707
(See RPR Instructions and R&C FAQs for guidance.)

Lead Federal Agency and Contact *(if applicable)* USDA Rural Development, Jonathan Harries, P.E.
(Agency providing funds, licenses, or permits)
Permit Type and Permit or Job Reference #

State Agency and Contact *(if applicable)*

Permit Type and Permit or Job Reference #

APPLICANT INFORMATION

Applicant Name Town of Bristol

Mailing Address 230 Lake Street Phone Number 603-744-3354

City Bristol State NH Zip 03222 Email townadmin@townofbristolnh.org

CONTACT PERSON TO RECEIVE RESPONSE

Name/Company Timothy Puls / Underwood Engineers, Inc.

Mailing Address 25 Vaughan Mall Phone Number 6034366192

City Portsmouth State NH Zip 03801 Email tpuls@underwoodengineers.com

This form is updated periodically. Please download the current form at www.nh.gov/nhdhr/review. *Please refer to the Request for Project Review Instructions for direction on completing this form.* Submit one copy of this project review form for each project for which review is requested. Include a self-addressed stamped envelope to expedite review response. Project submissions will not be accepted via facsimile or e-mail. This form is required. Review request form must be complete for review to begin. Incomplete forms will be sent back to the applicant without comment. Please be aware that this form may only initiate consultation. For some projects, additional information will be needed to complete the Section 106 review. All items and supporting documentation submitted with a review request, including photographs and publications, will be retained by the DHR as part of its review records. Items to be kept confidential should be clearly identified. For questions regarding the DHR review process and the DHR's role in it, please visit our website at: www.nh.gov/nhdhr/review or contact the R&C Specialist at christina.st.louis@nh.gov or 603.271.3558.

PROJECTS CANNOT BE PROCESSED WITHOUT THIS INFORMATION 10209

Project Boundaries and Description

- ☒ Attach the relevant portion of a 7.5' USGS Map (photocopied or computer-generated) ***indicating the defined project boundary.*** *(See RPR Instructions and R&C FAQs for guidance.)*
- ☒ Attach a detailed narrative description of the proposed project.
- ☒ Attach a site plan. The site plan should include the project boundaries and areas of proposed excavation.
- ☒ Attach photos of the project area (overview of project location and area adjacent to project location, and specific areas of proposed impacts and disturbances.) *(Informative photo captions are requested.)*
- ☒ A DHR file review must be conducted to identify properties within or adjacent to the project area. Provide file review results in **Table 1**. *(Blank table forms are available on the DHR website.)* File review conducted on 10/29/2018.

Architecture

Are there any buildings, structures (bridges, walls, culverts, etc.) objects, districts or landscapes within the project area? ☒ Yes ☐ No
If no, skip to Archaeology section. If yes, submit all of the following information:

Approximate age(s):

- ☒ Photographs of ***each*** resource or streetscape located within the project area, with captions, along with a mapped photo key. (Digital photographs are accepted. All photographs must be clear, crisp and focused.)
- ☒ If the project involves rehabilitation, demolition, additions, or alterations to existing buildings or structures, provide additional photographs showing detailed project work locations. (i.e. Detail photo of windows if window replacement is proposed.)

Archaeology

Does the proposed undertaking involve ground-disturbing activity? ☒ Yes ☐ No
If yes, submit all of the following information:

- ☒ Description of current and previous land use and disturbances.
- ☒ Available information concerning known or suspected archaeological resources within the project area (such as cellar holes, wells, foundations, dams, etc.)

Please note that for many projects an architectural and/or archaeological survey or other additional information may be needed to complete the Section 106 process.

DHR Comment/Finding Recommendation *This Space for Division of Historical Resources Use Only*

☐ Insufficient information to initiate review. ☑ Additional information is needed in order to complete review.

☐ No Potential to cause Effects ☐ No Historic Properties Affected ☐ No Adverse Effect ☐ Adverse Effect

Comments: Archaeological sites located within proposed project area. Portions of proposed cross country route also considered archaeologically sensitive. Phase 1-A survey necessary before informed comment can be made.

Please provide an opportunity for the Bristol Historic District Commission to comment and forward correspondence to DHR.

If plans change or resources are discovered in the course of this project, you must contact the Division of Historical Resources as required by federal law and regulation.

Authorized Signature: [signature] Date: 11-26-18

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2353.05-4

November 20, 2018

Ms. Seta Detzel
Regional Permit Reviewer – Region 6
New Hampshire Wetlands Bureau
29 Hazen Drive; PO Box 95
Concord, New Hampshire 03302-0095

Re: Review of Potential Wetland Impacts and Permit Requirements
Environmental Review for Sewer to Newfound Lake Project
Bristol, New Hampshire

Dear Ms. Detzel,

The Town of Bristol, New Hampshire is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) for the United States Department of Agriculture (USDA), Rural Utilities Service (RUS). The purpose of the Environmental Review is to assess the environmental impacts of a proposed sewer infrastructure expansion project located in Grafton County within the state of New Hampshire. The project is intended to connect a large population of the Town near and adjacent to Newfound Lake to the wastewater and collection infrastructure in an attempt to increase public health and safety by preserving the water quality of the lake and adjacent natural resources.

As you will note in the attached narrative and maps, the project is currently in the preliminary engineering phase and includes three sewer routing alternatives. These alternatives include new infrastructure, i.e. pipes, pump stations and river crossings, as well as upgrades to the Town's existing wastewater collection system. The new infrastructure alternatives include work in both the roadway right-of-way as well as cross-country sewers across private property.

- Please advise us if any of the proposed pump stations are located within the National Wetland Inventory Sites.
- Please indicate any applicable permits, waivers, and/or exemptions for the project.
- Please assist us in ensuring that our construction activities will be consistent with your program goals.

We would appreciate a response within 30 days. If you require additional information or wish to discuss the project, please contact me at (603) 436-6192.

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Phil MacDonald, P.E.
Project Manager

Timothy Puls, P.E.
Project Engineer

Encl.

- Project Narrative
- USGS 7.5' Topographic Map
- Sewer Routing Alternatives
- Land Cover Map
- Water Resources Map
- USGS Soils Map

Cc: Nicholas Coates, Town Administrator, Bristol, NH

The State of New Hampshire
Department of Environmental Services

Robert R. Scott, Commissioner

December 12, 2018

UNDERWOOD ENGINEERS, INC.
C/O TIMOTHY PULS
25 VAUGHAN MALL
PORTSMOUTH, NH 03801

RE: Sewer to Newfound Lake Project in Bristol, NH

Dear Mr. Puls:

Per your November 20, 2018 request for review of preliminary mapping of the "Sewer to Newfound Lake Project" alternatives in Bristol, please find New Hampshire Department of Environmental Services (NHDES) Wetlands Program responses to your questions below.

1) *Location of proposed pump stations within National Wetlands Inventory sites.*

NWI mapping does not guarantee presence or absence of wetlands. The project area must be delineated in accordance with Rule Env-Wt 301.01. Proposed pump stations 1, 3, 4 and 5 are not located within NWI wetlands. Pump station number 2 is located along the shore of Newfound Lake and may be within Wetlands jurisdiction.

2) *Applicable permits, waivers, and/or exemptions for the project.*

New Hampshire wetlands law, RSA 482-A, requires a Wetlands Permit to excavate, remove, fill, dredge, or construct any structures in or on any bank, flat, marsh, or swamp in and adjacent to any waters of the state. If the project proposes no work within these jurisdictional resources, a Wetlands Permit is not required. Bristol does not have Designated Prime wetlands, so there are no wetland setbacks. Impacts to streams must meet the NH Stream Crossing Rules as promulgated in NH Administrative Rules Chapter Env-Wt 900. The Pemigewasset River is a Designated River. Pursuant to RSA 482-A(I)(d)(2), applications proposing impacts within ¼ mile of Designated Rivers must submit notice to the Local Advisory Committee (LAC) for review and comment.

Please be advised that this project will require a Shoreland Permit. A pre-application meeting with the Shoreland Program is encouraged.

3) *Ensuring construction activities will be consistent with your program goals.*

The Wetlands Program prefers an alternative that will avoid and minimize permanent and temporary impacts to wetland resources to the extent practicable.

If you have any questions or concerns or would like to schedule a pre-application meeting, please feel free to contact me directly at seta.detzel@des.nh.gov or (603) 271-2917.

Sincerely,

Seta A. Detzel
Wetlands Specialist

cc: Nicholas Coates, Town Administrator, Bristol, NH

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engineers

2353.05-4

November 20, 2018

Mr. Jason Aube
New Hampshire Shoreland Program
29 Hazen Drive; PO Box 95
Concord, New Hampshire 03302-0095

Re: Review of Potential Shoreland Impacts and Permit Requirements
Environmental Review for Sewer to Newfound Lake Project
Bristol, New Hampshire

Dear Mr. Aube,

The Town of Bristol, New Hampshire is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) for the United States Department of Agriculture (USDA), Rural Utilities Service (RUS). The purpose of the Environmental Review is to assess the environmental impacts of a proposed sewer infrastructure expansion project located in Grafton County within the state of New Hampshire. The project is intended to connect a large population of the Town near and adjacent to Newfound Lake to the wastewater and collection infrastructure in an attempt to increase public health and safety by preserving the water quality of the lake and adjacent natural resources.

As you will note in the attached narrative and maps, the project is currently in the preliminary engineering phase and includes three sewer routing alternatives. These alternatives include new infrastructure, i.e. pipes, pump stations and river crossings, as well as upgrades to the Town's existing wastewater collection system. The new infrastructure alternatives include work in both the roadway right-of-way as well as cross-country sewers across private property.

- Please indicate any applicable permits, waivers, and/or exemptions for the project.
- Please assist us in ensuring that our construction activities will be consistent with your program goals.

We would appreciate a response within 30 days. If you require additional information or wish to discuss the project, please contact me at (603) 436-6192.

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Phil MacDonald, P.E.
Project Manager

Timothy Puls, P.E.
Project Engineer

Encl.

- Project Narrative
- Sewer Routing Alternatives
- Water Resources Map

Cc: Nicholas Coates, Town Administrator, Bristol, NH

File No. 2273.12
Route:

Underwood Engineers
Record of Telephone Conversation

Date: 11/28/18

Project No.: SEWER EXTENSIONS TO
Project Name: NEWFOUND LAKE
Call to: P. MAC
Call from: JOY OBE, SHORELAND PROTECTION

Was letter confirming call forwarded?

Items Discussed:

- SHORELAND PERMIT WILL BE REQUIRED
- MUNICIPAL INFRASTRUCTURE, PERMIT APPLICATION FEES NOT REQUIRED
- ALTERNATIVES
  - SHORELAND FAVORS LEAST ENVIRONMENTAL IMPACT (ALT. 3)
  - NEWFOUND RIVER IS VERY FLASHY, MINIMIZE WORK IN RIVER

Follow-up:

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2353.05-4

November 7, 2018

Ms. Amy Lamb
Ecological Information Specialist
New Hampshire Natural Heritage Bureau
172 Pembroke Road
Concord, New Hampshire 03301

Re: NH NHB Review of Potential Impacts, File #NHB18-3448
Environmental Review for Sewer to Newfound Lake Project
Bristol, New Hampshire

Dear Ms. Lamb,

The Town of Bristol, New Hampshire is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) for the United States Department of Agriculture (USDA), Rural Utilities Service (RUS). The purpose of the Environmental Review is to assess the environmental impacts of a proposed sewer infrastructure expansion project located in Grafton County within the state of New Hampshire. The project is intended to connect a large population of the Town near and adjacent to Newfound Lake to the wastewater and collection infrastructure in an attempt to increase public health and safety by preserving the water quality of the lake and adjacent natural resources.

As you will note in the attached narrative and maps, the project is currently in the preliminary engineering phase and includes three sewer routing alternatives. These alternatives include new infrastructure, i.e. pipes, pump stations and river crossings, as well as upgrades to the Town's existing wastewater collection system. The new infrastructure alternatives include work in both the roadway right-of-way as well as cross-country sewers across private property.

We are requesting assistance of your office to determine "Potential Impacts" of the proposed project on Non-Game & Endangered Wildlife Programs as well as threatened/endangered species, bald and golden eagles, migratory bird species, anadromous species, critical habitats, species of special concern, and any other wildlife concerns. A species list was generated using the US Fish & Wildlife Service IPaC tool and has been attached for reference.

We would appreciate a response within 30 days. If you require additional information or wish to discuss the project, please contact me at (603) 436-6192.

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Phil MacDonald, P.E.
Project Manager

Timothy Puls, P.E.
Project Engineer

Encl.

- Project Map – 7.5' USGS Topographic Quadrangle
- Project Narrative
- Request for NHB Review of "Potential Impacts", #NHB18-3448
- US Fish & Wildlife Letter and Species List
- Sewer Routing Alternatives

Cc: Nicholas Coates, Town Administrator, Bristol, NH

Timothy A. Puls

From: Lamb, Amy <Amy.Lamb@dncr.nh.gov>
Sent: Friday, November 9, 2018 4:30 PM
To: tpuls@underwoodengineers.com
Cc: Tuttle, Kim; Houghton, Sandra
Subject: NHB review: NHB18-3448
Attachments: NHB18-3448_Puls.pdf

Attached, please find the review we have completed. If your review memo includes potential impacts to plants or natural communities please contact me for further information. If your project had potential impacts to wildlife, please contact NH Fish and Game at the phone number listed on the review.

