New Hampshire
Department of Transportation

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Draft Categorical Exclusion

U.S. Department of Transportation
Federal Highway Administration

NH ROUTE 106
Roadway Improvements

September 2017

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Introduction

This project would provide improvements to a 3.5-mile section of NH Route 106, beginning just south of Soucook Lane in Loudon and ending just north of the Canterbury/Loudon town line, as well as a 2,000' section between the NH Motor Speedway north access road and Shaw Road, for a total length of 3.9 miles (*Figure 1*).

The project is located within the limits of previously evaluated projects that encompassed the NH Route 106 corridor. In 1995, an Environmental Assessment (EA) was prepared for a project proposing to widen NH Route 106 to 5 lanes from I-393 in Concord to US Route 3 in Laconia, a distance of 21 miles. Interim improvements were also identified to address short-term needs. Since the completion of the EA, the interim improvements have been constructed as smaller, standalone projects. Traffic volumes did not increase as modeled and the 5-lane widening project was never advanced to construction. In 2012, NHDOT and the Town of Loudon undertook a review to reevaluate a portion of the 1995 EA study limits, extending 11 miles from I-393 in Concord north to a point 0.25 miles north of Ames Road in Canterbury. The purpose of this study was to determine if the 5-lane widening recommended in 1995 was still a valid design alternative that warranted continued consideration. The Corridor Study was completed in March 2012 as NHDOT project Loudon 16188. Based on updated traffic growth trends, it was demonstrated that the 5-lane cross section was no longer necessary to satisfy anticipated future traffic demand in the area, and that a reduced 3-lane cross section would be appropriate. The 2012 Corridor Study identified a three-phased approach to construct improvements along the 11-mile study area.

The subject project is the first phase of the improvements identified in the 2012 Corridor Study and funding for this phase is included in the current (2017-2026) New Hampshire Ten Year Transportation Improvement Plan. This segment of the corridor has been given priority due to safety concerns and operational demands associated with a high density of driveways and side roads, as well as high traffic volumes during events at the NH Motor Speedway. It has been determined that this 3.9-mile project has independent utility, meaning that improvements to this segment would provide a benefit and are not dependent on improvements to any other segments within the 11-mile corridor (*Exhibit 1)*.

The project has logical termini based on two factors. First, the project limits correspond to the oldest section of NH Route 106 along the 11-mile corridor. Second, this 3.9-mile segment has a density of driveways and local roads equal to 18 driveways per mile, which contributes to safety and operational concerns. In contrast, the driveway density along the remainder of the 11-mile corridor is 6 driveways per mile.

The proposed 3.9-mile project would be constructed in two phases. Phase I of the project would be approximately 1 mile in length, located just south of the NH Motor Speedway from Sta 5439+00 to Sta 5488+00. Phase II of the project would consist of two segments of roadway, one located to the south and two to the north of Phase I. Construction of Phase II would begin following the construction of Phase I.

In accordance with the National Environmental Policy Act of 1969 (42 USC 4332(2)(c)), as implemented in 23 CFR 771.117(d)(3), this Categorical Exclusion addresses the construction of both phases of the above noted project. This document has been prepared using a systematic, interdisciplinary approach to assess the engineering considerations and environmental effects of the subject project.

Statement of Purpose and Need

Project Purpose

The purpose of this project is to respond to increasing development in the Loudon-Canterbury region as it relates to traffic demands imposed on NH Route 106.

Project Need

The need for this project is evidenced by safety and operational concerns related to the high density of driveways and local roads, as well as operational demands placed on the corridor during high traffic volume events.

- Safety Concerns: Safety concerns exist in areas with a high density of left and right turns at intersections and commercial driveways where turning vehicles remain in the path of through traffic. For example, between 2002 and 2009, the unsignalized intersection of NH Route 106/Clough Hill Road/Mudgett Hill Road experienced seven crashes. Over half of these were rear-end collisions where a vehicle was stopped on NH Route 106 waiting to make a left turn into the side road when the vehicle was struck from behind.

- Operational Concerns: During major events at the New Hampshire Motor Speedway, traffic along NH Route 106 increases from approximately 11,000 vehicles per day to approximately 17,000 vehicles traveling northbound in the morning hours before the event and approximately 25,300 vehicles traveling southbound in the afternoon and early evening following the event. Lane usage along NH Route 106 is modified during these periods to accommodate the large volume of directional flow with the use of temporary signs, cones, and variable message boards. These large traffic volumes cause operational concerns relative to emergency vehicle access, pedestrian safety, and movement of local traffic.

These safety and operational concerns are unique to this 3.9-mile segment of the 11-mile corridor that was considered in the 2012 Corridor Study. This segment has the highest density of driveways and local roads and experiences the greatest operational demands during events at the NH Motor Speedway. For these reasons, this segment has a purpose and need that is distinct from the remaining corridor. The project is not dependent on subsequent phases to be constructed and would provide safety and operational benefits even if no further transportation improvements are made to the corridor.

Existing Conditions

Setting

The project area consists of a 3.9-mile section of NH Route 106 in the Towns of Loudon and Canterbury in Merrimack County. According to the US Census Bureau, Merrimack County is currently the third-most populous county in the state. Loudon has a population of 5,420 and a population density of 95.7 people per square mile. Canterbury's population is 2,365, with a population density of 45.1 people per square mile.

NH Route 106 is an important north-south corridor between the Capital Region and the Lakes Region, traveling 35 miles from Concord, through Loudon and Canterbury, and continuing north to the Lakes Region where it ends at US Route 3 in Meredith. The NH Route 106 corridor provides a transportation link that is vital to local and regional traffic. According to the 2001 Loudon Master Plan, 87.7% of Loudon residents commute to jobs outside of Loudon, with Concord and Manchester being the destination for more than half of commuters.

The route is classified as a Rural Principal Arterial. In general, the NH Route 106 corridor through much of the project area is characterized by a landscape that is fragmented by State and local roads and commercial and residential development. A major feature of the project area is the New Hampshire Motor Speedway, located in the center of the project along the east side of NH Route 106. The Speedway consists of over 500 acres of cleared area comprised of the main race track and associated ancillary structures, parking, and access areas.

The NH Route 106 corridor in Loudon is zoned Commercial/Industrial through the project area, except the area immediately surrounding the NH Motor Speedway and fronting on the east side of NH Route 106 (4,400 linear feet), which is zoned Commercial/Recreational. The frontage along NH Route 106 in Canterbury is zoned Commercial.

Gues Meadow Brook is located in the project area, passing under NH Route 106 in three locations. Palustrine wetlands are also common throughout the project. The entire project area is located within the Soucook River watershed. The river is located east of the project and runs approximately parallel to NH Route 106 in this area. Gues Meadow Brook outlets into the Soucook River just north of Clough Hill Road.

Roadway Characteristics

The existing roadway through the project area consists of two 12-foot travel lanes and two 12-foot shoulders. In 2010, Annual Average Daily Traffic was 16,400 vehicles per day with approximately 8.5% trucks. In 2012, a traffic impact assessment determined that the projected daily traffic for the year 2035 is 20,995 vehicles per day.

View north from start of project (2013 StreetView)

The NH Motor Speedway hosts major NASCAR race events each year, with each race attended by more than 100,000 people. During these events, traffic volumes increase to approximately 17,000 vehicles traveling northbound in the morning hours before the event and approximately 25,300 vehicles traveling southbound in the afternoon and early evening following the event. Lane usage along NH Route 106 is modified during these periods to accommodate the large volume of directional flow with the use of temporary signs, cones, and variable message boards. Leading up to the events, there are three northbound travel lanes (both regular travel lanes and the northbound breakdown lane). All southbound traffic uses the southbound breakdown lane. Immediately following the events, the road is converted to southbound-only traffic. Northbound traffic is detoured onto I-93 northbound to Exit 20 and must use NH Route 140 from Belmont to reach NH Route 106.

Proposed Action

The proposed action involves widening the roadway to accommodate an additional 12-foot lane to serve as a center two-way left-turn lane. The travel lanes and shoulders would remain 12 feet in width. Overall roadway widening would be approximately 12 feet, resulting in a pavement width of 60 feet.

The 3.9-mile project would be constructed in two phases. Phase I of the project would be approximately 1 mile in length, located just south of the NH Motor Speedway from Sta 5439+00 to Sta 5488+00. Phase II of the project would consist of two segments of roadway, one located to the south and two to the north of Phase I. Construction of Phase II would begin following the construction of Phase I.

The roadway typical would be wider along one section of NH Route 106 within the limits of Phase I between Clough Hill Road and the south entrance of the speedway, a distance of approximately 1,600 linear feet. This area experiences heavy pedestrian use during race events. In order to address safety concerns associated with large

numbers of pedestrians and vehicles on the road at the same time, there would be an additional 6' offset to guardrail, resulting in a grass panel between the paved shoulder and guardrail. Exhibit 2 provides illustrations of proposed roadway typical sections. In addition, a 6' wide grass panel is proposed along the east side of the 2,000' project segment north of the NH Motor Speedway north access road, another area that experiences heavy pedestrian use during speedway events.

The project generally follows existing horizontal and vertical alignments and widens equally on both sides of the existing roadway. Locations where the proposed alignment departs from the existing alignment are as follows:

- Between approximately Sta 5380+00 and Sta 5386+00, the edge of pavement would be shifted to the right (east) approximately 3 feet and all widening would be to the east. From Sta 5386+00 to approximately Sta 5391+00, the existing left edge of pavement would remain the same and all widening would be to the east. This section of roadway is located in Phase II. Shifting the alignment to the east would minimize impacts to the parcel owned by the KOS Manufactured Housing Community that is located along the west side of the road.

- Between approximately Sta 5451+50 to Sta 5453+00, the roadway would be widened approximately 4 feet to the right and 8 feet to the left. Beginning at approximately Sta 5453+00 and continuing to Sta 5460+00, the edge of pavement would be shifted to the left (west) approximately 3 feet and all widening would be the west. This section of roadway is located in Phase I. Shifting the alignment to the west would avoid impacts to a large pond and associated wetlands located along the east side of the road.

The project would include ancillary work such as drainage and guardrail upgrades. Drainage work would include the replacement or extension of cross pipes, as well as the installation of a closed drainage system throughout much of the project to divert runoff to proposed stormwater treatment areas. Proposed treatment areas consist of one roadside soil filter/infiltration practice, one grass treatment swale, and five potential stormwater treatment ponds.

The estimated cost to construct this alternative is $8.4 million. Preliminary design plans can be viewed online: https://www.nh.gov/dot/projects/loudoncanterbury29613/index.htm

This alternative fully meets the purpose and need of the project and minimizes impacts to natural resources and private property.

Other Alternatives Considered

Extensive alternatives analyses have been completed for the NH Route 106 corridor as part of the 1995 EA and 2012 Corridor Study. The alternatives presented below represent an abbreviated, composite summary of applicable alternatives that have been considered under previous studies and the current project.

"No-Build"

This alternative would provide no improvements to NH Route 106 other than routine maintenance. Existing safety concerns and operational demands would not be addressed. Therefore, this alternative does not meet the purpose and need of the project.

Widening to Accommodate Four Through Lanes

The alternatives analysis completed for the 1995 EA resulted in the recommendation to upgrade approximately 21 miles of NH Route 106 to a four-lane cross section based on future traffic projections. The projected traffic volumes from the 1995 EA project indicated that the daily traffic volumes on the NH Route 106 corridor would reach nearly 23,000 vehicles by the Design Year (2013) at the Concord/Loudon town line.

As part of the 2012 Corridor Study, the four-lane cross section was reevaluated. A review of the actual traffic volume increases along NH Route 106 since 1995 showed much less growth than was originally forecasted. The 2010 Annual Average Daily Traffic volume on NH Route 106 at the Concord/Loudon town line was found to be approximately 16,400 vehicles. For this reason, the four-lane alternative is no longer recommended since it would result in substantial property and environmental impacts, and design alternatives with less impact would meet the project's purpose and need.

Widening to Accommodate 16-foot Wide Center Turn Lane

This alternative was proposed as the preferred alternative following completion of the 2012 Corridor Study. It would entail widening NH Route 106 to provide one 12-foot travel lane in each direction, a 16-foot center turn lane, and 12-foot shoulders. The proposed 16-foot center turn lane would allow flexibility in the proposed lane use by providing an exclusive left-turn lane at intersections (12-foot lane with 4-foot painted median), a two-way left-turn lane at driveways (16-foot lane), and a passing lane at other locations (12-foot lane with 4-foot painted median).

This alternative would meet the purpose and need of the project; however, it would result in greater environmental and property impacts due to the wider roadway that would be required to accommodate a 16-foot center turn lane. The design alternative that proposes a 12-foot center turn lane fully meets the project's purpose and need and substantially minimizes environmental and property impacts. Therefore, the 16-foot center turn lane was not selected as the preferred alternative.

Transportation System Management - Restriping

Transportation System Management (TSM) consists of localized, low-cost improvements to the existing roadway system that address safety concerns and do not involve major construction. These improvements typically focus on intersection-related improvements including signal timing and phasing upgrades, signal equipment upgrades, and consolidation of access points. These improvements can also include providing exclusive turn lanes or auxiliary lanes at an intersection without widening the roadway. This can be accomplished by reducing the existing shoulder width and restriping the roadway during routine pavement overlay projects.

A TSM measure that could be implemented within the project area to improve safety would involve the restriping of NH Route 106 to provide for the installation of left-turn lanes at town road intersections without widening. Providing exclusive left-turn lanes improves traffic flow and safety by removing turning vehicles from the traffic stream. However, creating these lanes by reducing the usable shoulder on a high speed, high volume roadway such as NH Route 106 can reduce the capacity and safety of the intersection and possibly negate the benefits of the exclusive turn lanes. Furthermore, this alternative would not address left turns into the numerous driveways along NH Route 106. Therefore, this alternative would not sufficiently improve existing traffic flow or alleviate safety concerns, nor would it address operational concerns during high traffic volume events. Therefore, this alternative would not fully meet the project's purpose and need.