Best,
Amy

Amy Lamb
Ecological Information Specialist

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301
603-271-2834

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

To: Tim Puls, Underwood Engineers, Inc.
25 Vaughan Mall
Portsmouth, NH 03801

From: Amy Lamb, NH Natural Heritage Bureau
Date: 11/9/2018 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB18-3448 Town: Bristol Location: Tax Maps: Multiple
Description: The Town of Bristol, New Hampshire is proposing to expand its wastewater collection system to the residential neighborhoods near and adjacent to Newfound Lake. This proposed project entails a multi-phase implementation schedule over several years that will require both local and federal funding to achieve. The Town began this effort in 2002 by contracting Camp Dresser and McKee (CDM) to conduct a Water Quality Improvements Study, which evaluated the existing wastewater treatment Plant (WWTP) and provided a conceptual plan for providing sewer service to the Newfound Lake area. In 2009, CDM completed a Preliminary Design Report (PDR) outlining a three-phase expansion plan of the sewer collection system including upgrades to the existing collection system and pump stations. In 2018, Underwood Engineers (UE) was contracted to update the 2009 PDR into a Preliminary Engineering Report (PER) to align the plan with USDA Rural Development (RD) grant funding application criteria. In addition to the PER, RD requires that an environmental assessment (EA) of the project area be conducted.

The Newfound sewer expansion plan would provide sewer service to over 1,200 residential units adjacent to and near Newfound Lake. The residential units consist of permanent residences, condo units, and camp grounds that range in usage from year-round to seasonal. The preliminary plan divides the project area into 10 subareas based on topography and the need for pump stations to lift wastewater over high elevations. The topography in the project area is typical of a NH lake region with lake side units at lower elevations than the roads and backlot units at much higher elevations. The preliminary design includes a combination of gravity sewers, pressurized force mains, pump stations, and residential low-pressure sewer systems designed to deliver wastewater into the existing collection system. The plan also includes sewer routing alternatives that are evaluated to determine the most economical and socially equitable approach to meet the Town's needs and future development plans.

cc: Kim Tuttle

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments: There is a State Endangered and Federally Threatened wildlife species in the vicinity of the project. Contact the NH Fish & Game Department.

Vertebrate species	State[1]	Federal	Notes
Sensitive species	E	T	Contact the NH Fish & Game Dept (see below).
Sensitive species	E	T	Contact the NH Fish & Game Dept (see below).

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

Memo

NH NATURAL HERITAGE BUREAU
NHB DATACHECK RESULTS LETTER

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

Contact for all animal reviews: Kim Tuttle, NH F&G, (603) 271-6544.

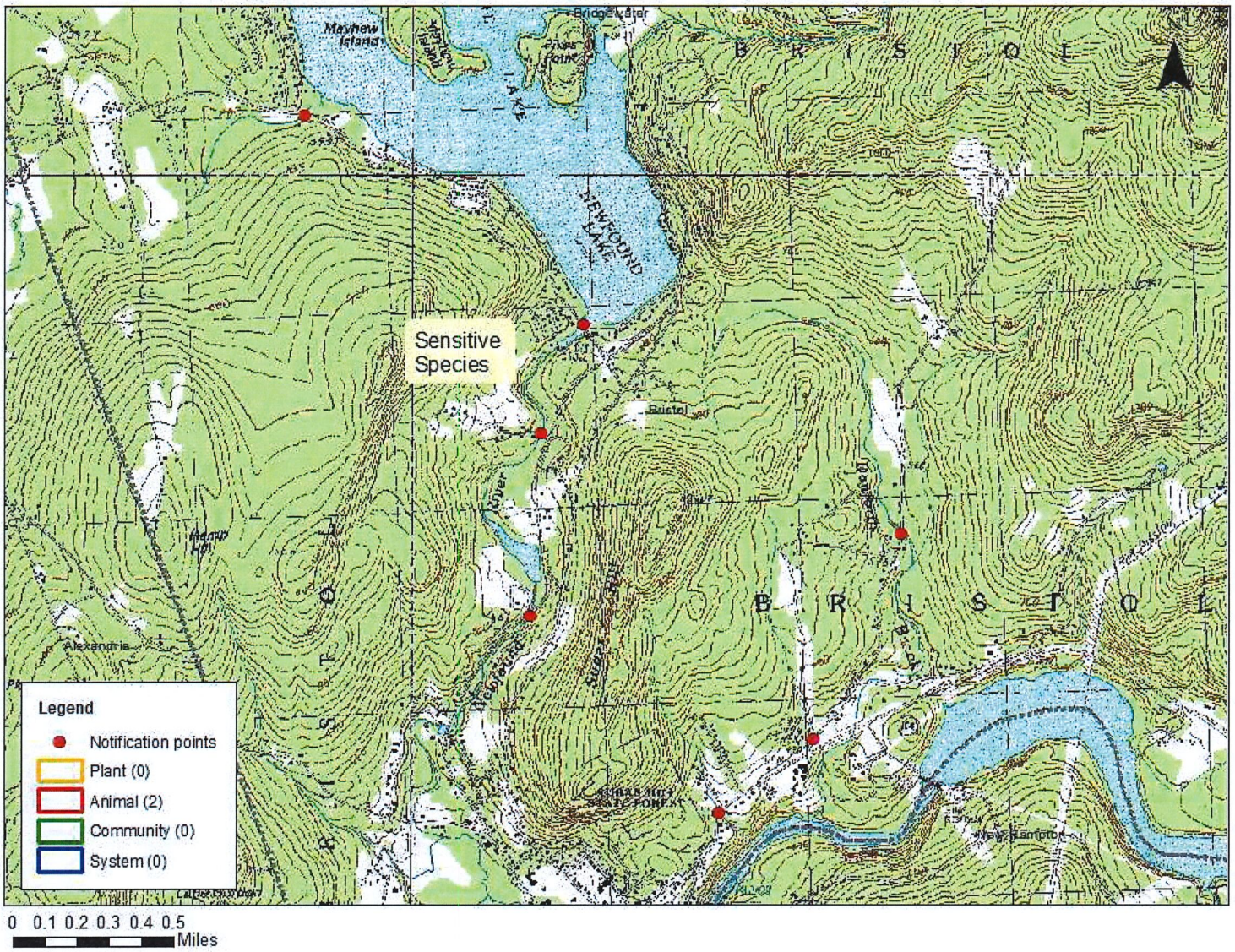
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB18-3448



New Hampshire Natural Heritage Bureau
Division of Forests & Lands - DNCR
172 Pembroke Road, Concord, NH 03301
(603) 271-2214 www.nhdfl.org

To: Timothy A. Puls, Project Engineer, Underwood Engineers, Inc.,

From: Amy Lamb, Ecological Information Specialist, NH Natural Heritage Bureau

Date: March 1, 2019

Subject: NHB18-3448, Sewer Service to Newfound Lake, Bristol NH

NHB's mission, as mandated by the Native Plant Protection Act of 1987 (RSA 217-A), is to determine protective measures and requirements necessary for the survival of native plant species, to investigate the condition and degree of rarity of plant species and to distribute information regarding the condition and protection of these species and their habitats. In cooperation with the NH Fish & Game Department's Nongame and Endangered Wildlife program, NHB maintains a statewide database of threatened and endangered plant and wildlife species and exemplary natural community occurrences in New Hampshire. This database is used as the basis for rare species reviews for environmental permitting in NH.

NHB completed a review of the above-referenced project: the proposal to expand Bristol, NH's wastewater collection system to residential neighborhoods in the vicinity of Newfound Lake (NHB18-3448). The review memo included records for two sensitive State Endangered/ Federally Threatened wildlife species. Wildlife is **not** under the jurisdiction of the NHB; consultation with the NH Fish & Game Department and/or the US Fish & Wildlife Service is required.

The review memo did **not** include any rare plant species or exemplary natural community records. **This memo is to confirm that there are no known threatened or endangered plant species or exemplary natural communities documented in or near the project area.** NHB does not have concerns or comments about this project as proposed. This result is valid until 11/9/2019, **or** as long as valid permits/project approvals are in place.

Should you have any questions about this review, please contact me at Amy.Lamb@dncr.nh.gov or (603) 271-2834.

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2353.05-4

November 13, 2018

Ms. Kim Tuttle
Wildlife Biologist, Nongame Program
New Hampshire Fish and Game
11 Hazen Drive
Concord, New Hampshire 03301

Re: NHFG Review of Sensitive Species Impacts, File #NHB18-3448
Environmental Review for Sewer to Newfound Lake Project
Bristol, New Hampshire

Dear Ms. Tuttle,

The Town of Bristol, New Hampshire is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) for the United States Department of Agriculture (USDA), Rural Utilities Service (RUS). The purpose of the Environmental Review is to assess the environmental impacts of a proposed sewer infrastructure expansion project located in Grafton County within the state of New Hampshire. The project is intended to connect a large population of the Town near and adjacent to Newfound Lake to the wastewater and collection infrastructure in an attempt to increase public health and safety by preserving the water quality of the lake and adjacent natural resources.

As you will note in the attached narrative and maps, the project is currently in the preliminary engineering phase and includes three sewer routing alternatives. These alternatives include new infrastructure, i.e. pipes, pump stations and river crossings, as well as upgrades to the Town's existing wastewater collection system. The new infrastructure alternatives include work in both the roadway right-of-way as well as cross-country sewers across private property.

We have conducted a preliminary review of threatened species, endangered species, and critical habitats using the NH NHB DataCheck tool and the US Fish & Wildlife Service IPaC tool. The NHB DataCheck Results Letter and IPaC generated species list and letter are attached for your reference. NHB requested we contact your office in regard to the presence of two sensitive species within the project area. We are requesting assistance of your office to determine potential impacts to these and/or other sensitive species.

We would appreciate a response within 30 days. If you require additional information or wish to discuss the project, please contact me at (603) 436-6192.

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

Very truly yours,

UNDERWOOD ENGINEERS, INC.

for

Phil MacDonald, P.E.
Project Manager

Timothy Puls, P.E.
Project Engineer

Encl.

- NH NHB DataCheck Results Letter, #NHB18-3448
- US Fish & Wildlife Letter and Species List
- Project Narrative
- 7.5' USGS Topographic w/ Project Area
- Sewer Routing Alternatives

Cc: Sandra Houghton, Wildlife Biologist, NHFG Nongame Program
Nicholas Coates, Town Administrator, Bristol, NH

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: November 02, 2018
Consultation Code: 05E1NE00-2019-SLI-0247
Event Code: 05E1NE00-2019-E-00550
Project Name: Bristol, NH - Sewer Expansion to Newfound Lake Area

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2019-SLI-0247

Event Code: 05E1NE00-2019-E-00550

Project Name: Bristol, NH - Sewer Expansion to Newfound Lake Area

Project Type: WASTEWATER PIPELINE

Project Description: The project is located in Bristol, NH primarily in the areas adjacent to and near Newfound Lake. This project is currently in the preliminary engineering and planning phase. The project entails a sewer expansion plan to bring municipal sewer service to and around Newfound Lake as well as improvements to the Town's existing wastewater collection system. A detailed project narrative and sewer expansion plan will be provided to US Fish & Wildlife Service along with this request for evaluation of threatened and endangered species and critical habitat within the project area. Results of the Fish & Wildlife assessment will be included in a comprehensive environmental review report. This report along with a Preliminary Engineering Report will be submitted to USDA Rural Development as part of a funding application through USDA's Water and Environmental Program.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/43.61457321777546N71.73555073005741W

Counties: Grafton, NH

Endangered Species Act Species

There is a total of 1 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

Timothy A. Puls

From: David Simmons <david_simmons@fws.gov>
Sent: Tuesday, November 27, 2018 8:42 AM
To: tpuls@underwoodengineers.com
Subject: NLEB streamlined consultation form and "No species present" letter

Hi Tim,
Here is the link to the northern long-eared bat webpage: https://www.fws.gov/midwest/endangered/mammals/nleb/index.html

And here is the "No species present" letter: https://www.fws.gov/newengland/pdfs/no_spp_present_ltr_2018.pdf

Let me know if you have any questions, concerns, etc. Regards,
David

David Simmons
Endangered Species Program Supervisor
New England Fish and Wildlife Office
U.S. Fish and Wildlife Service
70 Commercial Street, Suite 300
Concord, New Hampshire 03301
603.227.6425

Timothy A. Puls

From: harries, jonathan - RD, Montpelier, VT <jonathan.harries@vt.usda.gov>
Sent: Wednesday, February 27, 2019 1:02 PM
To: Timothy A. Puls; Koprowski, Mark - RD, Concord, NH
Cc: 'Keith A. Pratt'; 'Phil MacDonald'; Nicholas Coates
Subject: RE: Environmental Concerns

Flag Status: Flagged

Good afternoon,

Responding first to Nik's email:

Permits are not needed for a funding decision or commitment. Pertaining to this email chain, what is needed is RD acceptance of an environmental assessment (EA) document, which should be forthcoming from Underwood Engineers. I believe Mark's intention was to be pro-active regarding the 3 environmental resources noted. Completion of the EA (and PER) is needed for the application and subsequent funding commitment. For completion of the EA, completed consultation with USFWS / NHNHB and NHSHPO is needed.