Evaluation of Environmental Effects

The effects of the preferred alternative relative to the following social, economic, natural, and cultural resources/issues have been reviewed. Resources/issues that are not discussed in the body of this document were evaluated; however, no impacts were evident, and as such, these resources/issues are omitted from this environmental documentation. Those resources and issues are listed in plain text below. The resources and issues deemed applicable for this project are indicated in **bold** type.

Social/Economic		*Natural*	*Cultural*
Safety	**Air Quality**	**Wetlands**	**Historical**
Transportation Patterns	**Noise**	**Surface Waters**	**Archaeological**
Community Services	**Farmland Soils**	Shoreland Protection	**Stone Walls**
Business Impacts	**Construction Impacts**	**Floodplains/Floodways**	Aesthetics
Land Acquisition	Displacements	**Water Quality**	
Environmental Justice	Neighborhoods	**Groundwater**	
Utilities	Land Use	**Wildlife/Fisheries**	
Hazardous Materials	Energy Needs	**Endangered Species**	
Contaminated Properties	Tax Base	**Natural Communities**	
Recreation	Scenic Byways	**Invasive Plants**	
Conservation Lands		Wild & Scenic Rivers	
Public Lands		NH Designated Rivers	
		Forest Lands	
		Coastal Zone	

Social and Economic Concerns

Safety/Transportation Patterns

NH Route 106 is classified as Rural Principal Arterial. The existing roadway through the project area consists of two 12-foot travel lanes and two 12-foot shoulders. In 2010, Annual Average Daily Traffic was 16,400 vehicles per day with approximately 8.5% trucks. The projected daily traffic for the year 2035 is 20,995 vehicles per day.

A detailed crash study was completed as part of the 2012 Corridor Study using crash data from 2002 to 2009. According to the study, crash data indicate that a common type of crash on NH Route 106 is rear end collisions at unsignalized intersections and driveways. For example, the unsignalized intersection of NH Route 106 and Clough Hill Road/Mudgett Hill Road experienced a total of seven crashes, three of which resulted in personal injury. Three of the crashes at this intersection were rear end collisions that occurred when a vehicle was stopped on NH Route 106 waiting to make a left-turn into the side road and was struck from behind.

Intersection of Mudgett Hill Road (2013 StreetView)

The decision to install left-turn lanes at an intersection is normally predicated on meeting the recommended guidance as outlined in *A Policy on the Geometric Design of Highways and Streets*. These volume thresholds indicate that a left-turn lane should generally be considered when at least 5% of the advancing volume is making a left turn at the intersection. The 2012 Corridor Study found that few of the side roads along NH Route 106 met this volume threshold. The manual, however, also indicates that it is prudent to consider the installation of left-turn lanes on arterial roadways with higher operating speeds where improving safety and preserving overall capacity are an issue.

The crash data indicate that a common type of crash on NH Route 106 is rear-end crashes at unsignalized intersections and driveways, which are indicative of the lack of a left-turn refuge. This indicates that there is a need to provide a safe refuge for vehicles waiting to make a left turn along NH Route 106. The National

Cooperative Highway Research Program has found that crash rates can be reduced by 20 to 65 percent with the construction of a left-turn lane (NHCRP Report 420). The AASHTO *Highway Safety Manual* discusses the effects of different types of treatments intended to improve roadway and intersection safety. The effects of these treatments can be quantified using Crash Modification Factors (CMF), which are multiplicative factors applied to crashes at an intersection or along a specific segment of roadway, to determine the anticipated reduction in crash occurrences. Quantifying the CMF associated with constructing an exclusive left-turn lane at an intersection results in an anticipated reduction in crash occurrences of 40 to 56 percent. This reduction provides a measurable decrease in the anticipated crash occurrences associated with left-turn movements. Therefore, it is recommended that left-turn refuges be provided at intersections and driveways where feasible. The *Highway Safety Manual* indicates that crash occurrences on rural highways with a driveway density of at least five access points per mile can be reduced with the implementation of a two-way left-turn lane. The 3.9-mile project area has a driveway density of approximately 18 driveways per mile, including unsignalized town roads.

The NH Motor Speedway hosts major NASCAR race events each year that are attended by more than 100,000 people. During these events, traffic volumes increase to approximately 17,000 vehicles traveling northbound in the morning hours before the event and approximately 25,300 vehicles traveling southbound in the afternoon and early evening following the event. These large traffic volumes cause safety and operational concerns relative to emergency vehicle access, pedestrian access, and movement of local traffic.

Lane usage along NH Route 106 is currently modified during these periods to accommodate the large volume of directional flow with the use of temporary signs, cones, and variable message boards. Leading up to the events, there are three northbound travel lanes (both regular travel lanes and the northbound breakdown lane). All southbound traffic uses the southbound breakdown lane. Immediately following the events, the road is converted to southbound-only traffic. Northbound traffic is detoured onto I-93 northbound to Exit 20 and must use NH Route 140 from Belmont to reach NH Route 106. The proposed typical section would allow for five lanes of traffic flow (two through lanes, two shoulders, and the center turn lane) during those special events, which is one more lane than is currently available. This additional lane could be utilized as a dedicated emergency vehicle lane throughout the corridor or to improve local access to NH Route 106 during these events.

Additionally, the roadway typical would be wider along one section of NH Route 106 within the limits of Phase I between Clough Hill Road and the south entrance of the speedway, a distance of approximately 1,600 linear feet. This area experiences heavy pedestrian use during race events. In order to address safety concerns associated with large numbers of pedestrians and vehicles on the road at the same time, an additional 6-foot offset to guardrail is proposed, which would result in a grass panel between the paved shoulder and guardrail (*Exhibit 2*). A 6-foot wide grass panel is also proposed along the east side of NH Route 106 north of the NH Motor Speedway, another area that experiences heavy pedestrian use. This grass panel would be approximately 2,000 feet in length. No roadway widening is proposed in that location.

Community Services/Business Impacts

The Loudon Police and Fire Departments are located off NH Route 129 south of the project. The Canterbury Police and Fire Departments are located in the Municipal Center Complex on Baptist Road, approximately 6 miles west of the project. Through traffic would be maintained at all times during construction; therefore, construction of the proposed project is not expected to obstruct the emergency response of fire or police within the project limits or within the local area.

The entire project area is zoned as Commercial. Businesses are located throughout the project, including the NH Motor Speedway, Loudon Country Club, and gas and convenience stores. The proposed two-way left-turn lane would improve safety and access for vehicles turning into these businesses. Although traffic delays could result from construction activities, access to all businesses would be maintained throughout construction.

Land Acquisition

The proposed project would require the acquisition of additional right-of-way and easements, which will be fully quantified prior to the Public Hearing. No houses or businesses would need to be acquired.

Environmental Justice

Executive Orders 12898 and 13166, signed in 1994 and 2000, require that an Environmental Justice evaluation be conducted for all transportation projects that are undertaken, funded, or approved by the Federal Highway Administration to avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, and social and economic effects on minority populations and low income populations.

The US Department of Transportation has adopted the following EJ principles:

1. To avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
2. To ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
3. To prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Based on the most recent Census data, the Environmental Justice review for the proposed project shows that EJ populations within the project area are not meaningfully greater than the surrounding area (*Exhibit 3*). Further, the proposed project would not require acquisition of homes or businesses. Public meetings for this project have been noticed in a variety of ways in advance of the meetings, including via letters to all abutters. Meetings have been located in accessible town buildings. For these reasons, this project complies with Executive Orders 12898 and 13166.

Utilities

The project area contains aerial electric, telephone, and cable utilities and buried gas lines. It is anticipated that relocation of utility lines and poles would be required for the project as proposed. Any necessary relocations would be confirmed and finalized during the Final Design phase of the project. The Department's Utility Section will continue to coordinate with the appropriate utilities. Disruption to service, if any, would be kept to an absolute minimum.

Hazardous Materials/Contaminated Properties

Remediation Sites

Hazardous waste sites are regulated by both the federal Resource Conservation and Recovery Act of 1980 (RCRA) (40 CFR Part 261 C) and the Comprehensive Environmental Response, Compensation, and Liability Act of 1986 (CERCLA). NHDES regulations incorporate by reference 40 CFR 260-270 (hazardous waste). The regulations include procedures for identifying hazardous waste, requirements for generators and transporters of hazardous waste, requirements for treatment, storage and disposal facilities, and other provisions.

The NHDES OneStop GIS database, the State database for environmental data, was accessed in August 2016 and contains records of remediation sites along NH Route 106 within 1,000 feet of the project (*Figure 2*). In addition to the NHDES database review, an EDR Corridor Study was obtained for the project area in January 2017. This study entailed a search of over 1,600 federal, state, and local environmental databases for recorded sites within a 1-mile radius of the project corridor.

Records within the project area consist of the following types of sites:

- Leaking Underground Storage Tank (LUST)
- Ether contamination from an unknown source (ETHER)
- Leaking residential or commercial heating oil tanks (OPUF)
- Subsurface wastewater disposal system receiving >20,000 gallon/day (SEPTIC)
- Underground injection control: discharges of benign wastewaters not requiring a groundwater discharge permit or request to cease a discharge (i.e. floor drain closure requests) (UIC)
- Groundwater release detection permit/no other defined project type (GWRELDET)
- Isolated groundwater sample with contaminant detection/unknown contaminant source (H2O SAMPLE)
- Non-hazardous, non-sanitary holding tank registration (HOLDTANK)

The files for the majority of sites have been closed; however, even closed sites could present a potential risk for encountering contaminated soils or groundwater during construction. The sites that have greater potential for resulting in impacts to the project, based on type of site and proximity to the project, are described below. These sites all involve petroleum-related contamination.

- The Scotch Pine Mobile Home Park (Parcel 49-54) is located at the southern end of the project and is listed as an OPUF site and ETHER site (DES file 199910009). Files for both have been closed. The ETHER site designation was the result of MtBE detected in drinking water. The OPUF site designation is the result of a spill of #2 fuel oil from a home heating oil tank at 26 Brook Circle. Groundwater flows away from NH Route 106 at this location and no monitoring wells are located within areas that could be impacted by the proposed project.

- The Bank of America property (Parcel 49-74) is located off Soucook Lane and is listed as an OPUF site (DES file 201410023). This site is the result of a spill involving #2 fuel oil from a home heating oil tank. The site is shown as active; however, OneStop files include an Intent to Close letter dated January 2016. A proposed stormwater treatment area is located to the west of this site. Groundwater flows to the east, away from this treatment area and NH Route 106.

- Loudon Mart LLC (Parcel 49-115) is located at the intersection of NH Route 106 and Shaker Road. This is a closed LUST site (DES file 198906037) with an expired Groundwater Management Permit. Monitoring wells do not appear to be located within areas that would be impacted by the project. The direction of groundwater flow is from east to west, away from NH Route 106.

- Crowley Land Clearing (Parcel 60-40) is a closed LUST site (DES file 199403034) located at the intersection of NH Route 106 and Clough Hill Road. A proposed stormwater treatment area is located east of this site on the south side of Clough Hill Road. Monitoring wells do not appear to be located within areas that would be impacted by the project. The direction of groundwater flow is not known.

- Speedway Convenience Store (Parcel 60-46) is a closed LUST site (DES file 199203070) located in the middle of the project area. Two monitoring wells are shown in the right-of-way of NH Route 106 between the parcel's two driveways. If still present, these wells may be within an area where additional roadway fill is proposed. Water flows from east to west, away from NH Route 106.

Impacts from fill slopes are anticipated along most of these parcels. The drainage design has not been finalized but will involve the installation of underdrain and catch basins and the construction of stormwater treatment areas throughout the project area. As design of the project progresses, coordination between the NHDOT Contamination Program and NHDES will be necessary to determine if the project as proposed could encounter contaminated soils or groundwater or impact monitoring wells. As limits of excavation are further refined during the Final Design phase of the project, the NHDOT Contamination Program will review design plans and cross

sections to assess potential concerns and determine if further investigation of remediation sites is warranted. If necessary, appropriate measures will be implemented during construction to avoid adverse effects from potential contaminated materials.

Asbestos Containing Material

Asbestos consists of a group of silicate mineral fibers that were once commonly used in construction materials used for insulating, waterproofing, fireproofing, and surfacing. When these asbestos containing materials are disturbed, they can break down into microscopic fibers that may become airborne. Once airborne, these fibers can be inhaled and cause health concerns.

Asbestos containing materials that could be encountered during roadway construction include bridge components and utility line conduit. When potential asbestos containing materials are identified in a project, appropriate provisions are included in contract documents to ensure the proper handling and disposal during construction. There are no bridges or asbestos utility line conduit within the project area. For these reasons, asbestos containing materials are not anticipated in the project area.

Limited Reuse Soils

Statewide analytical data collected by NHDOT, as well as nationwide information, indicates that roadside soils commonly contain metals at concentrations above naturally occurring background conditions, and Polycyclic Aromatic Hydrocarbons (PAHs) exceeding acceptable reuse concentrations. These “Limited Reuse Soils” (LRS) excavated from within the operational right-of-way must be addressed in accordance with applicable NHDES rules and/or waivers. Soils that are anticipated to meet the definition of LRS may be subject to management through a Soils Management Plan. Roadside soils currently managed as LRS by the Department include all topsoil within the limits of the existing right-of-way, regardless of its depth. In those instances where there is no measurable topsoil, LRS will be measured from the top of the ground to a depth of six inches.

During final design of the project, it will be determined if LRS would be generated by the project and, if generated, if the material would require reuse on-site, disposal, and/or temporary stockpiling. Any excess materials that result from the project within the operational right-of-way would be addressed in accordance with applicable NHDOT guidance and NHDES rules.

Recreation

Private Facilities

The NH Motor Speedway opened in 1990 and has hosted annual NASCAR races since 1993. Major race events attract more than 100,000 visitors. The Speedway also hosts the Loudon Classic, a motorcycle race that coincides with Laconia Bike Week. Bike Week is an annual motorcycle rally centered in Weirs Beach in the Lakes Region. According to its website, Laconia Bike Week is the world’s longest running motorcycle rally and one of the largest rallies in the country with attendance over 300,000. NH Route 106 is an important route connecting the Concord area and points south to the Speedway and the Lakes Region, and this corridor is vital to the success of major race events.

NH Motor Speedway (2013 StreetView)

The Loudon Country Club is located in the project area just north of Shaker Road. This private 18-hole course is located on approximately 84 acres. The facility includes a golf course, driving range, pro-shop, and restaurant.

Bicycles and Pedestrians

NH Route 106 is not a State Designated Bicycle Route within the project. Although not a designated route, cyclists do travel on this section of NH Route 106, utilizing the existing 12-foot wide shoulders. The *New Hampshire Statewide Bicycle and Pedestrian Plan* recommends a minimum shoulder width of 4 feet for bicycles.

There are no sidewalks in the project area. Pedestrian use of NH Route 106 is generally limited to race events at the Speedway, when large numbers of pedestrians walk between the Speedway and parking and camping areas using the 12-foot shoulders and mowed rights-of-way.

The proposed cross section would continue to provide 12-foot shoulders. Additionally, the proposed roadway typical would be wider along one section of NH Route 106 between Clough Hill Road and the south entrance of the Speedway, an area that experiences heavy pedestrian use during race events. In this area, an additional 6-foot offset to guardrail is proposed, which would result in a grass panel between the paved shoulder and guardrail that could be utilized by pedestrians.

Snowmobile Trails

A network of local snowmobile trails and State Corridor Trail #15 is located in the vicinity of the project area, utilizing private land, public land, and public road rights-of-way. These trails are maintained by a local snowmobile club, the NH SnoShakers, which maintains 134 miles of trails in Loudon and Canterbury. Trail #15 runs approximately parallel to NH Route 106 to the east. A local trail, Trail #350, crosses NH Route 106 within the project just south of the Speedway (*Figure 3*). Parking for trail users is located just north of this crossing.

A snowmobile bridge is located over the upstream end of the southernmost crossing of Gues Meadow Brook opposite the South Gate of the Speedway (Station 5472+50). This bridge is also used by pedestrians during race events. The crossing is located within the section of roadway that would have a wider typical with grass panels. This wider typical, with a proposed 10-foot culvert extension, would allow for removal of the snowmobile bridge and snowmobiles could instead use the grass panel along the road.

The proposed project would not disrupt future use or continuity of snowmobile trails. Access to and use of these trails would need to be taken into consideration if construction activities are carried out through the winter.

Conservation Land/Public Lands

Properties Present Within the Project Area

Based on a review of data available from the NH Statewide GIS Clearinghouse (NH GRANIT), conservation lands and lands managed as open space are located in the vicinity of the project (*Figure 3*). The NH Fish and Game Department (NHFG) and NH Department of Environmental Services (NHDES) each hold a conservation easement on properties adjacent to the project. The NHDES property is located on the west side of NH Route 106 at the north end of the project beginning at approximately the Loudon/Canterbury town line. The project as proposed would not require any work outside existing right-of-way along this property. One NHFG property, known as the Smith Easement, is located on the east side of NH Route 106 just south of Mudgett Hill Road. Another NHFG property is located on the east side of NH Route 106 south of Shaw Road. These properties are owned by the NH Motor Speedway and NHFG holds a conservation easement that protects the properties from impacts and development (*Exhibit 4*). The conservation easement was given to NHFG as mitigation for wetland impacts resulting from a Speedway project.

As proposed, the project would result in impacts to the frontage of both properties. Along the Smith Easement, the east side of NH Route 106 would be widened 6 feet, which would require pushing the existing 2:1 slope back. The slope work would entail placing fill over existing ground and would require cutting trees. Areas of this slope work and tree cutting are located beyond the existing right-of-way on the Smith Easement. Also, there are two

drainage pipes that outlet on the property. Both pipes would need to be replaced and extended and both would likely be upsized as well. The proposed pipes would not result in more water outletting onto the Speedway property. The work as proposed would require permanent slope and drainage easements on the Speedway property. Previous NH Route 106 projects acquired slope easements that extend onto the Smith Easement. However, these existing easements do not provide adequate space for the proposed slope and drainage work. The existing slope easements, established under two prior projects (P2440 and 10672) total 11,118 square feet. The current project would impact the slope within these existing easements, and also proposes 7,125 square feet of additional slope impact and 220 square feet of drainage impact for upgrades to the two existing pipes.

Minimizing impacts to the Smith Easement would require steepening the roadway slope or widening more to the west. The existing slope is a 2:1 slope and the proposed slope would also be 2:1. A slope of 1 ¾:1 would reduce impacts and could still be vegetated. A slope that is any steeper would require structural support, which would be unlikely to support vegetation and would cost substantially more. Widening more to the west side of NH Route 106 would introduce a curve into the alignment, which is considered problematic for the traffic volumes and traffic speed on this road.

Coordination on proposed impacts to the Smith Easement was initiated at a meeting with NHFG on February 8, 2017 (*Exhibit 5*). Although NHFG is not opposed to the proposed roadway improvements, the existing language of the conservation easement prohibits the work as proposed. Ongoing coordination will be required to identify the most appropriate legal mechanism for accomplishing the work.

Impacts to the second NHFG easement south of Shaw Road will be quantified and included in the ongoing coordination with NHFG.

Another protected parcel within the project area is located along the north side of Soucook Lane (Parcel 49-73). This parcel is owned by the Town of Loudon and is encumbered by a municipal recreation/conservation deed restriction. Impacts to this parcel would result from slope widening along NH Route 106 as well as from a proposed stormwater treatment area. To avoid impacts to the property from slope widening, a 6 to 10 foot retaining wall with guardrail would be required, which would increase project costs and impact the line of sight from an adjacent roadway. To avoid impacts to this property from the proposed treatment area, treatment would need to be located elsewhere. However, there are no other undeveloped parcels in the area that would be suitable for treatment. Coordination with the Town of Loudon will be ongoing regarding impacts to this property.

Properties Not Present Within the Project Area

The Conservation Land Stewardship (CLS) Program is responsible for monitoring and protecting the conservation values of conservation easement lands in which the State of New Hampshire has invested through the Land Conservation Investment Program (LCIP). The CLS Program is located within the NH Office of Energy & Planning. The project has been reviewed by the CLS Program Coordinator, and it was determined that there are no LCIP properties within the project area *(Exhibit 6)*.

The Land and Water Conservation Fund (LWCF) is a program established by Congress in 1964 to create parks and open spaces; protect wilderness, wetlands and refuges; preserve wildlife habitat; and enhance recreational opportunities. The NH Division of Parks and Recreation is the State LWCF Manager. Section 6(f) of the Land and Water Conservation Act requires all property acquired or developed with LWCF assistance to be maintained perpetually in public outdoor recreation use. Any permanent or temporary use of a LWCF property must be reviewed and approved by the LWCF Manager and the National Park Service, and conversion of LWCF property requires mitigation. Based on a review of their LWCF files, the NH Division of Parks and Recreation has advised that there are no LWCF properties present in the project area *(Exhibit 7)*.

The New Hampshire Land and Community Heritage Investment Program (LCHIP) is an independent state authority that makes matching grants to communities and non-profits to conserve and preserve natural, cultural and historic resources. LCHIP has reviewed the project and determined that no LCHIP properties exist in the area (*Exhibit 8*).

Through coordination with local officials, and review of available GIS data, it has been determined that no other types of conservation land or public lands exist in or adjacent to the project area.

Air Quality

The Clean Air Act Amendments of 1990 (CAAA) requires federal actions to be consistent with the State Implementation Plan for achieving and maintaining Federal air quality standards. Transportation conformity must be shown at a both a regional and a project level.

The project is located in an attainment area. Moreover, this project is listed in the Statewide Transportation Improvement Program (STIP) but not as a regionally significant project. In accordance with 40 CFR 93, the FHWA includes a finding of regional transportation conformity through the STIP. For these reasons, a regional analysis of the proposed project is not required.

Project-level conformity must demonstrate that a project will not violate National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants (carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter, and sulfur dioxide). To determine whether a project may result in any local exceedances of the NAAQS, a microscale analysis is typically completed to determine pollutant concentrations. This analysis generally focuses on carbon monoxide (CO) and particulate matter, the constituents that can be addressed at the project level. Under the CAAA, this analysis is typically only required for projects that are located in a nonattainment or maintenance area. The only such areas in New Hampshire are Manchester and Nashua, which are CO maintenance areas. Therefore, a project-level conformity analysis is not required for the proposed project under the CAAA.

Although a project-level analysis is not required under the CAAA, NEPA requires federal actions to consider project-level impacts on air quality regardless of location. In addition to the six criteria pollutants, consideration must be given to Mobile Source Air Toxics (MSAT), which are seven hazardous air pollutants from mobile sources: acrolein, benzene, 1,3-butadiene, diesel particulate matter, formaldehyde, naphthalene, and polycyclic organic matter.

A qualitative assessment of project-level air quality impacts was completed for the 2012 Corridor Study and determined that adverse air quality impacts were not anticipated and quantitative analysis was not warranted. The current proposed project entails widening to accommodate a 12-foot center left-turn lane. Signalization of intersections is not proposed. Exceedances of the NAAQS are typically found only where there are high numbers of idling vehicles, such as intersections with high traffic volumes and poor levels of service. The proposed center left-turn lane is expected to improve traffic flow and level of service at intersections in the project area and for through traffic. The 1995 EA included a microscale analysis of the Shaker Road intersection, which is located near the southern limit of the current project. That analysis modeled the 1993 baseline and the 1999 and 2013 build and no-build conditions, and all predicted one-hour CO concentrations below 4 parts per million (ppm) at this intersection. The one-hour NAAQS is 35 ppm. Although modeling methods have changed since this analysis was completed, the older model is still considered reasonably accurate. The actual traffic volumes since the 1995 EA have been lower than predicted; therefore, the CO concentrations are also expected to be lower than indicated by the previous analysis.

According to the FHWA *Interim Guidance on MSAT Analysis in NEPA Documents* (October 16, 2016), the proposed project has low potential MSAT effects given that the project would improve operations along NH Route 106 without adding substantial new capacity. Therefore, a quantitative MSAT analysis is not warranted. The

proposed project is expected to improve traffic flow by providing a left turn lane for vehicles waiting to turn, allowing through traffic to continue at normal travel speeds. According to the Environmental Protection Agency's MOVES2014 model, emissions of all of the priority MSAT decrease as speed increases. Further, according to the FHWA, emissions will likely be lower than present levels in the design year as a result of EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent between 2010 and 2050. Although local conditions may differ from these national projections in terms of vehicle mix and turnover, vehicle miles traveled, and local control measures, the magnitude of the EPA-projected reductions is so great that MSAT emissions in the project area are likely to be lower in the future in nearly all cases.

Based on these factors, the project would not contribute to violations of the NAAQS and would not contribute to increases in MSAT emissions; therefore, the constructed project would not result in any long-term impacts on air quality.

Noise

The 2016 NHDOT *Policy and Procedural Guidelines for the Assessment and Abatement of Highway Traffic Noise for Type I & II Highway Projects* (Noise Policy) requires a noise impact assessment for Type I projects. The FHWA defines Type I projects as those that involve construction of a highway in a new location or the physical alteration of an existing highway that substantially changes either the horizontal or vertical alignment or increases the number of through-traffic lanes.

The project proposes to widen NH Route 106 to accommodate a center turn lane. Additional through-traffic lanes are not proposed. The Noise Policy defines substantial horizontal alteration as a project that halves the distance between the traffic noise source and the closest receptor between the existing condition to the future build condition, and substantial vertical alteration as a project that removes shielding and exposes the line-of-sight between the receptor and the traffic noise source either by altering the vertical alignment of the highway or by altering the topography between the highway traffic noise source and the receptor.

The project proposes to widen the roadway a total of 12 feet. This widening would require extending roadway slopes, which would necessitate tree clearing in certain areas. Alterations to the vertical alignment are not proposed. The removal of shielding would be minimal and limited to the edge of the existing tree line. There are no locations within the project area where vegetation between a receptor and the roadway would be removed completely. Throughout much of the project area, the 12-foot widening would be accomplished by widening each side of the roadway by 6 feet. Along these areas, the nearest receptors are located approximately 50 feet from the existing edge of pavement; therefore, the proposed widening of 6 feet would not halve the distance between traffic and receptors.

Between approximately Sta 5380+00 and Sta 5386+00, the edge of pavement would be shifted to the right (east) approximately 3 feet and all widening would be to the east. From Sta 5386+00 to approximately Sta 5391+00, the existing left edge of pavement would remain the same and all widening would be to the east. The KOS Manufactured Housing Community is located along the west side of the road beginning at Sta 5380+00. The homes closest to the roadway are located approximately 40 feet from existing edge of pavement. Since proposed widening would move NH Route 106 away from these homes, noise impacts are not anticipated from the proposed project. The receptors along the east side of the road in this segment are all commercial, with the nearest receptor located approximately 70 feet from existing edge of pavement. The proposed widening and alignment shift would move the edge of pavement up to 15 feet to the east; therefore, the distance between traffic and receptors would not be halved.

Between approximately Sta 5451+50 to Sta 5453+00, the roadway would be widened approximately 4 feet to the right and 8 feet to the left. Beginning at approximately Sta 5453+00 and continuing to Sta 5460+00, the edge of pavement would be shifted to the left (west) approximately 3 feet and all widening would be to the west. This

section of roadway is located in Phase I. A large wetland is located along the east side of NH Route 106 in this segment. Scattered houses are located on the west side of the roadway, with the nearest house located approximately 70 feet from the existing edge of pavement. The proposed widening and alignment shift would move the edge of pavement up to 15 feet to the west; therefore, the distance between traffic and receptors would not be halved.