Responding to Tim's email in the same numbered order:

1. All pump stations / buildings need to be specifically located for the ER/PER and these locations need to be shown as not in floodplains or wetlands. Not locating in wetlands is without exception. Locating in floodplains is allowable If it is shown that there is no practicable alternative.
2. As noted above SHPO consultation is required per Section 106 of the National Historic Preservation Act (NHPA). This is the only consultation / component of the EA that is allowed to be "deferred" subsequent to a funding commitment. Meaning, RD can commit funds and completion of S106 would be completed as soon as possible after. This would be a condition in the letter of conditions. That being said, please push ahead with the phase IA study and we will follow up. The report should be provided to RD and any additional investigations recommended in the report should reviewed by RD prior to engaging.
3. RD will finalize consultation with USFWS. Please pursue formal response from NHNHB / NHFG.

Please provide a timeline on providing the EA. There is a 15 day public notice period which we would like to get published ASAP.

Please contact me with any questions.

Thanks,
Jon

Jonathan Harries
VT/NH State Engineer
USDA | Rural Development
(802) 828-6035
87 State St., Suite 324 | P.O. Box 249
Montpelier, VT 05601
www.rd.usda.gov/VT | www.rd.usda.gov/nh

Timothy A. Puls

From: Timothy A. Puls <tpuls@underwoodengineers.com>
Sent: Tuesday, March 5, 2019 11:37 AM
To: 'Houghton, Sandra'
Subject: RE: Bristol Sewer Expansion - NHB18-3448
Attachments: NHB18-3448_follow-up.pdf

Hi Sandi,

The sewer installation will consist of a sewer main installed under the road pavement. Laterals then connect each house to the main and typically run in the most direct line from the house plumbing to the sewer main. These are typically across the front lawn. In the Crodem Drive and Holiday Hills Drive area, most of the homes are close to the road so tree removal is not anticipated. A situation that would require tree removal is if a tree line is between the road and the house. This would require select tree removal to install a 2" to 4" line.

Your recommendations for working along the cross-country route are noted.

If possible, can you provide a formal letter stating your review of the project and your recommendations? This letter will become part of the permanent record of the Environmental Assessment of this project. A formal response will help to ensure your recommendations are presented clearly to USDA Rural Development, the Town of Bristol, and the eventual design team.

I have attached an example letter from Amy Lamb at NH NHB for reference. This is the response Ms. Lamb provided for this project.

Please call or email if you would like to discuss further or have any questions.

Thank you for your time,
Tim

From: Houghton, Sandra <Sandra.Houghton@wildlife.nh.gov>
Sent: Monday, March 4, 2019 11:22 AM
To: 'Timothy A. Puls' <tpuls@underwoodengineers.com>
Subject: RE: Bristol Sewer Expansion - NHB18-3448

Hello,

In the attached the red box surrounds the area that is within ¼ mile of the hibernacula and overlaps with 2353 Alt 2 Phase 1 & 2. From a desktop review it does not appear that there is a lot of suitable habitat in this area as most of the trees are isolated on lawns; is that accurate? However, the corner of Crodem Drive and Holiday Hills Road appears to have potentially suitable forest habitat. Do you know if whether tree cutting is proposed here? Or if this area can be avoided?

For the cross country route voluntary conservation measures are recommended given that bats may use this area before and after hibernation in the spring and fall, in addition to the summer (April1 to November 14). "Avoid clearing suitable spring staging and fall swarming habitat within a 5-mile radius of known or assumed northern long-eared bat

hibernacula during the staging and swarming seasons (April 1 to May 15 and August 15 to November 14, respectively". In summary it is recommended that tree removal occur from December to April 1.

Thank you,
Sandi

Sandra Houghton
Wildlife Diversity Biologist
Nongame and Endangered Wildlife Program
NH Fish and Game Department
11 Hazen Dr.
Concord, NH 03301
603-271-5679

From: Timothy A. Puls [mailto:tpuls@underwoodengineers.com]
Sent: Thursday, February 28, 2019 11:40 AM
To: Houghton, Sandra
Subject: RE: Bristol Sewer Expansion - NHB18-3448

Hi Sandi,

The submitted engineering report to RD included three sewer routing alternative with four phases each. The preferred route is Alternative 2 , of which Phase 1 and Phase 2 are being pursued for this round of funding.

Here are a few maps of the project area:

- Figure 1-2: Full project area topo
- Figure 6-1: Full project area for Alternative 2, all 4 phases labeled
- 2353 Alt 2 Phase 1 & 2: This is the extent of the project for this application round.
- Figure 9: Is the map with the buffer area around the hibernacula that I put together from our previous conversations.

Regarding tree removal, the sewer lines that follow roads will be installed either in the subbase of the road or within the ROW. This would result in minimal to no tree removal for these areas. The cross-country route, which is part of Phase 1, that runs from Pump Sta #1 to Hall Road will require tree removal. The installation approach will be further developed during final design phase, but may include some areas of horizontal directional drilling techniques to avoid impacts to wetlands and other sensitive areas. Identification of sensitive areas within this corridor and throughout the project area will help to determine the extent of direction drilling required, which then can be budgeted for appropriately.

I contacted David Simmons at USFWS last fall about this project and their review is underway.

Please let me know if you have any additional questions or need additional information.

Thank you for your assistance.

Tim

From: Houghton, Sandra <Sandra.Houghton@wildlife.nh.gov>
Sent: Thursday, February 28, 2019 10:48 AM

To: 'Timothy A. Puls' <tpuls@underwoodengineers.com>
Subject: RE: Bristol Sewer Expansion - NHB18-3448

Hi Tim,

If you can provide a more detailed map that would help. Particularly within the area near hibernacula where you indicated work would be within existing roadway(s), but may include minimal tree removal. Do you know more regarding potential tree removal?

Given the federal agency involvement FWS may review https://www.fws.gov/midwest/endangered/mammals/nleb/s7.html I can help you to determine the 1/4mile from a hibernaculum question.

Thank you,
Sandi

Sandra Houghton
Wildlife Diversity Biologist
Nongame and Endangered Wildlife Program
NH Fish and Game Department
11 Hazen Dr.
Concord, NH 03301
603-271-5679

From: Timothy A. Puls [mailto:tpuls@underwoodengineers.com]
Sent: Wednesday, February 27, 2019 3:52 PM
To: Houghton, Sandra
Subject: RE: Bristol Sewer Expansion - NHB18-3448

Hi Sandra,

I am following up on a voicemail that I just left for you.

The potential funding agency, USDA RD, has requested a formal response from NHFG in regard to any potential impacts on the NLEB habitats in the project area.

Some of the project information has changed or been reduced to fit the potential funding amount. I can provide more detailed maps and information as needed.

Please let me know the best way to proceed.

Thanks,
Tim

UNDERWOOD engineers

Timothy A. Puls, P.E.

civil &
environmental
engineering

UNDERWOOD
engineers

2353.05-4

November 20, 2018

Mr. Don Keirstead,
State Soil Scientist
Natural Resources Conservation Service
273 Locust Street, Suite 2D
Dover, New Hampshire 03820

Re: ***Review of Project Effects to Farmlands***
Environmental Review for Sewer to Newfound Lake Project
Bristol, New Hampshire

Dear Mr. Keirstead,

The Town of Bristol, New Hampshire is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) for the United States Department of Agriculture (USDA), Rural Utilities Service (RUS). The purpose of the Environmental Review is to assess the environmental impacts of a proposed sewer infrastructure expansion project located in Grafton County within the state of New Hampshire. The project is intended to connect a large population of the Town near and adjacent to Newfound Lake to the wastewater and collection infrastructure in an attempt to increase public health and safety by preserving the water quality of the lake and adjacent natural resources.

As you will note in the attached narrative and maps, the project is currently in the preliminary engineering phase and includes three sewer routing alternatives. These alternatives include new infrastructure, i.e. pipes, pump stations and river crossings, as well as upgrades to the Town's existing wastewater collection system. The new infrastructure alternatives include work in both the roadway right-of-way as well as cross-country sewers across private property.

We are requesting information on the possible effects of the proposed project on important farmland, and any recommendations you have to minimize or avoid these effects. We also seek your assessment of the compatibility of the proposed project with State and local government or any private programs and policies to protect important farmland.

We would appreciate a response within 30 days. If you require additional information or wish to discuss the project, please contact me at (603) 436-6192.

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Phil MacDonald, P.E.
Project Manager

Timothy Puls, P.E.
Project Engineer

Encl.

- Project Narrative
- Sewer Routing Alternatives
- Land Cover Map
- Farmlands Map
- USGS Soils Map

Cc: Nicholas Coates, Town Administrator, Bristol, NH

U.S. DEPARTMENT OF AGRICULTURE
Natural Resources Conservation Service

NRCS-CPA-106
(Rev. 1-91)

FARMLAND CONVERSION IMPACT RATING FOR CORRIDOR TYPE PROJECTS

PART I *(To be completed by Federal Agency)*	3. Date of Land Evaluation Request 12/5/18	4. Sheet 1 of 1
1. Name of Project **Sewer to Newfound Lake**	5. Federal Agency Involved **USDA Rural Development**	
2. Type of Project **Sewer Collection System Expansion**	6. County and State **Grafton, New Hampshire**	

PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS	2. Person Completing Form
3. Does the corridor contain prime, unique statewide or local important farmland? (If no, the FPPA does not apply - Do not complete additional parts of this form). YES ☐ NO ☐		4. Acres Irrigated / Average Farm Size
5. Major Crop(s)	6. Farmable Land in Government Jurisdiction Acres: %	7. Amount of Farmland As Defined in FPPA Acres: %
8. Name Of Land Evaluation System Used	9. Name of Local Site Assessment System	10. Date Land Evaluation Returned by NRCS

PART III *(To be completed by Federal Agency)*	Alternative Corridor For Segment _____			
	Corridor A	Corridor B	Corridor C	Corridor D
A. Total Acres To Be Converted Directly	1	3	1	
B. Total Acres To Be Converted Indirectly, Or To Receive Services	0	0	0	
C. Total Acres In Corridor	1	3	1	
PART IV *(To be completed by NRCS) Land Evaluation Information*				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS) Land Evaluation Information Criterion Relative value of Farmland to Be Serviced or Converted (Scale of 0 - 100 Points)*				

PART VI *(To be completed by Federal Agency) Corridor Assessment Criteria (These criteria are explained in 7 CFR 658.5(c))*	Maximum Points				
1. Area in Nonurban Use	15				
2. Perimeter in Nonurban Use	10				
3. Percent Of Corridor Being Farmed	20				
4. Protection Provided By State And Local Government	20				
5. Size of Present Farm Unit Compared To Average	10				
6. Creation Of Nonfarmable Farmland	25				
7. Availablility Of Farm Support Services	5				
8. On-Farm Investments	20				
9. Effects Of Conversion On Farm Support Services	25				
10. Compatibility With Existing Agricultural Use	10				
TOTAL CORRIDOR ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	0	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

1. Corridor Selected:	2. Total Acres of Farmlands to be Converted by Project:	3. Date Of Selection:	4. Was A Local Site Assessment Used? YES ☐ NO ☐

5. Reason For Selection:

Signature of Person Completing this Part: | DATE

NOTE: Complete a form for each segment with more than one Alternate Corridor

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor - type site or design alternative for protection as farmland along with the land evaluation information.

(1) How much land is in nonurban use within a radius of 1.0 mile from where the project is intended?
More than 90 percent - 15 points
90 to 20 percent - 14 to 1 point(s)
Less than 20 percent - 0 points

(2) How much of the perimeter of the site borders on land in nonurban use?
More than 90 percent - 10 points
90 to 20 percent - 9 to 1 point(s)
Less than 20 percent - 0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?
More than 90 percent - 20 points
90 to 20 percent - 19 to 1 point(s)
Less than 20 percent - 0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?
Site is protected - 20 points
Site is not protected - 0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County ?
(Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage or Farm Units in Operation with $1,000 or more in sales.)
As large or larger - 10 points
Below average - deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average - 9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?
Acreage equal to more than 25 percent of acres directly converted by the project - 25 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project - 1 to 24 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project - 0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?
All required services are available - 5 points
Some required services are available - 4 to 1 point(s)
No required services are available - 0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?
High amount of on-farm investment - 20 points
Moderate amount of on-farm investment - 19 to 1 point(s)
No on-farm investment - 0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?
Substantial reduction in demand for support services if the site is converted - 25 points
Some reduction in demand for support services if the site is converted - 1 to 24 point(s)
No significant reduction in demand for support services if the site is converted - 0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?
Proposed project is incompatible to existing agricultural use of surrounding farmland - 10 points
Proposed project is tolerable to existing agricultural use of surrounding farmland - 9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland - 0 points

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2353.05-4

November 20, 2018

Ms. Wendy Gilman
Grants and Compliance Officer
NH Office of Strategic Initiatives
Johnson Hall, 3rd Floor
107 Pleasant Street
Concord, New Hampshire 03301

Re: Town of Bristol – Sewer to Newfound Lake Infrastructure Expansion
Environmental Review for USDA RD Application
Bristol, New Hampshire

Dear Ms. Gilman,

The Town of Bristol, New Hampshire is in the process of performing an environmental review pursuant to the National Environmental Policy Act (NEPA) for the United States Department of Agriculture (USDA), Rural Utilities Service (RUS). The purpose of the environmental review is to assess the environmental impacts of the proposed sewer infrastructure expansion project. The project is intended to connect a large population of the Town near and adjacent to Newfound Lake to the existing wastewater collection system in an attempt to increase public health and safety by preserving the water quality of the lake and adjacent natural resources.

As you will note in the attached narrative and maps, the project is currently in the preliminary engineering phase and includes three sewer routing alternatives. These alternatives include new infrastructure, i.e. pipes, pump stations and river crossings, as well as upgrades to the Town's existing wastewater collection system. The new infrastructure alternatives include work in both the roadway right-of-way as well as cross-country sewers across private property.

We are submitting this letter to initiate a request for review by NHOSI and would appreciate a response within 30 days. If you require additional information or wish to discuss the project, please contact me at (603) 436-6192.

Very truly yours,

UNDERWOOD ENGINEERS, INC.

Phil MacDonald, P.E.
Project Manager

Timothy Puls, P.E.
Project Engineer

ph 603.436.6192
fx 603.431.4733
25 Vaughan Mall
Portsmouth, NH 03801
underwoodengineers.com

Encl.

- Project Narrative
- Budget Summary
- SF 424 Forms
- Figure 1 – Sewer Routing Alternatives

Cc: Nicholas Coates, Town Administrator, Bristol, NH

REQUEST FOR REVIEW

The enclosed information is submitted for review under the Intergovernmental Review Process.

For detailed information regarding the proposed project, please contact the Applicant:

Name: Mr. Nicholas Coates
Title: Town Administrator
Phone Number: (603) 744-3354
Email Address: townadmin@townofbristolnh.org
Address: 230 Lake Street, Bristol, NH 03222

Please forward the results of the review to:

Funding Agency: USDA Rural Development
Contact Name: Mark Koprowski
Title: Community Programs Specialist
Phone Number: (603) 223-6057
Email Address: mark.koprowski@nh.usda.gov
Address: 10 Ferry Street, Suite 218, Concord Center, Concord, NH 03301

Bristol, NH – Sewer to Newfound Lake
Project Summary

The Town of Bristol, New Hampshire is proposing to expand its wastewater collection system to the residential neighborhoods near and adjacent to Newfound Lake. This proposed project entails a multi-phase implementation schedule over several years that will require local, state, and federal coordination to achieve. The Town began this effort in 2002 by contracting Camp Dresser and McKee (CDM) to conduct a Water Quality Improvements Study, which evaluated the existing wastewater treatment Plant (WWTP) and provided a conceptual plan for providing sewer service to the Newfound Lake area. In 2009, CDM completed a Preliminary Design Report (PDR) outlining a three-phase expansion plan of the sewer collection system including upgrades to the existing collection system and pump stations. In 2018, Underwood Engineers (UE) was contracted to update the 2009 PDR into a Preliminary Engineering Report (PER) to align the plan with USDA Rural Development (RD) grant funding application criteria.

The Town of Bristol is located along the Pemigewasset River in Grafton County, New Hampshire. The Town currently owns and operates a wastewater treatment facility, 17 miles of sanitary sewers, and 3 wastewater pumping stations. Currently, 35 percent of the Town's residents (1,055 individuals) are connected to the municipal sewer system. The wastewater collection infrastructure was originally constructed in the early 1970's and does not extend to portions of the town located near and adjacent to Newfound Lake. As such, the heavily populated area around the Lake relies on individual septic systems for their wastewater disposal. Some of the "grandfathered" septic systems, exempt from current NHDES regulations, are located within wellhead protection areas or shoreline setback zones and have the potential to effect drinking water wells, rivers, and Newfound Lake. In an attempt to preserve the town drinking water and adjacent natural resources the town has begun preliminary designs to expand its sewer system towards the Lake.

OMB Number: 4040-0004
Expiration Date: 12/31/2019

Application for Federal Assistance SF-424

* 1. Type of Submission:	* 2. Type of Application:	* If Revision, select appropriate letter(s):
☐ Preapplication	☒ New	
☒ Application	☐ Continuation	* Other (Specify):
☐ Changed/Corrected Application	☐ Revision	

* 3. Date Received:	4. Applicant Identifier:

5a. Federal Entity Identifier:	5b. Federal Award Identifier:

State Use Only:

6. Date Received by State:	7. State Application Identifier:

8. APPLICANT INFORMATION:

* a. Legal Name: Town of Bristol, New Hampshire

* b. Employer/Taxpayer Identification Number (EIN/TIN):	* c. Organizational DUNS:
02-6000096	0534679160000

d. Address:

* Street1:	230 Lake Street
Street2:	
* City:	Bristol
County/Parish:	Grafton
* State:	NH: New Hampshire
Province:	
* Country:	USA: UNITED STATES
* Zip / Postal Code:	03222-3572

e. Organizational Unit:

Department Name:	Division Name:
Town of Bristol	

f. Name and contact information of person to be contacted on matters involving this application:

Prefix:	Mr.	* First Name:	Nicholas
Middle Name:			
* Last Name:	Coates		
Suffix:			

Title: Town Administrator

Organizational Affiliation:
Town of Bristol

* Telephone Number:	(603) 744-3354	Fax Number:	(603) 744-2521

* Email: townadmin@townofbristolnh.org

Application for Federal Assistance SF-424

*** 9. Type of Applicant 1: Select Applicant Type:**

C: City or Township Government

Type of Applicant 2: Select Applicant Type:

Type of Applicant 3: Select Applicant Type:

* Other (specify):

*** 10. Name of Federal Agency:**

USDA Rural Development - Rural Utilities Service

11. Catalog of Federal Domestic Assistance Number:

10-760

CFDA Title:

Water and Waste Disposal Loan and Grant Program

*** 12. Funding Opportunity Number:**

* Title:

13. Competition Identification Number:

Title:

14. Areas Affected by Project (Cities, Counties, States, etc.):

Figure 1_Sewer Routing_.pdf

Add Attachment | Delete Attachment | View Attachment

*** 15. Descriptive Title of Applicant's Project:**

Sewer to Newfound Lake

Attach supporting documents as specified in agency instructions.

Add Attachments | Delete Attachments | View Attachments

Application for Federal Assistance SF-424

16. Congressional Districts Of:

* a. Applicant: 2
* b. Program/Project: 2

Attach an additional list of Program/Project Congressional Districts if needed.

Add Attachment | Delete Attachment | View Attachment

17. Proposed Project:

* a. Start Date: 12/21/2018
* b. End Date: 08/01/2021

18. Estimated Funding ($):

* a. Federal	15,000,000.00
* b. Applicant	0.00
* c. State	0.00
* d. Local	0.00
* e. Other	0.00
* f. Program Income	0.00
* g. TOTAL	15,000,000.00

*** 19. Is Application Subject to Review By State Under Executive Order 12372 Process?**

☒ a. This application was made available to the State under the Executive Order 12372 Process for review on 11/30/2018.

☐ b. Program is subject to E.O. 12372 but has not been selected by the State for review.

☐ c. Program is not covered by E.O. 12372.

*** 20. Is the Applicant Delinquent On Any Federal Debt? (If "Yes," provide explanation in attachment.)**

☐ Yes ☒ No

If "Yes", provide explanation and attach

Add Attachment | Delete Attachment | View Attachment

21. *By signing this application, I certify (1) to the statements contained in the list of certifications and (2) that the statements herein are true, complete and accurate to the best of my knowledge. I also provide the required assurances** and agree to comply with any resulting terms if I accept an award. I am aware that any false, fictitious, or fraudulent statements or claims may subject me to criminal, civil, or administrative penalties. (U.S. Code, Title 218, Section 1001)**

☒ ** I AGREE

** The list of certifications and assurances, or an internet site where you may obtain this list, is contained in the announcement or agency specific instructions.

Authorized Representative:

Prefix: Mr. * First Name: Nicholas

Middle Name:

* Last Name: Coates

Suffix:

* Title: Town Administrator

* Telephone Number: (603) 744-3354 Fax Number: (603) 744-2521

* Email: townadmin@townofbristolnh.org

* Signature of Authorized Representative: * Date Signed: 11/29/18

OMB Number: 4040-0008
Expiration Date: 01/31/2019

BUDGET INFORMATION - Construction Programs

NOTE: Certain Federal assistance programs require additional computations to arrive at the Federal share of project costs eligible for participation. If such is the case, you will be notified.

COST CLASSIFICATION	a. Total Cost	b. Costs Not Allowable for Participation	c. Total Allowable Costs (Columns a-b)
1. Administrative and legal expenses	$ 0.00	$ 0.00	$ 0.00
2. Land, structures, rights-of-way, appraisals, etc.	$ 0.00	$ 0.00	$ 0.00
3. Relocation expenses and payments	$ 0.00	$ 0.00	$ 0.00
4. Architectural and engineering fees	$ 2,000,000.00	$ 0.00	$ 2,000,000.00
5. Other architectural and engineering fees	$ 0.00	$ 0.00	$ 0.00
6. Project inspection fees	$ 0.00	$ 0.00	$ 0.00
7. Site work	$ 0.00	$ 0.00	$ 0.00
8. Demolition and removal	$ 0.00	$ 0.00	$ 0.00
9. Construction	$ 10,500,000.00	$ 0.00	$ 10,500,000.00
10. Equipment	$ 0.00	$ 0.00	$ 0.00
11. Miscellaneous	$ 0.00	$ 0.00	$ 0.00
12. SUBTOTAL *(sum of lines 1-11)*	$ 12,500,000.00	$ 0.00	$ 12,500,000.00
13. Contingencies	$ 2,500,000.00	$ 0.00	$ 2,500,000.00
14. SUBTOTAL	$ 15,000,000.00	$ 0.00	$ 15,000,000.00
15. Project (program) income	$ 0.00	$ 0.00	$ 0.00
16. TOTAL PROJECT COSTS *(subtract #15 from #14)*	$ 15,000,000.00	$ 0.00	$ 15,000,000.00

FEDERAL FUNDING

17. Federal assistance requested, calculate as follows: (Consult Federal agency for Federal percentage share.) Enter the resulting Federal share.	Enter eligible costs from line 16c Multiply X 100 %	$ 15,000,000.00

CHRISTOPHER T. SUNUNU
GOVERNOR

STATE OF NEW HAMPSHIRE
OFFICE OF STRATEGIC INITIATIVES
107 Pleasant Street, Johnson Hall
Concord, NH 03301-3834
Telephone: (603) 271-2155
Fax: (603) 271-2615

DIVISION OF PLANNING
DIVISION OF ENERGY
www.nh.gov/osi

NEW HAMPSHIRE INTERGOVERNMENTAL REVIEW PROCESS

LETTER OF ACKNOWLEDGEMENT

To: Nicholas Coates
Town Administrator
Town of Bristol
230 Lake Street
Bristol, NH 03222-3572

Date Received: 12/5/2018

SAI Number: NH181206.336

Suspense Date: 1/4/2019

Funding Agency: U.S. Department of Agriculture, Rural Development

Program Name: Water and Waste Disposal Systems for Rural Communities

CFDA Number: 10.760

Applicant: Town of Bristol

Project: Sewer to Newfound Lake

This office has received your Intergovernmental Review request, subject as above. This letter is for your information only and requires no further action.

Your request is assigned a State Application Identifier Number (SAI Number) shown above. In future correspondence, please refer to the SAI Number.

A summary of the results will be issued upon completion of the review process on or before the suspense date shown above. Should it be necessary to grant more time for review, you will be advised.

Sincerely,

Wendy Gilman

Wendy Gilman
Procurement & Contract Compliance Officer

Attachment: "Request for Review," for your information

CHRISTOPHER T. SUNUNU
GOVERNOR

STATE OF NEW HAMPSHIRE
OFFICE OF STRATEGIC INITIATIVES
107 Pleasant Street, Johnson Hall
Concord, NH 03301-3834
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DIVISION OF PLANNING
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NEW HAMPSHIRE INTERGOVERNMENTAL REVIEW PROCESS

SINGLE POINT OF CONTACT

REQUEST FOR REVIEW

Lakes Region Planning Commission
NH Fish & Game Department
NH DOT, Bureau of Planning & Community Assistance

Date: 12/5/2018
SAI No.: NH181206.336
Applicant: Town of Bristol
Project: Sewer to Newfound Lake
Water and Waste Disposal Systems for Rural Communities
U.S. Department of Agriculture, Rural Development
CFDA No.: 10.760

Return Before: 12/30/2018

The attached **Federal Assistance** request is forwarded for your review and comments. The review should focus on the project's compatibility with the plans, programs, and objectives of your agency.