For these reasons, the proposed project is not a Type I highway project and a noise impact assessment is not required.

Farmland Soils

The Farmland Policy Protection Act (FPPA), overseen by the Natural Resources Conservation Service (NRCS), was established to minimize the impact that Federal programs have on the conversion of farmland to nonagricultural uses. For the purpose of the FPPA, farmland includes areas where soils are designated as prime farmland soils or farmland soils of statewide or local importance, even if that land is not currently used for farmland. Projects within the existing right-of-way of a public road are not subject to the FPPA.

The project area contains farmland soils of local importance that would be impacted outside existing right-of-way. The project as proposed would result in 1.25 acres of permanent impact to farmland soils as a result of fill placed for roadway slopes. A Farmland Conversion Impact Rating Form was submitted to NRCS (*Exhibit 9*). Based on the assessment criteria, the proposed impacts received a score of 58 out of 260 points. According to the FPPA, sites receiving a total score of less than 160 conform to the FPPA. Further consideration of protection of farmland soils is not required and no additional alternatives need to be evaluated.

Natural Resources

Wetlands and Surface Waters

Description of Wetlands and Surface Waters

Wetland resources were delineated within the limits of the project based on the 1987 US Army Corps of Engineers *Federal Manual for Identifying and Delineating Jurisdictional Wetlands* and the 2012 *Regional Supplement to the Corps Wetland Delineation Manual: Northcentral and Northeast Region*. Wetlands were classified utilizing the *Classification of Wetlands and Deepwater Habitats of the United States*, Lewis M. Cowardin, US Department of the Interior, Fish and Wildlife Service. Ordinary high water (OHW) and top of bank (TOB) were delineated for surface waters based on hydrologic, topographic, and vegetative characteristics.

The wetland areas within the project area consist of a variety of palustrine and riverine systems (*Figure 5*). Palustrine wetland types that were identified include forested, shrub-scrub, emergent, and open water wetlands. Riverine systems include Gues Meadow Brook and intermittent streams.

Gues Meadow Brook originates northwest of the project in Canterbury. The stream is carried under NH Route 106 near the north end of the project across from the Speedway and is then piped under the Speedway for approximately 2,000 feet. Approximately 4,300 feet downstream from the Speedway, the stream flows under NH Route 106 for a second time, then meanders back to NH Route 106 where it flows under the road at a third crossing. From there, the stream flows unobstructed for another 1,300 feet before reaching its confluence with the Soucook River.

The proposed 3.9-mile project would be constructed in two phases. Phase I of the project would be approximately 1 mile in length, located just south of the NH Motor Speedway from Sta 5439+00 to Sta 5488+00.

Phase II of the project would consist of two segments of roadway, one located to the south and two to the north of Phase I. The discussion of preliminary impacts below summarizes impacts by phase.

NH Stream Crossing Rules

The NH Stream Crossing Rules (Chapter Env-Wt 900) regulates all roadway crossings of perennial streams and intermittent streams. Regulations are based on the tier of the crossing, determined by the area of the contributing watershed, as well as the presence of resource concerns such as NH Designated Rivers, surface water impairments, floodplains, rare species, and prime wetlands. In general, regulations pertaining to Tier 1 crossings are least restrictive and those pertaining to Tier 3 crossings are most restrictive. The Stream Crossing Rules require crossings to address a variety of fluvial geomorphological features, including flood flows, sediment transport, and aquatic organism passage.

There are eight stream crossings in the project area. Gues Meadow Brook is carried under NH Route 106 at three locations, all of which are Tier 3 stream crossings. There is no work proposed at the northern Gues Meadow Brook crossing. There are also four Tier 1 stream crossings and one Tier 2 crossing in the project area. None of these crossings have a history of flooding. The larger structures are in good condition and do not require replacement. All structures currently have adequate capacity to carry the 100-year storm event and proposed work would not reduce this capacity. A summary of proposed stream crossing work is provided below.

Station 5453+80 (Phase I)

This Tier 1 crossing is a 24-inch reinforced concrete pipe (rcp) that carries an intermittent stream. The pipe outlets onto a mound of riprap and the stream flows through the riprap before reaching an adjacent wetland. Upstream of the NH Route 106 pipe, the stream is carried under Mudgett Hill Road via a pipe with a perched outlet. Proposed work would entail upsizing, resulting in approximately 20 linear feet of channel impact. Proposed work would comply with the Stream Crossing Rules as replacement of an existing legal Tier 1 stream crossing (Env-Wt 904.07).

Station 5472+50 (Phase I)

This is the first crossing of Gues Meadow Brook, consisting of twin 72-inch concrete pipes. The existing pipes are in good condition and the proposed treatment involves extending the pipes 10 feet upstream (for a total of 30 linear feet of impact to the channel and each bank) and 6 feet downstream (18 linear feet of impact to the channel and each bank). A snowmobile bridge is located over the upstream end of the culverts and is used by pedestrians during race events. This crossing is located within the section of roadway that would have a wider typical with grass panels. This wider typical, with the proposed 10-foot culvert extension, would allow for removal of the snowmobile bridge. During drought conditions, the outlet of the pipes was approximately 6 inches above the water surface. Further study will be required during the final design phase of the project to determine how to address the perched outlet at this crossing in order to comply with the Stream Crossing Rules. Proposed work, to include addressing the perched outlet, would comply with the Stream Crossing Rules as an alternative design of a Tier 3 stream crossing (Env-Wt 904.09).

Gues Meadow Brook Sta 5484+60 (left) (2016)

Station 5484+60 (Phase I)

This is the location of the second Gues Meadow Brook crossing, which also consists of twin 72-inch concrete pipes. The stream at this location is influenced by beaver activity, which has resulted in a much wider channel at the inlet. The existing pipes are in good condition. The proposed treatment would entail placing a new concrete header in front of the existing MRM header and constructing new wingwalls. This would result in approximately 20 linear feet of impact both upstream and downstream. The pipes are not currently perched and would not become perched as a result of the proposed work. Proposed

work would comply with the Stream Crossing Rules as an alternative design of a Tier 3 stream crossing (Env-Wt 904.09).

Station 5422+00 (Phase II)
This Tier 1 crossing is located south of Phase I. The 15-inch rcp carries an intermittent stream that originates in a palustrine wetland on the upstream end of the pipe. The outlet is perched approximately 1 foot above the channel due to scouring that has occurred at the outlet. Proposed work entails upsizing and extending the pipe and addressing the perch. This work would result in approximately 20 linear feet of impact to the stream channel. Proposed work would comply with the Stream Crossing Rules as replacement of an existing legal Tier 1 stream crossing (Env-Wt 904.07).

Station 5513+70 (Phase II)
This Tier 2 crossing is located north of Phase I and consists of a 4-foot by 4-foot concrete box extended at each end with a 48-inch rcp. The structure carries an intermittent stream. Proposed work entails placing new concrete headwalls and extending the pipe, resulting in approximately 20 linear feet of impact upstream and 30 linear feet of impact downstream. Proposed work would comply with the Stream Crossing Rules as repair/rehabilitation of an existing legal Tier 2 stream crossing (Env-Wt 904.06).

Impacts to Wetlands and Surface Waters

The project would involve work within areas under the jurisdiction of the NH Department of Environmental Services (NHDES) Wetlands Bureau and the Army Corps of Engineers (ACOE). Based on preliminary design of the project, estimated impacts to wetlands and surface waters are summarized below. Impact calculations will be further refined during the Final Design phase of the project.

Phase I:
Temporary Impacts– 2,350 square feet
Permanent Wetland Impacts – 4,350 square feet
Permanent Stream Impacts – 6,030 square feet (290 linear feet)

Phase II:
Temporary Impacts – 8,015 square feet
Permanent Wetland Impacts – 27,700 square feet
Permanent Stream Impacts – 775 square feet (70 linear feet)

Cumulative Totals:
Temporary Impacts – 10,365 square feet
Permanent Wetland Impacts – 32,050 square feet
Permanent Stream Impacts – 6,805 square feet (360 linear feet)

Preliminary impacts were discussed at the NHDOT Natural Resource Agency Coordination Meeting on January 18, 2017. Based on proposed impacts, it is anticipated that a major impact permit would be required from NHDES and that the project would qualify for authorization under the Army Corps NH Programmatic General Permit. Separate permits would be obtained for each phase of the project. However, mitigation would be provided for cumulative impacts from the two phases.

Coordination on impacts will continue as design of the project progresses. All appropriate permits would be secured from the NHDES and the ACOE prior to construction.

Mitigation

Based on feedback received at the NHDOT Natural Resource Agency Coordination Meeting, per Env-Wt 302.03, compensatory mitigation would be required for proposed permanent linear impacts to the channel and banks of streams and proposed permanent wetland impacts. At the request of NHDES, preference for mitigation shall be given to a stream crossing enhancement project through the culvert mitigation program. This would require identifying a deficient crossing in the vicinity of the project and providing upgrades that are at least equivalent to the cost of an in-lieu fee payment into the NHDES Aquatic Resources Mitigation Fund. If this option for mitigation cannot be carried out, then mitigation would be in the form of an in-lieu fee payment. Proposed mitigation must be reviewed and approved by NHDES and the Army Corps during the final design phase of the project prior to submitting the permit application.

Floodplains/Floodways

The project is adjacent to the mapped 100-year floodplain of Gues Meadow Brook (*Figure 5*). The 100-year floodplain is defined as the area inundated by 1% annual chance flooding. No work is proposed within the floodplain; therefore, no further coordination with the NH Floodplain Management Program or the Federal Emergency Management Agency (FEMA) is required.

Water Quality

Surface Waters

Section 303(d) of the Clean Water Act requires each state to submit a list of impaired waters to the US EPA every two years to identify surface waters that are impaired by pollutants, not expected to meet water quality standards within a reasonable time, and require the development of a Total Maximum Daily Load (TMDL) study. This list is prepared by NHDES as outlined in the draft *2016 Section 305(b) and 303(d) Consolidated Assessment and Listing Methodology*. According to the NHDES draft 2016 303(d) list (most recent available), Gues Meadow Brook is an impaired surface water due to pH and benthic macroinvertebrate bioassessments.

The acidity, or pH, of freshwater streams can be influenced by bedrock composition, organic material in the water, and acid deposition. In New Hampshire, acid deposition, combined with the low prevalence of calcium-rich bedrock, results in lower pH in freshwater systems across large areas of the landscape. A pH impairment is not driven by the amount of impervious surface or stormowater runoff in a watershed. Therefore, the proposed project would have no impact on the acidity of Gues Meadow Brook.

A surface water is listed as impaired as a result of benthic macroinvertebrate bioassessments when the type, numbers, or diversity of organisms in the benthic community have been negatively impacted by pollutants or other stressors. Benthic organisms are those that live at the bottom of a surface water and include crayfish, aquatic snails, clams, leeches, aquatic worms, and certain insect larvae and nymphs and adult aquatic insects. Common benthic stressors include elevated levels of sediment, organic matter, toxins, nutrients, or suspended solids; elevated temperatures; channel or runoff modifications in the watershed; and pH extremes. The NHDES Biomonitoring Program has been assessing the biological health of aquatic ecosystems throughout the state since 1995. These assessments are used to establish reference locations for "least disturbed" conditions in the state and to identify areas that are biologically impaired. NHDES does not report specific factors that have led to the benthic macroinvertebrate impairment in Gues Meadow Brook. Based on existing conditions within the watershed, factors that may be causing this impairment could include stormwater runoff from roadways and parking lots. There are currently no stormwater treatment areas within the project area. Although the proposed project would result in an increase in runoff and impervious surface area, stormwater treatment areas are also proposed and would result in an overall benefit to water quality in the Gues Meadow Brook watershed.

Groundwater

Portions of the project are located within a Groundwater Classification Area (Class GA2). The NH Groundwater Classification Protection Act (RSA 485-C) was enacted to protect and preserve valuable groundwater resources. Classifications of GA2 are applied to groundwater within high-yield stratified drift aquifers identified for potential use as a public water supply. Zones of stratified drift with a saturated thickness greater than 20 feet and a transmissivity greater than 1,000 feet squared per day are classified as GA2. Also classified as GA2 are zones of bedrock with average well yields greater than 50 gallons per minute. GA2 areas have no land use restrictions and no active management until the local community initiates reclassification to the GAA or GA1 class.

The project is located within Wellhead Protection Areas for community and non-community wells (*Figure 4*). The NHDES Drinking Water and Groundwater Bureau has reviewed the proposed project. General recommendations for protecting drinking water quality include locating filtration or infiltration practices away from or outside of the wellhead protection area (WHPA) for community wells and conveying stormwater runoff out of the WHPA through a closed system when in close proximity to the well (*Exhibit 10*). Groundwater Protection Measures that are outlined in the NHDES *Recommendations for Implementing Groundwater Protection Measures When Siting or Improving Roadways* (1995) should be followed, as listed in Exhibit 10 and summarized below.

KOS Manufactured Housing Community (C system), 1403010-001, Community Well
This well is located approximately 570 feet from NH Route 106, at approximately Sta 5385+00 Left. The well is located along a section of NH Route 106 that would be widened more to the east side, away from the KOS well. Between approximately Sta 5380+00 and Sta 5386+00, the edge of pavement would be shifted to the right (east) approximately 3 feet and all widening would be to the east. From Sta 5386+00 to approximately Sta 5391+00, the existing left (west) edge of pavement would remain the same and all widening would be to the east.

Level 2 Protection Measures should be applied:

- Appropriate stormwater treatment BMPs (grassed swales, detention ponds, etc.)