For additional information regarding this application, contact: Nicholas Coates, Town Administrator
Town of Bristol
603-744-3354

If you have questions about the NH Intergovernmental Review Process, please contact Wendy Gilman, Procurement & Contract Compliance Officer, at 271-2155. It is important that the original copy of this review be returned to this office prior to the date shown above. **Non-receipt of the review implies tacit concurrence.**

Comments: (Check one. Additional comments should be included on a separate sheet.)

_____ **Concur.** _____ **Concur, permits required.** (list: _____)

_____ **Concur with conditions.** (indicate major reservations about the project and the specific substantive changes or modifications desired)

_____ **Do not concur.** (summarize the major defensible reasons for recommended disapproval including documentation or references to plans, statutes, etc.)

_____ **Technical comments.** (although the reviewer may not wish to take a formal position, technical comments may be attached)

_____ **No comment.**

Reviewer's Signature: _____ Date: _____

Reviewer's Name: _____ Title: _____
(please type or print name)

RETURN ONLY THIS SHEET TO OSI

TDD Access: Relay NH 1-800-735-2964

CHRISTOPHER T. SUNUNU
GOVERNOR

STATE OF NEW HAMPSHIRE

OFFICE OF STRATEGIC INITIATIVES
107 Pleasant Street, Johnson Hall
Concord, NH 03301-3834
Telephone: (603) 271-2155
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DIVISION OF PLANNING
DIVISION OF ENERGY
www.nh.gov/osi

NEW HAMPSHIRE INTERGOVERNMENTAL REVIEW PROCESS
SINGLE POINT OF CONTACT
RESULTS SUMMARY

To:	Mark Koprowski Community Programs Specialist USDA, Rural Development
From:	Wendy Gilman, Procurement & Contract Compliance Officer
Date:	January 2, 2019
Applicant:	Town of Bristol
Program/Project:	Water and Waste Disposal Systems for Rural Communities / Sewer to Newfound Lake CFDA # 10.760
SAI#	NH181206.336
Copy To:	Nicholas Coates Town Administrator Town of Bristol 230 Lake Street Bristol, NH 03222-3572

RESULTS SUMMARY

This is to confirm that the Intergovernmental Review Process for the stated program / project has been completed. Reviewer response(s) are summarized below. Please refer to the attached copy of the Request for Review for a list of reviewers.

2 **Concur.**

___ **Concurrence only with conditions:** Permits required or technical comments attached.

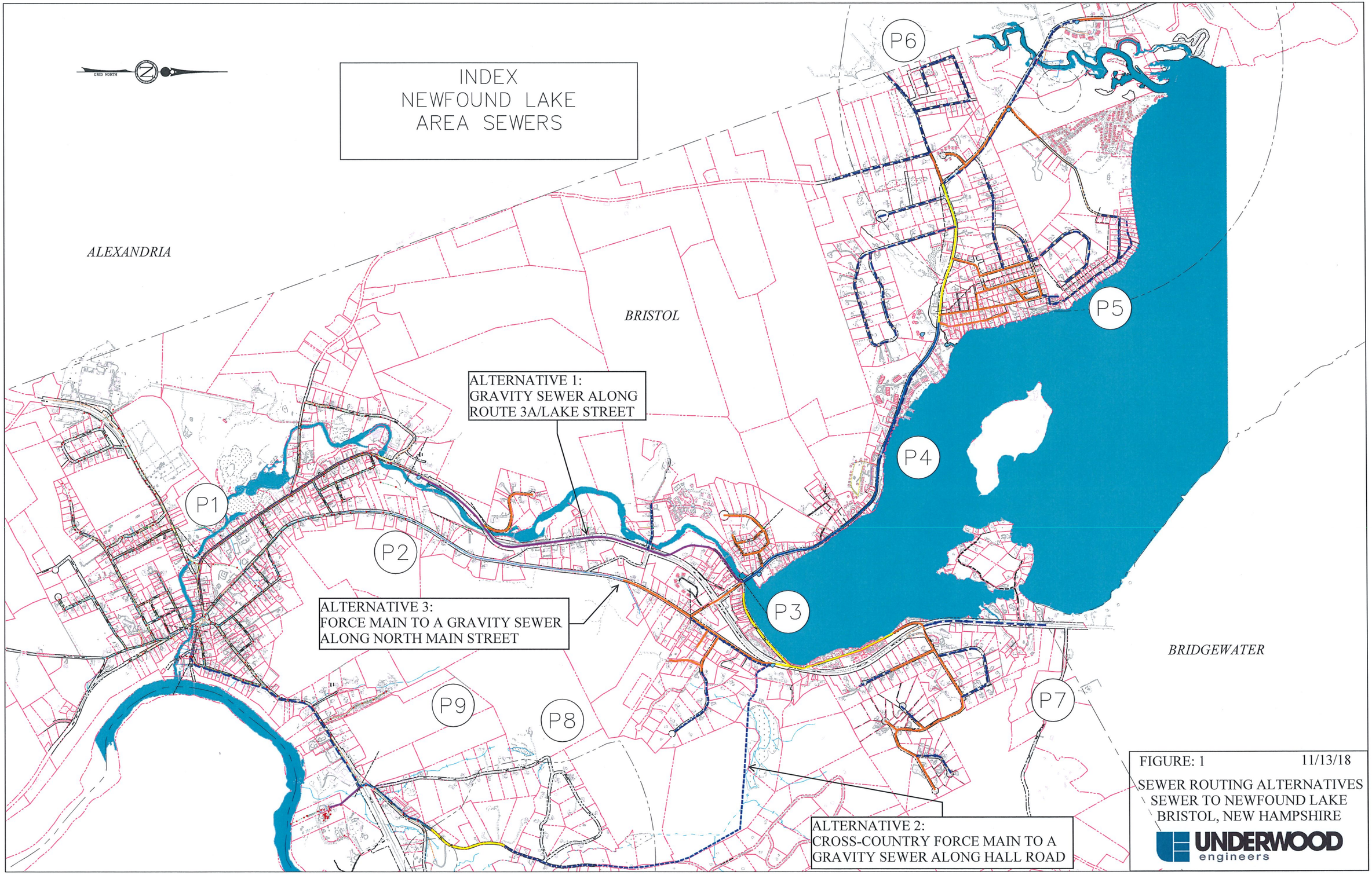
___ **Technical comments:**

___ **Do not concur.**

1 **No comment or non-receipt:** Presumed concurrence.

Authorized Signature Wendy Gilman
Wendy Gilman, Procurement & Contract Compliance Officer

7.0 Reference Figures



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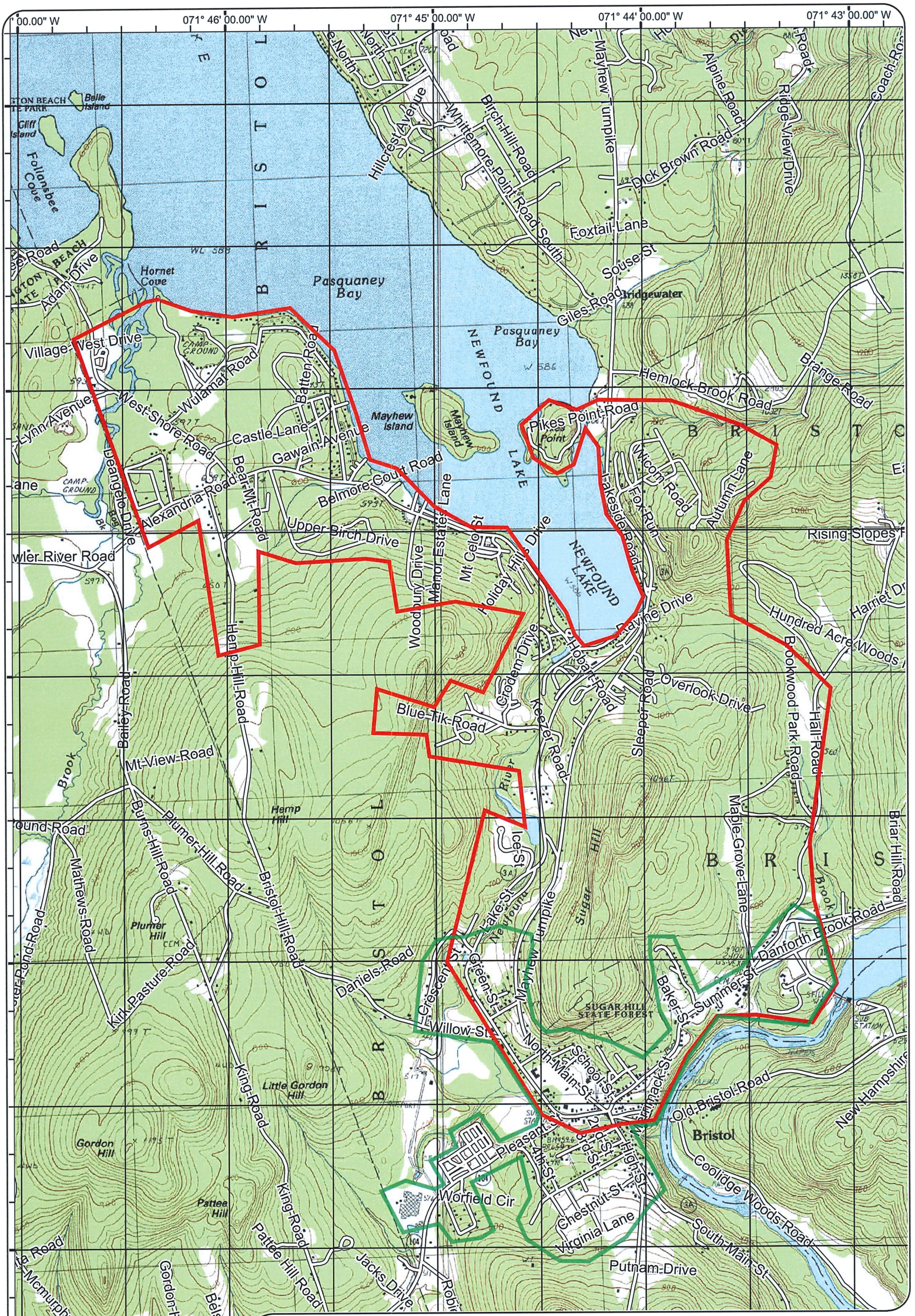
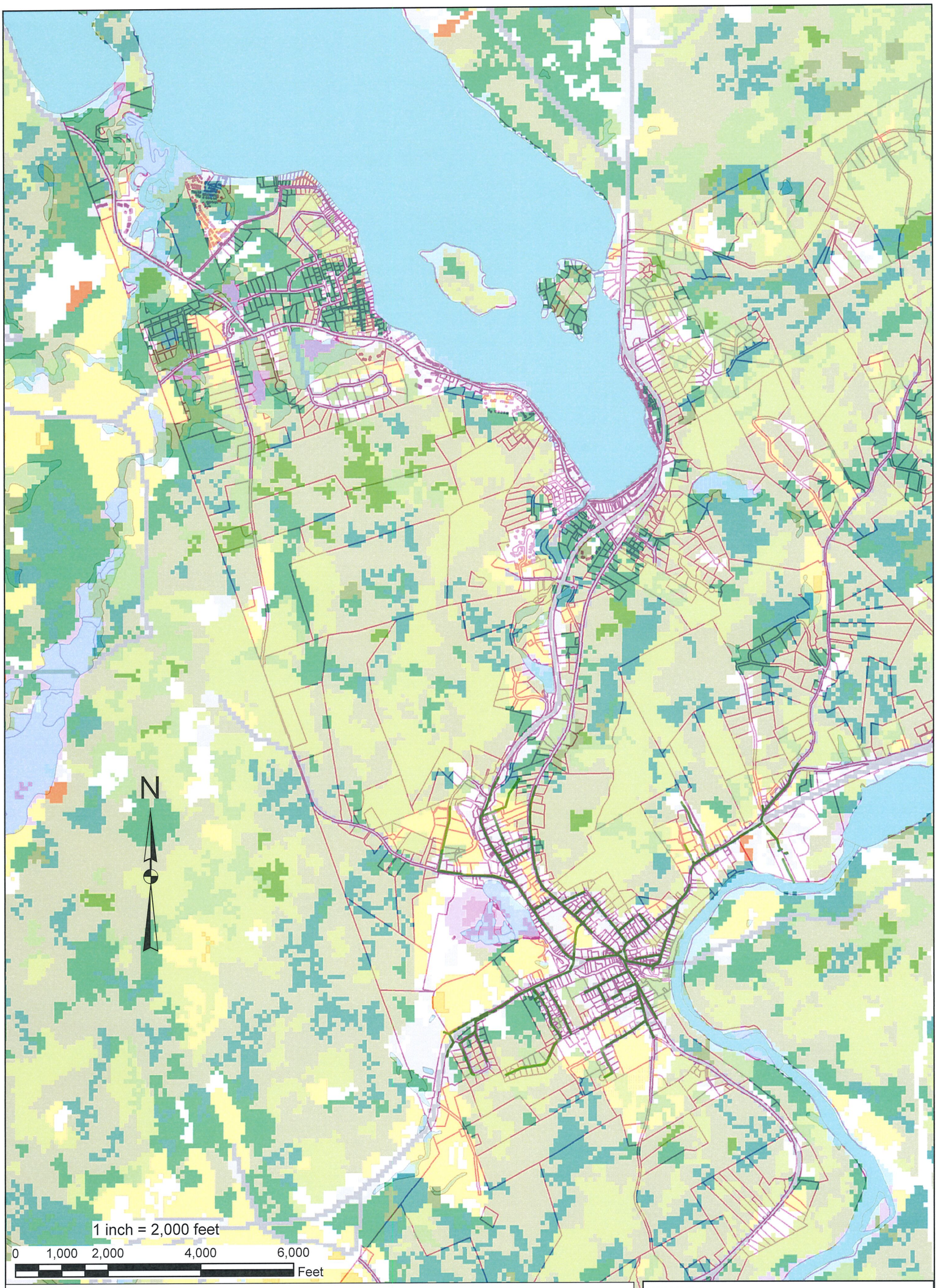