Flintlock Well (C system), 1402010-001, Community Well
This well is located less than 200 feet from NH Route 106, at approximately Sta 5452+25 Right. A Community Well is a public water system that services at least 15 service connections used by year-round residents. The well is located along a section of NH Route 106 that will be widened more to the west side, away from the Flintlock well. Between approximately Station 5451+50 and 5453+00, the roadway would be widened approximately 4 feet to the right (east) and 8 feet to the left (west). Beginning at approximately Station 5453+00 (just north of the Flintlock well) and continuing to Station 5460+00, the edge of pavement would be shifted to the left (west) approximately 3 feet and all widening would be the west.

Level 4 Protection Measures should be applied:

- Closed drainage system that outlets stormwater outside the Wellhead Protection Area

NH Motor Speedway public water supply well (P system), 1407060-001, Non-Transient, Non-Community Well
The well for the main office is located approximately 440 feet from the road, at approximately Sta 5531+00 Right. A Non-Transient Non-Community Well is a non-residential drinking water system that serves the same 25 people or more for over 6 months each year. The well is located along a section of NH Route 106 that would be widened approximately 6 feet on each side.
Level 3 Protection Measures should be applied:

- Lined grass swales
- Runoff diverted out of Wellhead Protection Area to the extent possible

Coordination with the NHDES Drinking Water and Groundwater Bureau will continue as drainage and stormwater treatment design progresses. Standard precautions would be taken during construction to avoid impacts to drinking water from fuel spills and other contaminants.

Stormwater Runoff

Treatment

Runoff from the project area is not currently treated in any formalized treatment areas. In accordance with the NHDES Alteration of Terrain (AOT) Administrative Rules Env-Wq 1500, activities that result in terrain alteration shall not cause or contribute to any violations of the surface water quality standards established in Env-Wq 1700. Per a Permit Exemption signed by NHDES and NHDOT in 2011, NHDOT projects are not required to obtain an AOT Permit but must still comply with AOT regulations. Therefore, permanent stormwater treatment measures must be considered when the project area is greater than 100,000 square feet of land (or more than 50,000 square feet if within a protected shoreland) or there are impacts to any land with a grade of 25% or greater within 50 feet of a surface water. The project area is greater than 100,000 square feet and compliance with AOT regulations will be required.

The proposed project would result in approximately 193,000 square feet (4.4 acres) of new pavement. Treatment areas are proposed in multiple locations. Most of these locations are located within wellhead protection areas (*Figure 4*); therefore, treatment areas may require impervious lining or other measures to eliminate or minimize infiltration, as described in the Groundwater section above. Proposed treatment areas consist of one roadside soil filter/infiltration practice, one grass treatment swale, and five potential stormwater treatment pond sites, ranging in size from 0.4 to 1.0 acre. Proposed locations are as follows:

Sta 5381+00 Rt (Phase II) – treatment pond
Sta 5406+00 Rt to Sta 5418+50 Rt (Phase II) – roadside soil filter/infiltration practice
Sta 5450 Lt to Sta 5454+60 Lt (Phase I) – treatment pond
Sta 5460 Rt 450’ (Phase I) – treatment pond
Sta 5472+00 Rt to Sta 5472+80 Rt (Phase I) – treatment swale
Sta 5487+40 Lt to Sta 5489+40 Lt (Phase I) – treatment pond
Sta 5506+70 Lt to Sta 5511+40 Lt – treatment pond

Proposed treatment areas are expected to remove total suspended solids, nitrogen, and phosphorus from roadway runoff. Since the pollutant removal efficiency of stormwater treatment practices is less than 100%, NHDOT strives to treat runoff from an area that is twice the size of the area of proposed increased pavement to reduce the overall impact of additional impervious surface on water quality. For the proposed project, this would equate to treating runoff from approximately 8.8 acres of pavement. Based on preliminary analysis of the proposed treatment areas, the area of treated pavement would be approximately 7.7 acres, or just under twice the area of new pavement. Areas of pavement that cannot be treated would continue to sheet flow off the roadway through roadside vegetation.

AOT compliance requirements are below in italics:

- *The project must be designed to prevent permanent water quality violations.*
  The proposed treatment areas would treat approximately 7.7 acres of pavement, which equates to an area that is 1.75 times greater than the area of proposed new pavement. Assuming the treatment removes most of the pollutant load from stormwater, there is likely to be a net reduction in pollutant loading from stormwater runoff after the project is complete.

- *Temporary measures must be employed during construction to prevent water quality violations.*
  All appropriate erosion and sedimentation control practices would be implemented during construction.

- *Wetlands cannot be utilized for stormwater treatment.*
  The proposed treatment areas would not utilize or impact existing wetlands.

- *Invasive plants must be addressed through contract provisions.*
  Invasive plants are located in the project area and appropriate best management practices would be implemented during construction to prevent their spread. Further details can be found in the Invasive Species section of this document.

- *The project cannot result in adverse impacts to State or Federally Threatened or Endangered species or exemplary natural communities.*
  The project would not adversely impact known rare species or exemplary natural communities. Further details can be found in the Endangered Species/Natural Communities section of this document.

Proposed water quality treatment is expected to result in equal or lower pollutant loading than currently exists for most pollutants associated with roadways. Stormwater treatment design will be refined as the project progresses through final design.

Road Salt

The primary material used for de-icing roadways in the winter is sodium chloride (road salt), which can impact surface waters and groundwater through stormwater runoff and infiltration. Sodium chloride cannot be treated or filtered with stormwater treatment methods and only dilution reduces its concentration in water. Sodium and chloride in surface waters and groundwater can impact drinking water quality, as well as wildlife, aquatic species, and vegetation that depend on surface waters.

According to NHDES Drinking Water and Groundwater Bureau (*Exhibit 10*), the public water supplies adjacent to the project area currently have sodium chloride levels of approximately 16 milligrams per liter (mg/L). Typical background levels of sodium and chloride for pristine locations in New Hampshire are less than 20 mg/L and 30 mg/L, respectively. The Secondary Maximum Contaminant Level (SMCL) for chloride is 250 (mg/L), which is the level at which a salty taste in the water can be detected. The EPA drinking water standard for sodium is 20 mg/L for people on a salt-restricted diet. Although the proposed project would result in an increase in impervious surface, and a likely increase in the amount of road salt that is applied during the winter, the increase is unlikely to be high enough to elevate sodium and chloride levels above drinking water standards. Furthermore, closed drainage would be utilized to direct stormwater runoff away from wells and public water supplies to the extent possible. NHDOT will continue to coordinate with the NHDES Drinking Water and Groundwater Bureau during final design of the project.

NHDES has established water quality standards for chloride in surface waters to assess impacts to aquatic organisms. The chronic (4-day average) standard for chloride is 230 mg/L, and the acute standard (1-hour average) is 860 mg/L (Env-Wq 1700). In general, the concentration of chloride found in surface water correlates with the proportion of impervious surfaces (state and town roads, parking lots, etc.) in the watershed. The proposed project would result in an increase in impervious surface of 4.4 acres along the 3.9-mile project.

As part of the 2012 Corridor Study, specific conductance levels were measured at four stream crossings along NH Route 106, one of which was the southernmost Gues Meadow Brook crossing in the current project area. This study involved the use of Aqua TROLL 100© monitoring devices manufactured by In-Situ, Inc., which were deployed both upstream and downstream of NH Route 106 at the selected stream crossings. Rugged Reader© data loggers were deployed with each device to record readings. The devices were deployed on August 25 and

26, 2011 in water 1 to 2.5 feet deep, and were removed on September 9, 2011. The first two days of monitoring were completed in optimal conditions, with water levels near the median annual low-water levels, which are normal for that time of year. After the first two days, however, Tropical Storm Irene passed over the state, resulting in heavy rainfall and much higher stream levels. Water levels receded a few days later, but rose again with a second large rain event a few days later.

Specific conductance levels measured in microsiemens per centimeter (µS/cm) were converted to chloride concentrations in milligrams per liter (mg/L) using a formula developed by Trowbridge et al. (2010)[1]:

$$\text{Chloride in mg/L} = 0.307 * [\text{Specific Conductance in } \mu\text{S/cm}] - 22.00$$

The highest specific conductance measured at Gues Meadow Brook was 91.2 µS/cm, making the derived chloride concentration 6.0 mg/L. Chloride concentrations at other locations included in the 2011 study were 8.6 mg/L or lower. Trowbridge et al. found that streams in southeastern New Hampshire with chloride concentrations at any time of the year below 102 mg/L were unlikely to experience acute or chronic water quality standards exceedances at any time during the year. In 2011, the derived chloride concentration of Gues Meadow Brook was substantially below 102 mg/L. Development within the project area has not increased substantially in the last six years; therefore, it is assumed that present-day chloride levels are comparable to measurements taken in 2011.

According to the NHDOT *Winter Maintenance Snow and Ice Policy* (2001), the typical application rate of road salt is 250 to 300 pounds per lane mile. This would equate to approximately 2,340 pounds of road salt applied within the 3.9-mile project area during any given treatment. The proposed roadway would have an additional lane, increasing lane miles by one-third and potentially resulting in an increase of road salt by one-third to 3,150 pounds per lane mile. Based on the estimated chloride concentration in Gues Meadow Brook in 2011, a 17-fold increase in chloride concentration would be required before acute or chronic water quality exceedances would be expected to occur at that location. The proposed condition is unlikely to result in an increase in salt loads that would cause this level of increase in chloride concentration.

Road salt imports within a watershed closely correlate with the percent of developed land in the watershed. Water quality exceedances typically occur after impervious surfaces cover 10% of the watershed, with severe degradation expected beyond 25% impervious cover. [2,3] Using the impervious cover that has been estimated from the 2011 National Land Cover Dataset, as well as aerial imagery, the approximate percent impervious within the Soucook River watershed and the smaller subwatersheds within the project area has been calculated (see Table 1 and Figure 8).

Overall, the proposed increase in impervious surface within the project area would result in an increase of only 0.01% to 0.3% within each watershed. Impervious cover is below 10% within the Soucook River watershed, as well as the watersheds of two intermittent streams within the project area. The watershed for a third intermittent stream contains approximately 13.9% impervious cover, most of which is within the Loudon Country Club property. The Gues Meadow Brook watershed consists of approximately 20.3% impervious cover, most of which is within the NH Motor Speedway complex. Little, if any, of the impervious cover associated with these two properties is comprised of roadways that would require applications of road salt. Based on this analysis, the

[1] Trowbridge, P.R., J.S. Kahl, D.A. Sassan, D.L. Heath, and E.M. Walsh. 2010. Relating Road Salt to Exceedances of the Water Quality Standard for Chloride in New Hampshire Streams. Environmental Science and Technology 44: 4903-4909.

[2] Center for Watershed Protection. 2003. Impacts of Impervious Cover on Aquatic Systems. Watershed Protection Research Monograph Number 1. Center for Watershed Protection, Ellicott City, MD. March 2003.

[3] Deacon, J.R., Soule, S.A., and Smith, T.E. 2005. Effects of urbanization on stream quality at selected sites in the Seacoast region in New Hampshire, 2001-03: U.S. Geological Survey Scientific Investigations Report 2005-5103, 18 p.

proposed impervious cover associated with this project is not expected to lead to levels of impervious cover at which water quality exceedances from road salt would be expected.

Watershed Name	Watershed Size (Acres)	Existing Impervious Cover (% of Watershed Area)	Proposed Impervious Cover (% of Watershed Area)
Soucook River	33,299	7.23%	7.24%
Gues Meadow	2,817	20.3%	20.4%
Intermittent Stream (Sta 5422+25)	36	13.9%	14.2%
Intermittent Stream (Sta 5453+80)	28	7.1%	7.2%
Intermittent Stream (Sta 5513+70)	316	0.73%	0.76%

Table 1. Existing and proposed estimated percent impervious cover summarized by watershed

Construction Water Quality

Stormwater discharges from construction activities resulting in earth disturbance greater than one acre in size must obtain coverage under an EPA National Pollutant Discharge Elimination System (NPDES) permit. In New Hampshire, such discharges are generally permitted under the Construction General Permit (CGP). Coverage under the CGP requires submittal of a Notice of Intent (NOI) and preparation of a Storm Water Pollution Prevention Plan (SWPPP). Since the proposed project is expected to disturb more than one acre of land, an NOI and SWPPP would be required prior to the start of construction.

Wildlife/Fisheries

The 2015 NH Wildlife Action Plan (WAP) provides the framework for conserving Species of Greatest Conservation Need and their habitats in New Hampshire. The WAP includes a habitat-based statewide map that identifies "Highest Ranked Wildlife Habitat," which shows where habitat exists in the best ecological condition. In the vicinity of the proposed project, the areas of Highest Ranked Habitat are associated with the Shaker Branch and Bumfagon Brook, both tributaries to the Soucook River (*Figure 6*). The Highest Ranked Habitat along the Shaker Branch is adjacent to the southern end of the project area and the edge of this mapped area would be impacted by the project. However, since the project would only impact areas adjacent to existing maintained right-of-way, it is not expected to adversely impact the mapped habitat area. No other WAP habitats would be impacted.

There are eight stream crossings in the project area, including three crossings that carry Gues Meadow Brook under NH Route 106 at three locations (*Figure 6*). Since the larger structures are in good condition and currently have adequate hydraulic capacity, the project proposes to extend rather than replace these structures. Existing perched outlets would be addressed to the extent possible. NH Fish and Game has no concerns with the project as currently proposed (*Exhibit 15*).

Endangered Species/Natural Communities

The New Hampshire Natural Heritage Bureau (NHB) reported known records of one State-listed rare plant species and three State-listed wildlife species in the vicinity of the project (*Exhibit 11*). The rare plant is located north of the project and will not be impacted. The US Fish & Wildlife Service (USFWS) *Information for Planning and Conservation System* (IPaC) web tool was utilized to request an official species list for federally listed species or critical habitats that could occur in the project area (*Exhibit 12*). According to the official species list, the northern long-eared bat and small whorled pogonia may occur in this area. The US Endangered Species Act (ESA) requires Federal agencies to work to conserve federally endangered and threatened species and to avoid

jeopardizing the existence of any listed species. In addition, the project must comply with the Bald and Golden Eagle Protection Act. Species of concern are described in more detail below.

Northern Long-Eared Bat

According to the USFWS Official Species List, northern long-eared bat may occur in this area of the state. The Natural Heritage Bureau did not report any known winter hibernacula or maternity roost trees in the vicinity of the project. NH Fish & Game also has not indicated that known hibernacula or maternity roost trees exist in the vicinity of the project. According to the US Fish & Wildlife Service, suitable summer habitat for northern long-eared bat consists of a variety of forested habitats. This species generally prefers closed canopy forest with an open understory. Potential roost trees include live trees or snags, at least 3" in diameter, with exfoliating bark, cracks, crevices, or cavities. Potential roosting habitat does exist in the project area.

The project would involve clearing within potential suitable summer habitat for northern long-eared bat. An acoustic survey was completed throughout the project area and results of that survey indicate probable absence of northern long-eared bat. No further surveys are required for this project and the project has a finding of "may effect, not likely to adversely affect" (NLAA). No avoidance and minimization measures are required. The project adheres to the criteria and conditions of the *Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat (*Version 3, May 2016), as outlined in the *Programmatic Biological Opinion for Transportation Projects in the Range of the Indiana Bat and Northern Long-eared Bat* (December 2016). The Range-wide Programmatic Consultation Project Submittal Form was submitted to the US Fish & Wildlife Service and no further coordination is required (*Exhibit 13*).

Small Whorled Pogonia

While the 2012 Corridor Study was underway, one stem of small whorled pogonia was identified in the project area in September 2012 (*Figure 6*). The plant was located in a utility line corridor approximately 65 feet from the edge of NH Route 106 and 100 feet from the maintained greens at the Loudon Country Club. At the time it was found, the plant had two seed capsules and the leaves were starting to decay.

A survey to relocate this plant was completed on August 2, 2016. Referring to photographs taken in 2012, the spot within the utility line corridor where this plant had been identified was easily relocated. However, no evidence of this species was found. The utility line corridor was then searched from NH Route 106 to the point at which the habitat changed to wetland, a distance of approximately 110 feet. Habitat on both sides of the corridor was also surveyed. The total area surveyed was approximately 0.5 acres of forested habitat on level terrain. Small whorled pogonia was not identified within the survey area. All plants in the survey could be identified at least to Genus, and no stems that appeared to be decayed were observed.

In addition to the area surveyed specifically for small whorled pogonia, the entire 3.9-mile project corridor was reviewed between June and September for the purpose of delineating wetlands and invasive species and completing the acoustic bat survey. The study area for the delineation extended approximately 100 feet from the edge of pavement along both sides of the road. Small whorled pogonia was not identified while carrying out these tasks.

The Natural Heritage Bureau (NHB) did not report any known populations of small whorled pogonia in the vicinity of the project area (*Exhibit 11*). The Natural Heritage Bureau report *Rare Plants, Rare Animals, and Exemplary Natural Communities in New Hampshire Towns* (July 2013) does not list known records of small whorled pogonia in either Loudon or Canterbury. This species most often occurs in hemlock-beech-oak-pine forest and tends to prefer mesic/seasonally damp soils. Other habitat preferences can include Skerry fine sandy loams or other soils in which a fragipan exists, somewhat poorly drained soils and/or a seasonally high water table, or terraces above streams. Small intermittent streams, ephemeral runoff channels, or old logging roads often provide breaks in the forest canopy that this species seems to prefer.

The location where small whorled pogonia was identified in 2012 would not be impacted by the proposed project. There would be areas of impact (fill and/or tree clearing) within forested habitat in other areas. Except for two areas where a treatment pond is proposed, impacts would be within 75 feet of the edge of pavement, which means that the impacts would be limited to the forest edge. The only impacts to forest interior habitat would be in the two locations where a treatment pond is proposed. The habitat in these areas is mixed woods of pine, maple, oak, and hemlock. One area is mapped as Rumney soils (poorly drained very fine sandy loam) and the other is Croghan soils (moderately well drained fine sandy loam). Neither area has any breaks in the canopy such as stream channels or logging roads. Given the characteristics of habitat that the project would impact, the presence of small whorled pogonia is unlikely in these areas.

For these reasons, the presence of small whorled pogonia in areas to be impacted by the project is not anticipated. This determination was confirmed with the USFWS (*Exhibit 14*). The proposed project would have no effect on this species. Actions resulting in no effect require no further coordination with or submittals to the USFWS.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act prohibits the "take" of bald eagles and golden eagles, including their parts, nests, and eggs. The Act also prohibits impacts from human activities that result in nest abandonment or the interruption of normal breeding, feeding, or sheltering habits. Neither of these species was reported by the NHB, NH Fish and Game, or the USFWS as a potential concern in the project area. No evidence of eagle nests has been observed in or near the project area. The project as proposed is not expected to result in any impact to these species.

State-Listed Wildlife Species

The NHB reported known populations of American eel (*Anguilla rostrata*), a species of special concern, bridle shiner (*Notropis bifrenatus*), State-threatened, and wood turtle (*Glyptemys insculpta*), a species of special concern, in the vicinity of the project (*Exhibit 11*). All three of these species rely on stream habitat. The project as proposed would impact streams in the vicinity of existing stream crossings. Proposed work would address perched outlets at the stream crossings that are included in the project. NHFG reviewed the project area and had no concerns at this time (*Exhibit 15*). Coordination with NHFG will be ongoing as the project progresses through final design and permitting.

Invasive Plants

An invasive plant is a non-native plant that is able to persist and proliferate outside of cultivation, resulting in ecological and/or economic harm. Under the statutory authority of NH RSA 430:55 and NH RSA 487:16-a, the NH Department of Agriculture, Markets & Food and NHDES prohibit the spread of invasive plants listed on the NH Prohibited Species List. The project area contains purple loosestrife (*Lythrum salicaria*), bush honeysuckle (*Lonicera* sp.), glossy buckthorn (*Rhamnus frangula*), Japanese barberry (*Berberis thunbergii*), Oriental bittersweet (*Celastrus orbiculatus*), spotted knapweed (*Centaurea biebersteinii*), multiflora rose (*Rosa multiflora*) and Japanese knotweed (*Fallopia japonica*), all of which are invasive plants listed on the NH List of Prohibited Invasive Species (AGR PART 3802.01).

Dozens of Japanese knotweed seedlings were observed in July 2016 between Beck Road and the Loudon Country Club along a recently loamed and seeded slope. The roadway slope was recently stabilized as part of a gas line extension associated with the newly constructed greenhouses on the east side of NH Route 106. There was no evidence in this area that knotweed was growing anywhere along the slope prior to the recent construction activity; therefore, it is likely that the knotweed was imported in materials used during construction. NHDOT is aware of this issue and is working on addressing it with the Contractor.

If invasive plants within the project area cannot be avoided during construction, all appropriate Best Management Practices would be summarized in an Invasive Species Control and Management Plan and implemented during construction to avoid spreading these plants to new sites. NHDOT Standard Specifications designate invasive plants as Type I or Type II based on the complexity of control measures that are required to prevent the spread of the plants during construction. In general, Type II plants require a greater level of control due to their ability to spread from stem or root fragments. Of the plants identified in the project area, purple loosestrife and Japanese knotweed would require Type II control measures and honeysuckle, buckthorn, barberry, bittersweet, multiflora rose, and knapweed would require Type I measures.

Cultural Resources

The Department has coordinated with the NH State Historic Preservation Office (SHPO) and the Federal Highway Administration (FHWA) to locate and identify properties listed in or eligible for the National Register of Historic Places within the project area. The Department also reached out to local officials and the Historical Society in Loudon and Canterbury. A Public Informational Meeting was held for this project on November 30, 2016, at which public input on potential historic resources was sought. The project was reviewed by SHPO through submittal of a Request for Project Review in August 2016.

Section 106 of the National Historic Preservation Act offers those with a demonstrated interest in historic resources, including town officials and Historical Societies, an opportunity to become more involved in an advisory role during project development as "Consulting Parties." Input was solicited through a letter to Town officials and the Historical Society in Loudon and Canterbury, as well as during the Public Informational Meeting. To date, no one has requested consulting party status and no concerns about historic resources have been raised.

Description of Historic Resources

Architectural Resources

Twelve parcels in the project area were previously surveyed and determined ineligible for the National Register of Historic Places (*Figure 7*). Ten of these were surveyed in 1993 and two were surveyed in 2011. Seven of these properties no longer contain extant structures (Parcels 50-18; 50-5; 50-6; 50-10; 50-14; 50-20; 60-45). On the remaining five parcels, there would be either no work or only minimal clearing, slope widening, and/or drainage work along the frontage of these parcels.

There are three parcels adjacent to the project with houses over 50 years old that have not been previously surveyed: 49-63 (1964 construction date); 50-13 (1963 construction date); 60-30 (1950 construction date) (*Figure 7*). Minimal clearing, slope widening, and/or drainage work is proposed along the frontage of these parcels with NH Route 106.

Archaeological Resources

The 1995 EA involved a Phase 1 archaeological survey that identified areas of archaeological sensitivity within the 21-mile corridor. Twenty-three locations with archeological sensitivity were identified during this survey. Subsequently, a walkover survey was conducted in those areas where resources lay within potential impact areas, with twelve additional sites discovered during the walkover survey. Prehistoric site sensitivity was assigned to nine locations and subsurface investigations occurred at these locations. Prehistoric resources were found at two of the nine locations, both of which are north of the current project area.

During the Phase 1 survey conducted as part of the 1995 EA, eight historic sites representing domestic, agricultural, and industrial sites were identified within the project corridor. Three of these sites, the Lovering Mill, French, and Parker sites, are in the vicinity of the current project corridor. The Lovering Mill site is located on the west side of NH Route 106 adjacent to Shaker Brook in Loudon. This site is located outside the current

project limits to the south of the start of the project and will not be impacted. The Parker and French sites are located on Asby Road in Canterbury beyond the limits of the project. The sites will not be impacted.

Stone Walls

Sections of stone walls are located throughout the project area. The stone walls are not maintained, are obscured by roadside vegetation, and are not visible while traveling on NH Route 106. An assessment of the stone walls that would be impacted by the project will be undertaken to determine if any walls warrant reconstruction. If reconstruction is warranted, appropriate specifications would be included in contract documents.

Effects on Historic Resources

Effects on historic properties were determined by the FHWA, in consultation with NHDOT and SHPO, based on the Section 106 review process established by the National Historic Preservation Act of 1966 and outlined at 36 CFR 800.9.

The work as proposed would not change the setting or viewshed near the parcels listed above and it was determined that no further survey work was needed. It was further determined that the proposed action would result in No Historic Properties Affected (*Exhibit 16).*

Section 4(f)

Section 4(f) of the USDOT Act (1966) addresses the use of historic sites and publicly owned parks, recreation areas, and wildlife refuges for projects funded by the US Department of Transportation. It has been determined that the project would not impact historic sites protected under Section 4(f). Further, there are no parks, recreation areas, or wildlife refuges in the project area that are subject to 4(f) protection.

The Loudon Country Club and NH Motor Speedway are not protected under Section 4(f) because they are privately owned facilities. The snowmobile trails in the project area are located primarily on private lands and are allowed through landowner agreements rather than public easements; therefore, the snowmobile trails are not protected under Section 4(f).

Although a public entity holds the conservation easement on the Smith Easement parcel, this property remains under private ownership. Furthermore, the property does not function as a park, recreation area, or wildlife refuge. For these reasons, this property is not considered a Section 4(f) resource.

The Town of Loudon parcel with a municipal recreation/conservation deed restriction has no public access points, no trails, and no formal parks. In order to be a 4(f) resource, the primary purpose of the property must be a significant public park, recreation area, or refuge, or the property must play an important current or future role in meeting the recreation or refuge objectives of the town. The Town of Loudon Open Space Trail System Plan (2001) lists this parcel as Town-owned with no public uses and does not include any description of future plans for the parcel. The parcel is also mentioned in the 2001 Loudon Master Plan with a note that this is vacant land and the town would study the feasibility of transferring the parcel to Fillmore Industries in exchange for access to the Soucook River. Neither of these plans highlights this parcel as having a significant recreational use in 2001 or the future. For these reasons, the property is not considered a Section 4(f) resource.

Construction Impacts

Construction of this project would cause temporary inconvenience to the public and temporary impacts to environmental resources. The following measures would be implemented to minimize or avoid impacts during construction:

- Access to all homes and businesses would be maintained throughout construction.
- Appropriate Best Management Practices, as outlined in "*Best Management Practices for Roadside Invasive Plants*", would be utilized to avoid the spread of invasive plants within or outside of the project limits.
- Standard pollution prevention measures would be employed to assure all negative impacts are avoided and/or minimized to the maximum extent practicable.
- Construction of this project is anticipated to cause temporary increases in noise and dust levels within the project area. Standard measures would be employed to ensure such increases are minimized to the extent practicable and limited to the construction period.
- The Contractor would be required to prepare a Storm Water Pollution Prevention Plan (SWPPP), approved by the Department, prior to the commencement of construction activities.

Coordination & Public Participation

Letters have been sent to various State and local entities to seek input on this project. To date, the only written response received from town officials was from the Canterbury Conservation Commission (*Exhibit 17*). Dates are summarized in below in Table 2.