LEGEND
PROJECT PLANNING AREAS
EXISTING SEWER AREAS

DATE	UNDERWOOD engineers	USGS TOPOGRAPHIC MAP	FIG.
12/21/18		SEWER TO NEWFOUND LAKE	2
PROJECT 2353	25 Vaughan Mall, Portsmouth, N.H. 03801 Tel. 603-436-6192 Fax. 603-431-4733	TOWN OF BRISTOL BRISTOL, NEW HAMPSHIRE	



Legend

NH Land Cover Assessment 2001

VALUE

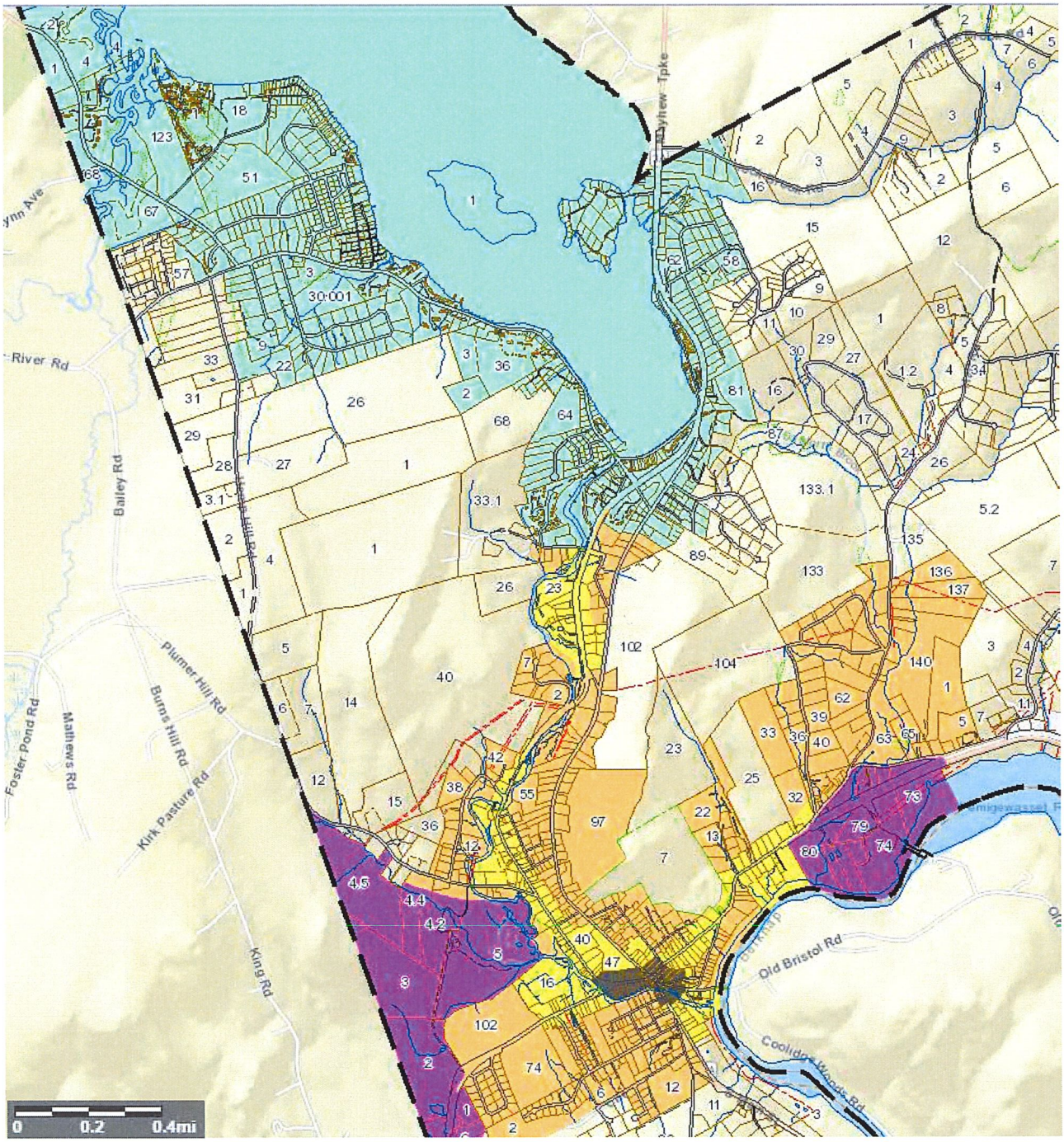
- Residential/Commercial/Industrial
- Transportation
- Row Crops
- Hay/Pasture
- Orchards
- Beech/Oak
- Paper Birch/Aspen
- Other Hardwoods
- White/Red Pine
- Spruce/Fir
- Hemlock
- Pitch Pine
- Mixed Forest
- Alpine (Krumholz)
- Open Water
- Forested Wetland
- Open Wetland
- Tidal Wetland
- Disturbed Land
- Bedrock/Vegetated
- Sand Dunes
- Other Cleared
- Tundra
- Existing Sewer
- NWIWetlands
- Parcel

FIGURE 3

LAND COVER - PROJECT AREA
SEWER TO NEWFOUND LAKE
BRISTOL, NEW HAMPSHIRE

UNDERWOOD engineers

NOVEMBER 13, 2018



LEGEND

- Corridor Commercial
- Downtown Commercial
- Industrial
- Lake District
- Rural
- Village District
- Village Residential

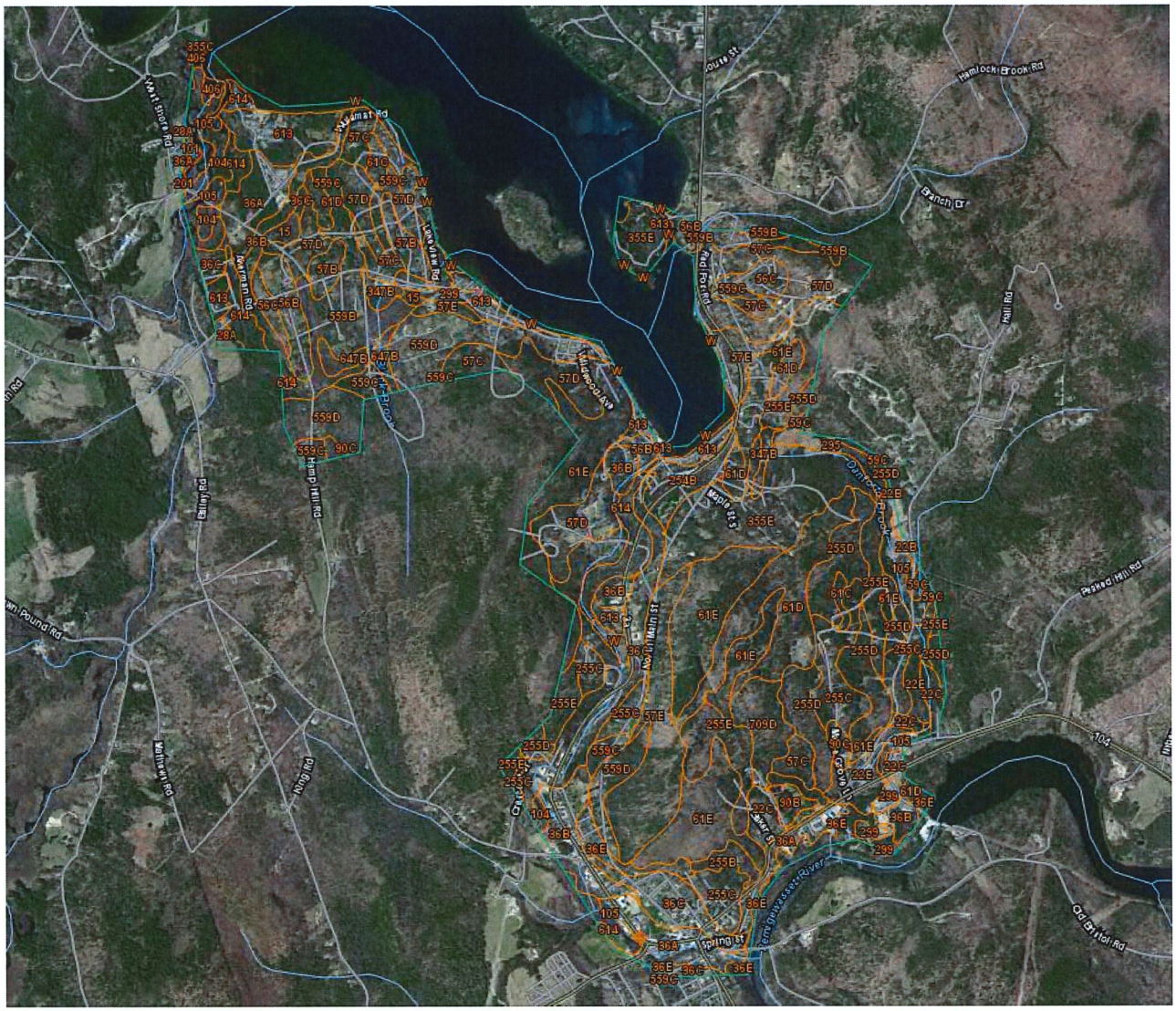
Parcel Boundary

DATE			FIG.
11/13/18	UNDERWOOD engineers	Zoning Map - Project Area Sewer to Newfound Lake Bristol, New Hampshire	4
PROJECT 2353.05-4	25 Vaughan Mall, Portsmouth, N.H. 03801 Tel. 603-436-6192 Fax. 603-431-4733		

LEGEND

- Conditional Prime Farmland
- All Areas are Prime Farmland
- Farmland of Local Importance
- Farmland of Statewide Importance
- Waterbody
- State Park

DATE			FIG.
11/19/18	UNDERWOOD engineers	Farmlands Map - Project Area Sewer to Newfound Lake Bristol, New Hampshire	5
PROJECT 2353.05-4	25 Vaughan Mall, Portsmouth, N.H. 03801 Tel. 603-436-6192 Fax. 603-431-4733		



LEGEND

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
15	Searsport mucky peat	10	0.4%
22B	Colton loamy sand, 3 to 8 percent slopes	4.4	0.2%
22C	Colton loamy sand, 8 to 15 percent slopes	43.7	1.5%
22E	Colton loamy sand, 15 to 60 percent slopes	38	1.3%
28A	Madawaska fine sandy loam, 0 to 3 percent slopes	4.9	0.2%
36A	Adams loamy sand, 0 to 3 percent slopes	114.2	4.0%
36B	Adams loamy sand, 3 to 8 percent slopes	112.3	4.0%
36C	Adams loamy sand, 8 to 15 percent slopes	173.1	6.1%
36E	Adams loamy sand, 15 to 60 percent slopes	50.5	1.8%
56B	Becket fine sandy loam, 3 to 8 percent slopes	39.6	1.4%
56C	Becket fine sandy loam, 8 to 15 percent slopes	23.8	0.8%
57B	Becket fine sandy loam, 0 to 8 percent slopes, very stony	30.9	1.1%
57C	Becket fine sandy loam, 8 to 15 percent slopes, very stony	93.6	3.3%
57D	Becket fine sandy loam, 15 to 25 percent slopes, very stony	232.1	8.2%
57E	Becket fine sandy loam, 25 to 35 percent slopes, very stony	133	4.7%
59C	Waumbek loamy sand, 8 to 15 percent slopes, very stony	10.9	0.4%
61C	Tunbridge-Lyman-Rock outcrop complex, 8 to 15 percent slopes	12.8	0.5%
61D	Tunbridge-Lyman-Rock outcrop complex, 15 to 25 percent slopes	131.9	4.6%
61E	Tunbridge-Lyman-Rock outcrop complex, 25 to 60 percent slopes	313.5	11.0%
90B	Tunbridge-Lyman complex, 3 to 8 percent slopes, rocky	10.4	0.4%
90C	Tunbridge-Lyman complex, 8 to 15 percent slopes, rocky	10.8	0.4%
101	Ondawa fine sandy loam, 0 to 3 percent slopes, frequently flooded	3.5	0.1%

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
104	Podunk fine sandy loam, 0 to 3 percent slopes, frequently flooded	23.9	0.8%
105	Rumney fine sandy loam, 0 to 3 percent slopes, frequently flooded	76.6	2.7%
201	Ondawa fine sandy loam, 0 to 3 percent slopes, occasionally flooded	1.1	0.0%
254B	Hermon and Monadnock soils, 3 to 8 percent slopes	32.4	1.1%
255B	Hermon and Monadnock soils, 0 to 8 percent slopes, very stony	12.1	0.4%
255C	Hermon and Monadnock soils, 8 to 15 percent slopes, very stony	119.3	4.2%
255D	Monadnock and Hermon soils, 15 to 25 percent slopes, very stony	128.1	4.5%
255E	Monadnock and Hermon soils, 25 to 35 percent slopes, very stony	96.4	3.4%
295	Greenwood mucky peat	16.3	0.6%
299	Udorthents, smoothed	17.3	0.6%
347B	Lyme and Moosilauke soils, 3 to 8 percent slopes, very stony	15	0.5%
355C	Hermon sandy loam, 8 to 15 percent slopes, extremely bouldery	0.7	0.0%
355E	Hermon sandy loam, 15 to 35 percent slopes, extremely bouldery	160.6	5.6%
406	Medomak silt loam	5.9	0.2%
559B	Skerry fine sandy loam, 0 to 8 percent slopes, very stony	90.1	3.2%
559C	Skerry fine sandy loam, 8 to 15 percent slopes, very stony	43.9	1.5%
559D	Skerry fine sandy loam, 15 to 25 percent slopes, very stony	135.8	4.8%
613	Croghan loamy fine sand	93.3	3.3%
614	Kinsman sand	64.1	2.3%
647B	Pillsbury fine sandy loam, 0 to 8 percent slopes, very stony	15.7	0.6%
709D	Becket-Tunbridge association, 15 to 35 percent slopes, very stony	38.2	1.3%
W	Water	58	2.0%
Totals for Area of Interest		**2,843**	**100%**

DATE
11/19/18

PROJECT
2353.05-4

UNDERWOOD engineers

25 Vaughan Mall, Portsmouth, N.H. 03801
Tel. 603-436-6192 Fax. 603-431-4733

USGS Soils Map - Project Area
Sewer to Newfound Lake
Bristol, New Hampshire

FIG.
6

LEGEND

- Zone A: 100-yr Floodplain
- Zone AE: Floodway Area
- Zone X: 500-yr Floodplain
- Zone X: Area Outside 500-yr Floodplain

DATE			FIG.
11/13/18	UNDERWOOD engineers	Floodplain Map - Project Area Sewer to Newfound Lake Bristol, New Hampshire	7
PROJECT 2353.05-4	25 Vaughan Mall, Portsmouth, N.H. 03801 Tel. 603-436-6192 Fax. 603-431-4733		

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was New Hampshire State Plane 2800. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was derived from U.S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 1998 or later. These images were recast by the New Hampshire Geographically Referenced Analysis and Information Transfer System (NH GRANIT) onto the New Hampshire State Plane coordinate system.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

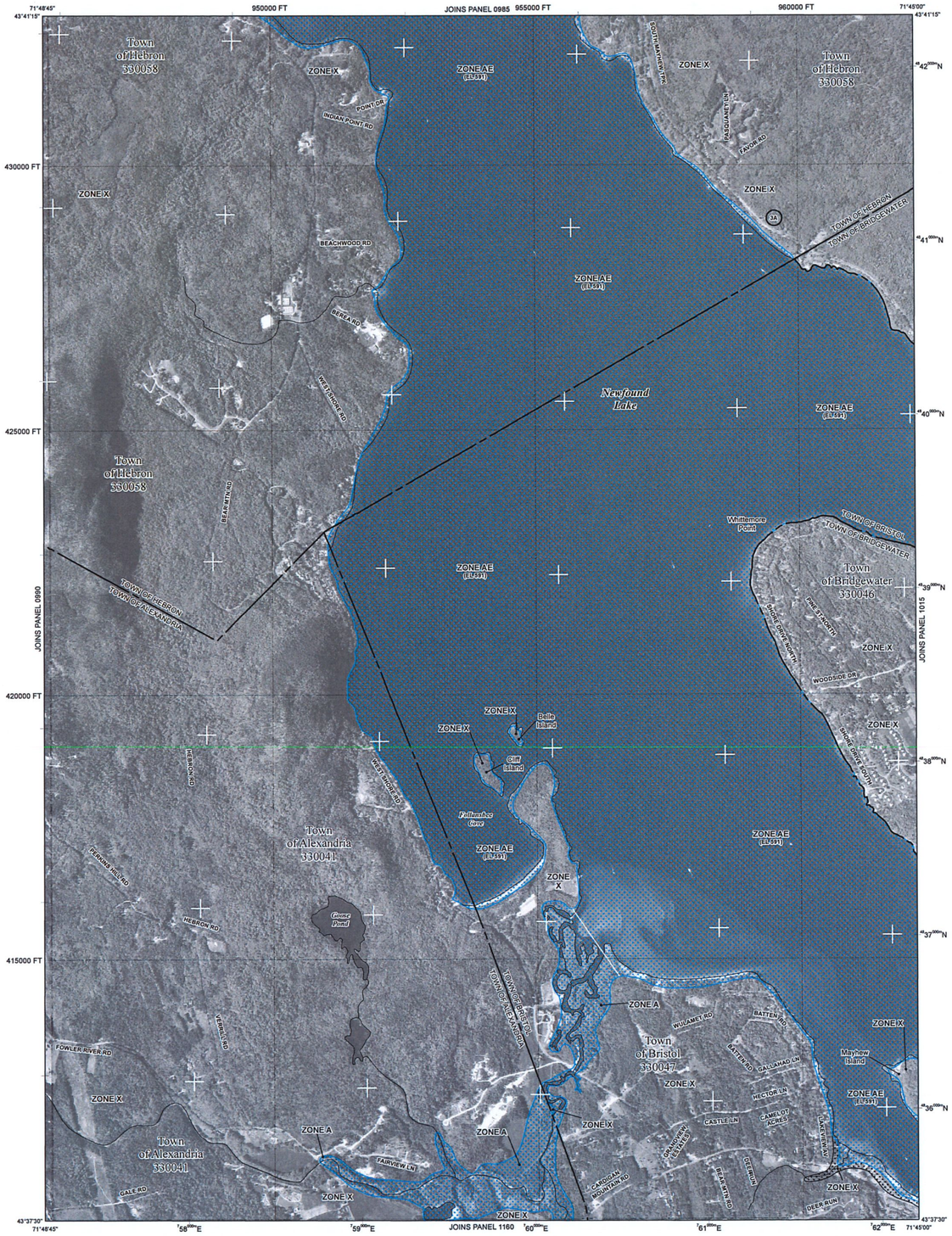


FIGURE 7.1

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the National Geodetic Vertical Datum of 1929

A — A	Cross section line
23 - - - - 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
5076000 N	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: New Hampshire State Plane coordinate system, FIPSZONE 2800, Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
FEBRUARY 20, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0995E

FIRM
FLOOD INSURANCE RATE MAP

GRAFTON COUNTY, NEW HAMPSHIRE
(ALL JURISDICTIONS)

PANEL 995 OF 1185

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALEXANDRIA, TOWN OF	330041	0995	E
BRIDGEWATER, TOWN OF	330046	0995	E
BRISTOL, TOWN OF	330047	0995	E
HEBRON, TOWN OF	330058	0995	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
33009C0995E

EFFECTIVE DATE
FEBRUARY 20, 2008

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

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Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

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This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

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Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.

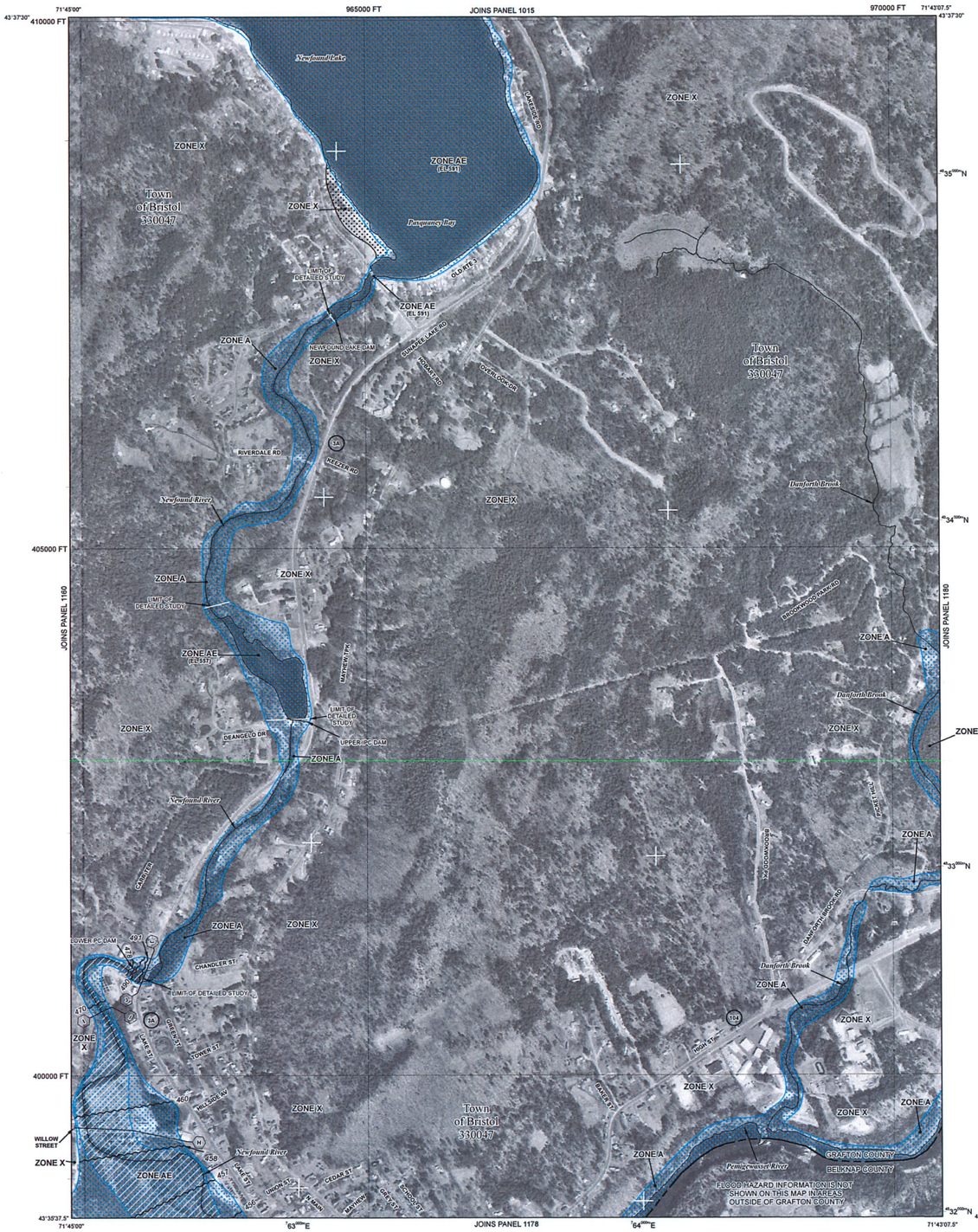

FIGURE 7.2

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the National Geodetic Vertical Datum of 1929

A — A	Cross section line
23 - - - - 23	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
76000 mN	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid ticks: New Hampshire State Plane coordinate system, FIPSZONE 2800, Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
FEBRUARY 20, 2008

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1176E

FIRM

FLOOD INSURANCE RATE MAP

GRAFTON COUNTY, NEW HAMPSHIRE
(ALL JURISDICTIONS)

PANEL 1176 OF 1185

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
BRISTOL, TOWN OF	330047	1176	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
33009C1176E