Agency/Organization	Contact	Date Sent	Reply Received
Loudon Board of Selectmen	Robert Krieger	6/29/2016	
Loudon Conservation Commission	Julie Robinson	6/29/2016	
Loudon Fire Chief	Rick Wright	6/29/2016	
Loudon Planning Board	Tom Dow	6/29/2016	
Loudon Police Chief	Kristoffer Burgess	6/29/2016	
Loudon Historical Society	Cynthia Babonis	6/29/2016	
Loudon Highway Dept	Lance Houle	6/29/2016	
Canterbury Town Administrator	Ken Folsom	6/29/2016	
Canterbury Board of Selectmen	Cheryl Gordan	6/29/2016	
Canterbury Conservation Commission	Kelly Short	6/29/2016	7/13/2016
Canterbury Planning Board	Art Rose	6/29/2016	
Canterbury Historical Society	Bob Scarponi	6/29/2016	
Canterbury Police Chief	Ernest Beaulieu	6/29/2016	
Canterbury Fire Dept	Peter Angwin	6/29/2016	
Canterbury Highway Dept	Jim Sawicki	6/29/2016	
Central NH Regional Planning Commission	Michael Tardiff	6/29/2016	
Conservation Land Stewardship Program	Steve Walker	6/20/2016	6/22/2016
NH Division of Parks and Recreation (LWCF)	Bill Gegas	1/31/2017	2/1/2017
LCHIP	Paula Bellemore	6/20/2016	1/11/2017
NHDES Drinking Water & Groundwater Bureau	Pierce Rigrod	7/7/2016	8/12/2016

Table 2. Summary of coordination

Meetings have been held with various Federal, State, and local agencies, as well as with the general public, throughout the development of this project. Project review meetings are summarized below in Table 3. Meeting minutes, if available, can be accessed online by clicking on the meeting name in the table.

Meeting	Date
NHDOT Natural Resource Agency Coordination Meeting	August 17, 2016
Public Officials/Public Informational Meeting	November 30, 2016
NHDOT Natural Resource Agency Coordination Meeting	January 18, 2017
NHDOT Public Hearing	October 23, 2017

Table 3. Summary of public meetings

The NHDOT project website includes links to additional project information:
https://www.nh.gov/dot/projects/loudoncanterbury29613/index.htm

Summary of Environmental Commitments

The following commitments have been made to ensure that environmental impacts are avoided or minimized and that the project remains in compliance with applicable regulations as the project progresses through Final Design and Construction. The NHDOT Bureau responsible for ensuring successful implementation of each commitment is shown in parentheses.

Commitments to be carried out during Final Design

1) Coordination with the NH Department of Environmental Services and US Army Corps of Engineers shall occur to determine appropriate compensatory mitigation for wetland impacts. (Environment)

2) All appropriate permits from the NH Department of Environmental Services and US Army Corps of Engineers shall be obtained prior to the commencement of any work within jurisdictional wetlands and surface waters. (Environment/Design)

3) Coordination with the NHDOT Contamination Program shall occur in regard to: 1) depth and extent of excavation adjacent to remediation sites in the vicinity of proposed work; 2) potential impacts to monitoring wells in the project area; and 3) the need for further investigations regarding Limited Reuse Soils. (Environment/Design)

4) Coordination with the NH Fish & Game Department shall continue in order to address proposed impacts to two properties protected by conservation easements. (Environment/Design/Right-of-Way)

5) Coordination with the NHDES Drinking Water and Groundwater Bureau shall continue in order to ensure that drainage and stormwater treatment design addresses concerns regarding Wellhead Protection Areas. (Environment/Design)

6) An assessment of the stone walls shall be completed to determine if any walls warrant reconstruction. (Environment)

Commitments to be carried out prior to earth disturbance

7) This project will require a Notice of Intent and Storm Water Pollution Prevention Plan (SWPPP) under the NPDES Construction General Permit. There shall be provisions in the contract requiring the Contractor to prepare the SWPPP and NOI. (Environment/Construction)

8) The project area contains plants that are on the NH List of Prohibited Invasive Species (AGR PART 3802.01) (purple loosestrife, bush honeysuckle, glossy buckthorn, Japanese barberry, Oriental bittersweet, spotted knapweed, multiflora rose, and Japanese knotweed). Locations of these plants shall be shown on construction plans. The Contractor shall prepare an Invasive Species Control and Management Plan, for the Department's approval, to summarize all appropriate BMPs to be implemented during construction to avoid spreading the plants to new sites. (Environment/Construction)

Commitments to be carried out during construction

9) The project is located over an aquifer and within Wellhead Protection Areas. Stringent best management practices shall be utilized to prevent adverse impacts to water quality during construction. (Construction)

10) Construction of this project is anticipated to cause temporary increases in noise and dust levels within the project area. Standard measures shall be employed to ensure such increases are minimized to the extent practicable and limited to the construction period. (Construction)

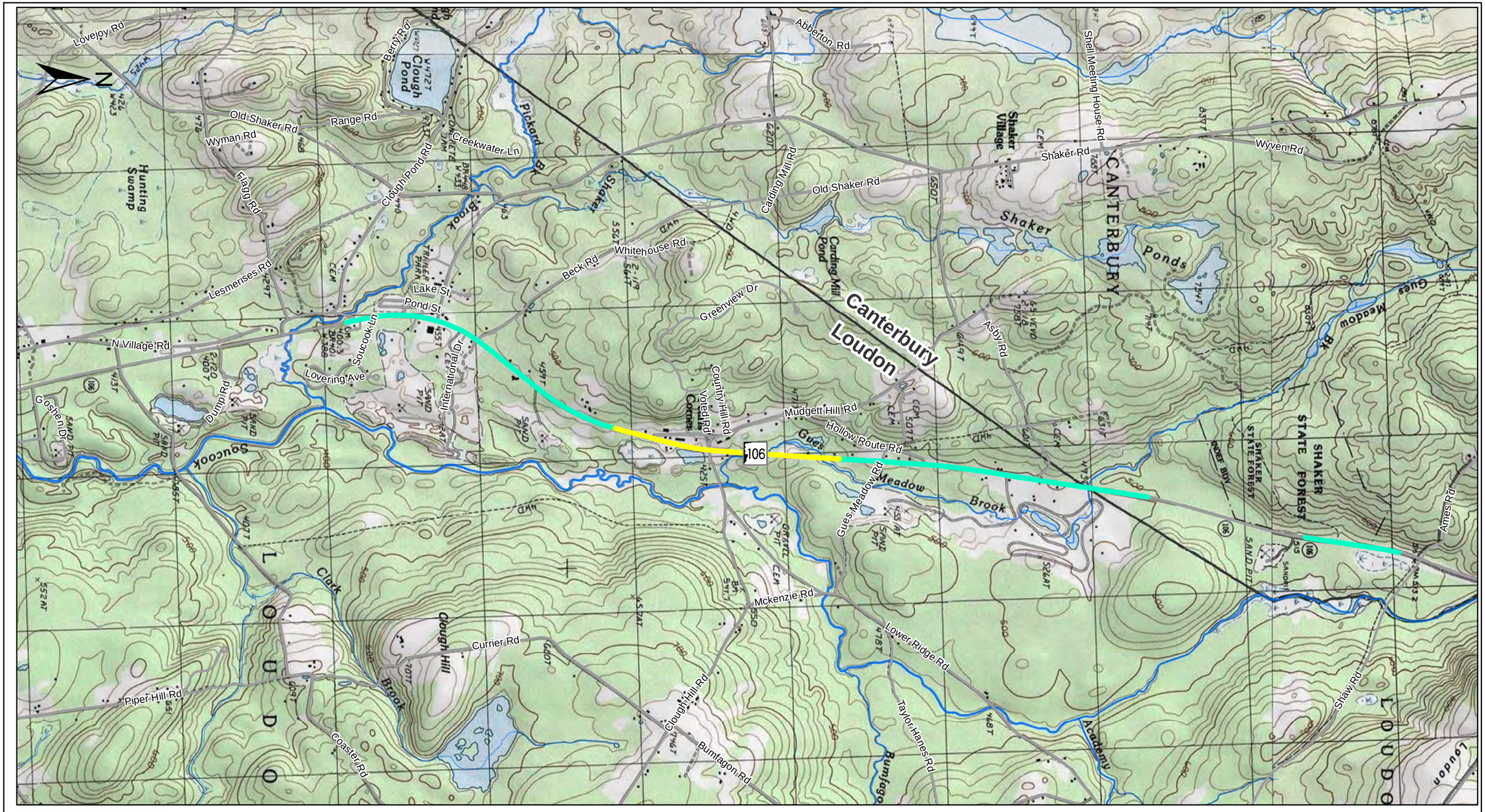
11) Access to all homes and businesses shall be maintained throughout construction. (Construction)

12) The Northern Long-Eared Bat Flyer shall be shared with all operators, employees, and contractors working on the project and operators, employees, and contractors shall be made aware of all applicable environmental commitments. (Environment/Construction)

13) All sightings of dead or sick bats shall be immediately reported to the Bureau of Environment (Rebecca Martin, 271-3226). (Construction)

14) Access to and use of snowmobile trails shall be taken into consideration if construction activities are carried out through the winter. (Design/Construction)

Figure 1 – Project Location



Project Limits

- Phase One
- Phase Two

NH DEPARTMENT OF TRANSPORTATION
LOUDON-CANTERBURY 29613

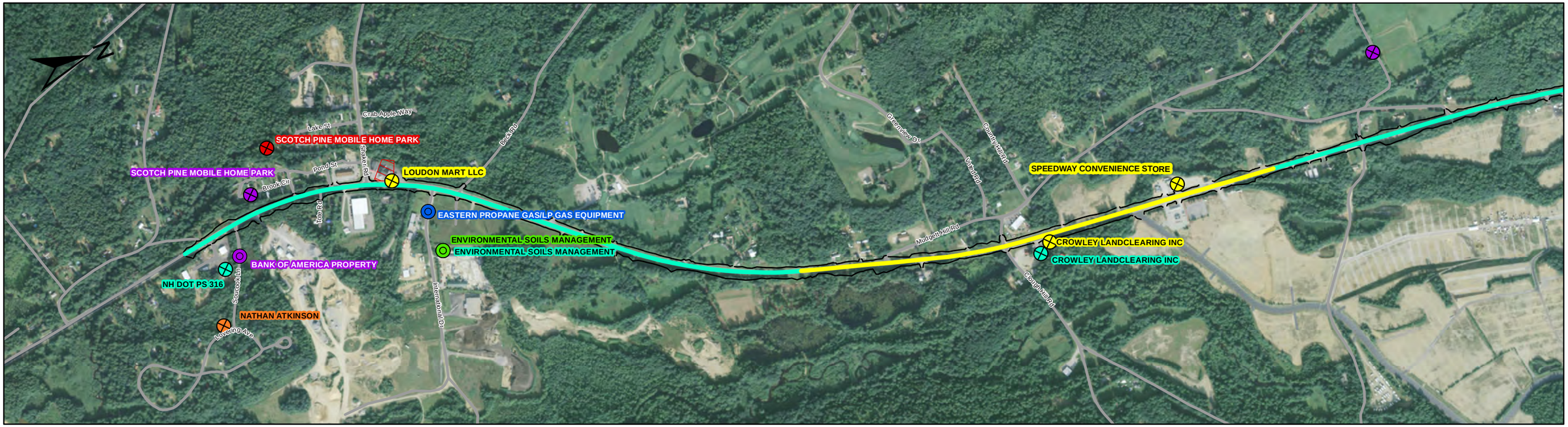
LOCATION

SCALE :	DATE :	FIGURE :
1 inch = 2,000 feet	SEPTEMBER 2017	1

McFarland Johnson

\\mjcolo-dc-x64\M\18038.14 NHDOT Loudon-Canterbury 29613\Draw\GIS\NEPA Figures\Location.mxd