EFFECTIVE DATE
FEBRUARY 20, 2008

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

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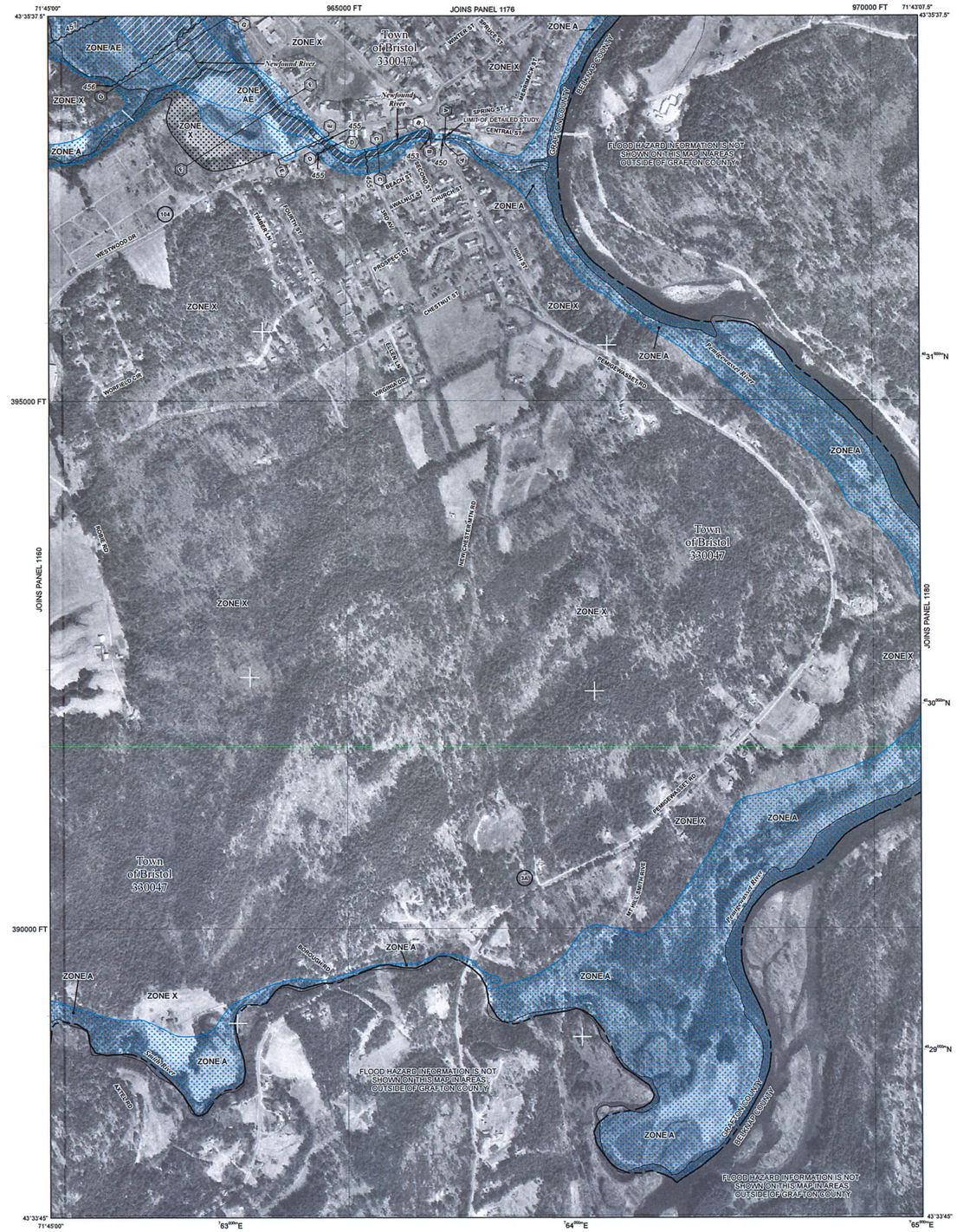

FIGURE 7.3

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

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ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

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ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

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OTHERWISE PROTECTED AREAS (OPAs)

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1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the National Geodetic Vertical Datum of 1929

(A)———(A)	Cross section line
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600000 FT	5000-foot grid ticks: New Hampshire State Plane coordinate system, FIPSZONE 2800, Transverse Mercator projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORY
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FEBRUARY 20, 2008

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MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 1178E

FIRM

FLOOD INSURANCE RATE MAP

GRAFTON COUNTY, NEW HAMPSHIRE
(ALL JURISDICTIONS)

PANEL 1178 OF 1185

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

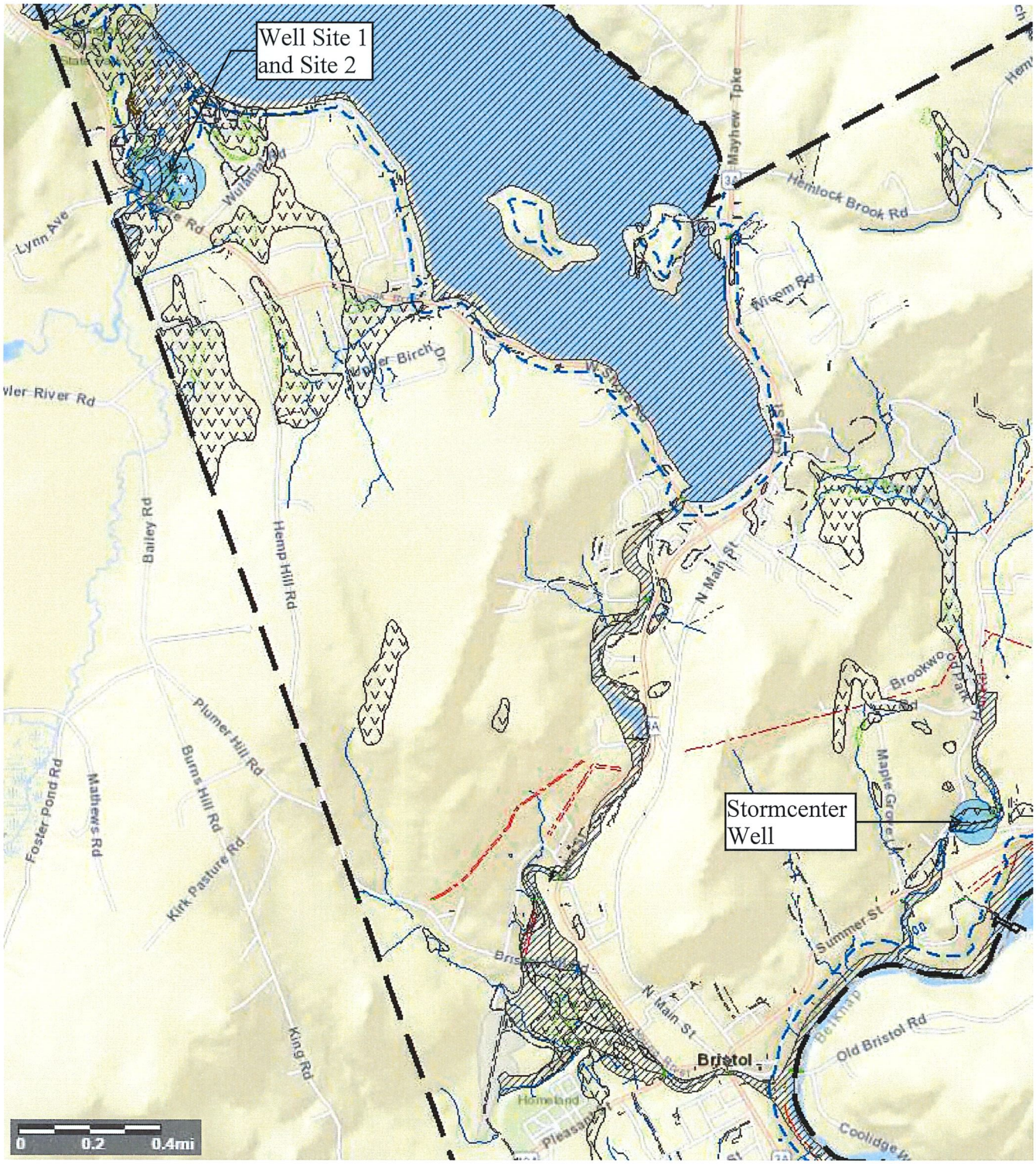
COMMUNITY	NUMBER	PANEL	SUFFIX
BRISTOL, TOWN OF	330047	1178	E

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
33009C1178E

EFFECTIVE DATE
FEBRUARY 20, 2008

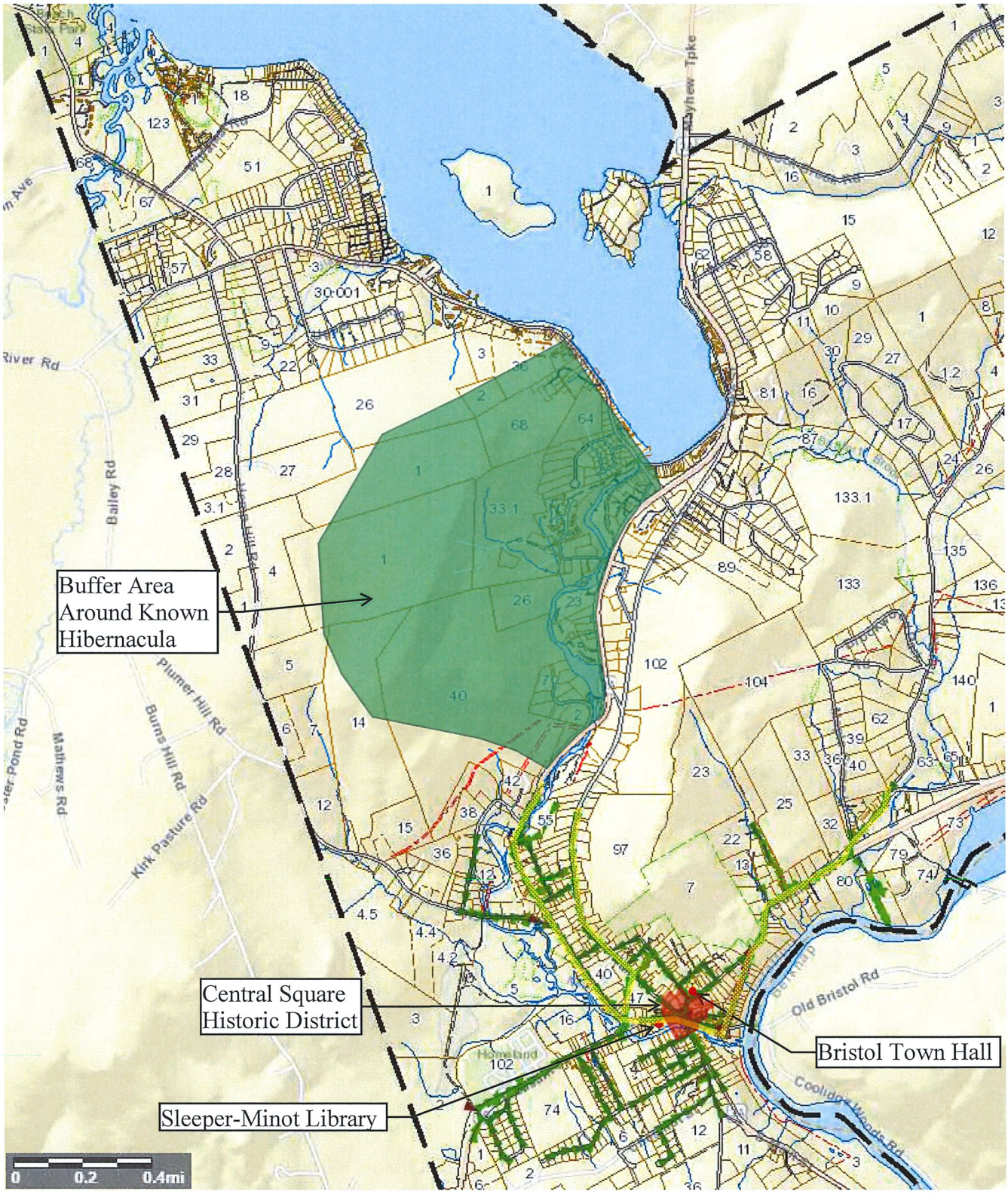
Federal Emergency Management Agency



LEGEND

- Municipal Well w/ 400ft Sanitary Protective Radius
- FEMA 100-yr Floodplain Overlay
- Wetlands Conservation Overlay District
- Shoreland Protection Buffer - 250ft

DATE			FIG.
11/19/18	UNDERWOOD engineers	Water Resources Map - Project Area Sewer to Newfound Lake Bristol, New Hampshire	8
PROJECT 2353.05-4	25 Vaughan Mall, Portsmouth, N.H. 03801 Tel. 603-436-6192 Fax. 603-431-4733		



LEGEND

- Sensitive Habitat
- Historic District
- Historical Properties
- Parcel Boundary
- Downstream Improvements

DATE			FIG.
11/16/18	UNDERWOOD engineers 25 Vaughan Mall, Portsmouth, N.H. 03801 Tel. 603-436-6192 Fax. 603-431-4733	Biological & Cultural Resources Sewer to Newfound Lake Bristol, New Hampshire	9
PROJECT 2353.05-4			

8.0 List of Preparers

Town of Bristol Staff:
Nicholas Coates, Town Administrator
Jeff Chartier, Water & Sewer Superintendent

Consulting Engineer:
Underwood Engineers, Inc.
25 Vaughan Mall
Portsmouth, New Hampshire 03801
(603) 436-6192