Figure 2 – Hazardous Materials



Project Limits

- Phase One
- Phase Two
- Cuts and Fills

Status

- ACTIVE
- CLOSED

Remediation Site Type

- ETHER
- GWRELDET
- H2O SAMPLE
- HOLDTANK
- LUST
- OPUF
- SEPTIC
- UIC

Groundwater Management Zone

Source: NHDES OneStop - Remediation Sites
Accessed August 2016

NH DEPARTMENT OF TRANSPORTATION
LOUDON-CANTERBURY 29613

HAZARDOUS MATERIALS

SCALE :	DATE :	FIGURE :
1 inch = 1,000 feet	SEPTEMBER 2017	2

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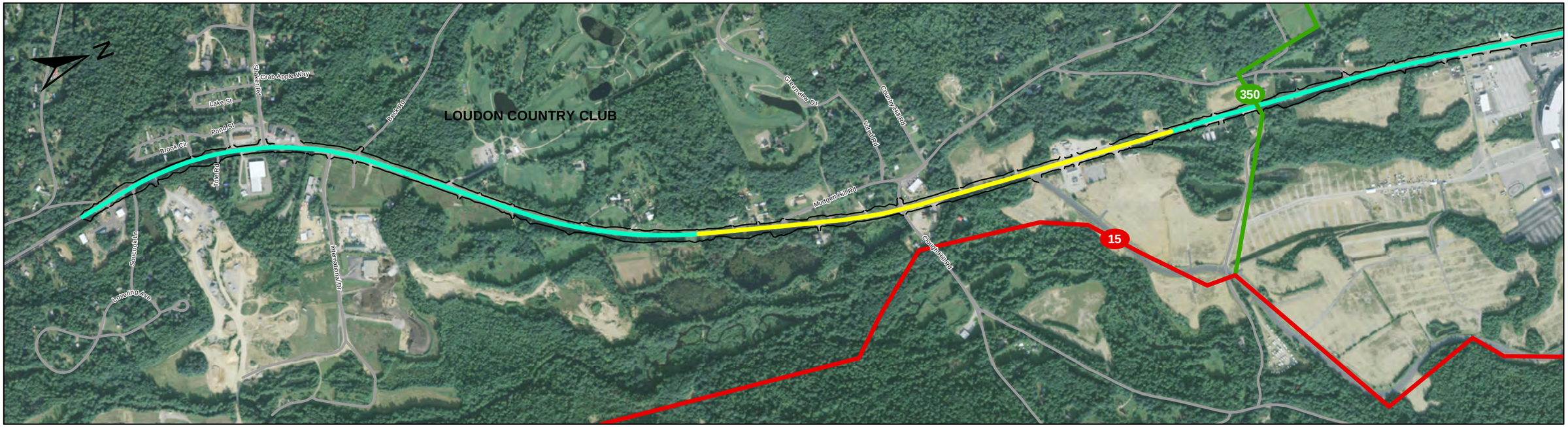
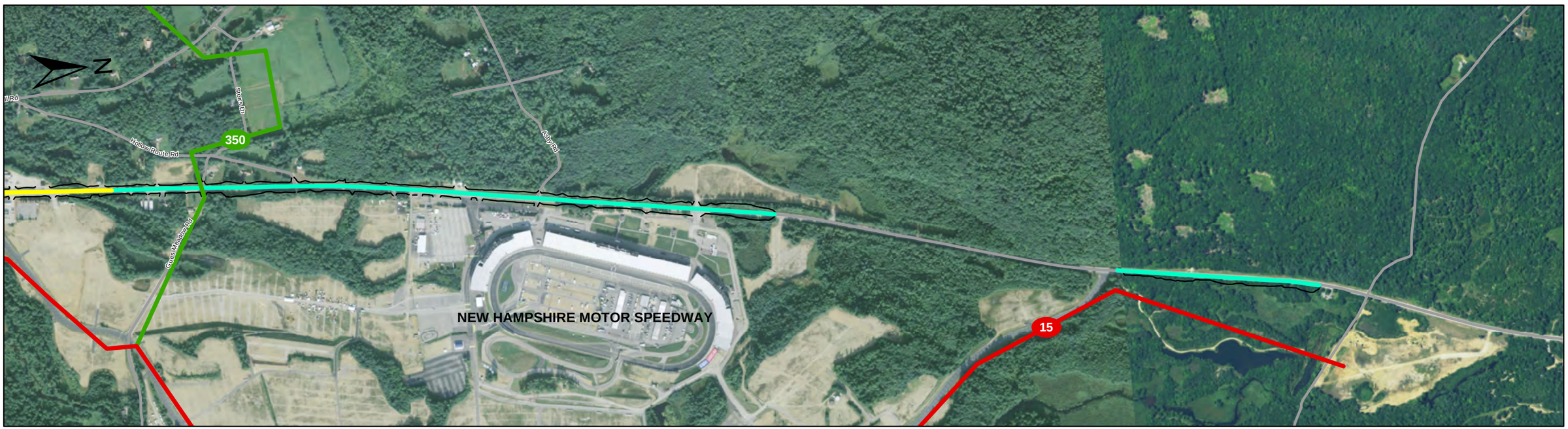
Figure 3 – Conservation Lands & Recreation





State Sonwmobile Corridor

Primary Local Snowmobile Trail

Project Limits

Phase One

Phase Two

Cuts and Fills

Source: NH GRANIT - NH Public Roads, Department of Transportation 2013. Conservation Lands, Society for the Protection of NH Forests and Other Land Trusts, 2013. Snowmobile Trails georeferenced from New Hampshire Snowmobile Association Interactive Map, 2017.

NH DEPARTMENT OF TRANSPORTATION
LOUDON-CANTERBURY 29613

CONSERVATION LANDS & RECREATION

SCALE :	DATE :	FIGURE :
1 inch = 1,000 feet	SEPTEMBER 2017	3

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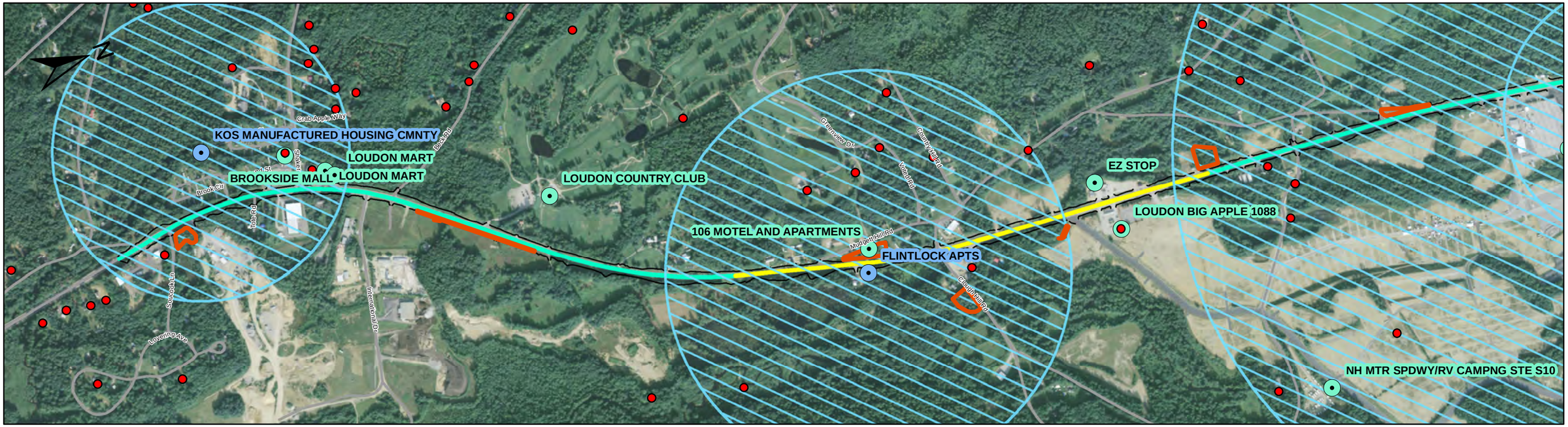
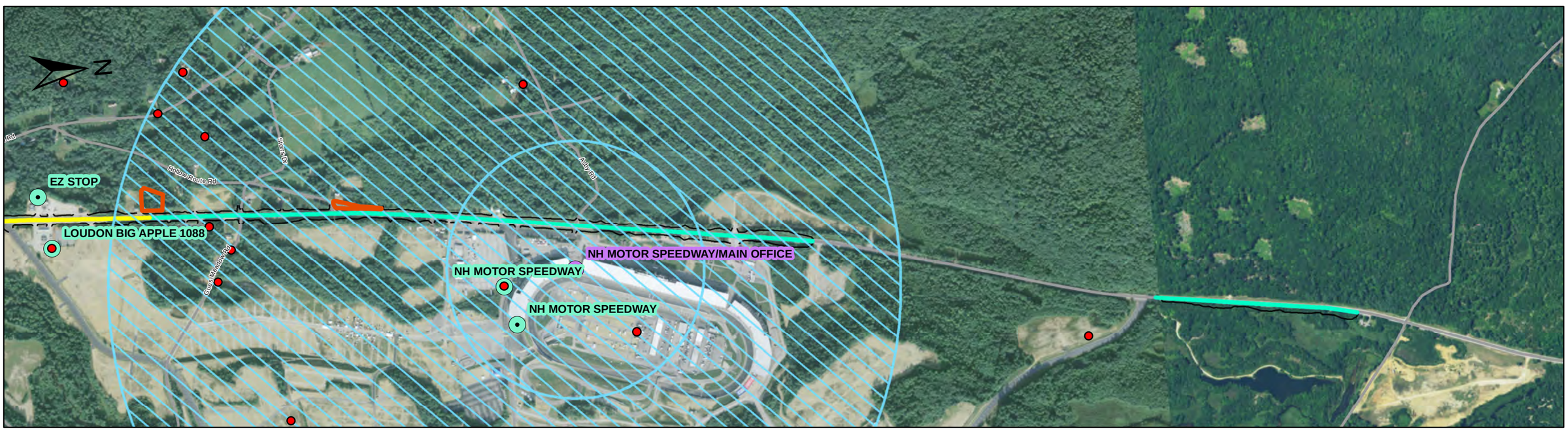
\\mjcolo-dc-x64\M\18038.14 NHDOT Loudon-Canterbury 29613\Draw\GIS\NEPA Figures\Conservation Lands and Recreation.mxd

Figure 4 – Groundwater Resources





Project Limits
- Phase One
- Phase Two
- Cuts and Fills

Public Water Supply
- Community
- Non-community
- Transient
- Wellhead Protection Areas

- Water Well Inventory
- Potential Treatment Areas

Source: NH DES OneStop - Public Water Supply Wells, NHDES/US EPA, Accessed June 2016.
Water Well Inventory, NHGS, Accessed June 2016.
Wellhead Protection Areas, NHDES, Accessed June 2016

NH DEPARTMENT OF TRANSPORTATION
LOUDON-CANTERBURY 29613

GROUNDWATER RESOURCES

SCALE :	DATE :	FIGURE :
1 inch = 1,000 feet	SEPTEMBER 2017	4

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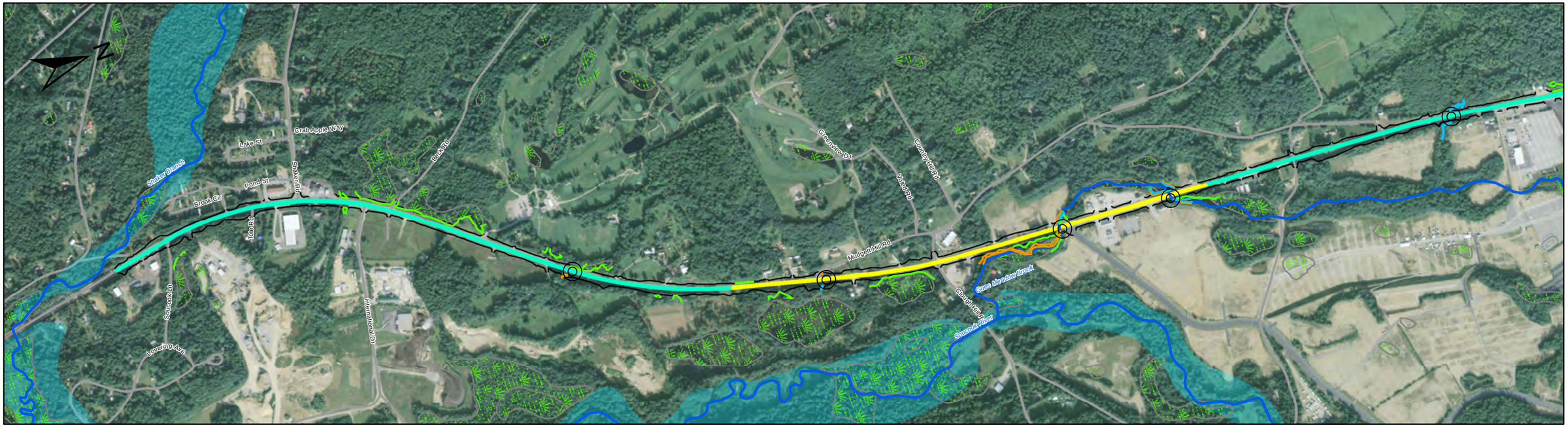
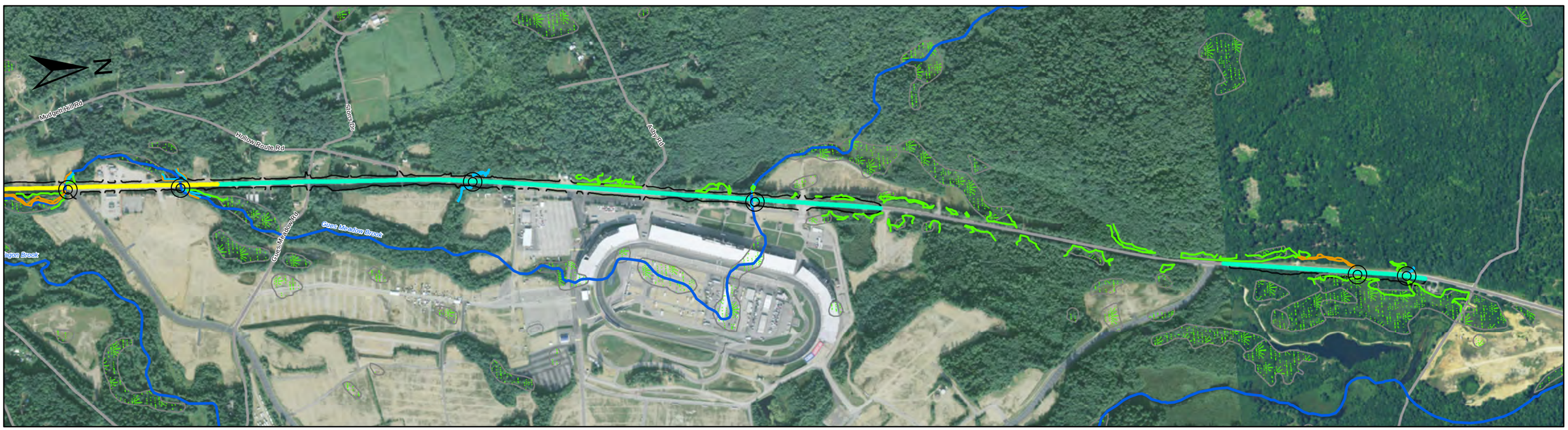
\\mjcolo-dc-x64\M\18038.14 NHDOT Loudon-Canterbury 29613\Draw\GIS\NEPA Figures\Groundwater Resources.mxd

Figure 5 – Surface Water and Wetland Resources





Delineated Wetland and Waterbody Lines

- Wetland
- Ordinary High Water (OHW)
- Top of Bank (TOB)
- Streams
- Stream Crossing
- National Wetland Inventory (NWI)
- 100 Year Floodplain

Project Limits

- Phase One
- Phase Two
- Cuts and Fills

Source: NH GRANIT - New Hampshire Hydrography Dataset, USGS/US EPA/NHDES, September 2006.
National Wetlands Inventory, USFWS, 2001.
FEMA National Flood Hazard Layer, 2015.

NH DEPARTMENT OF TRANSPORTATION
LOUDON-CANTERBURY 29613

SURFACE WATER AND WETLAND RESOURCES

SCALE :	DATE :	FIGURE :
1 inch = 1,000 feet	SEPTEMBER 2017	5

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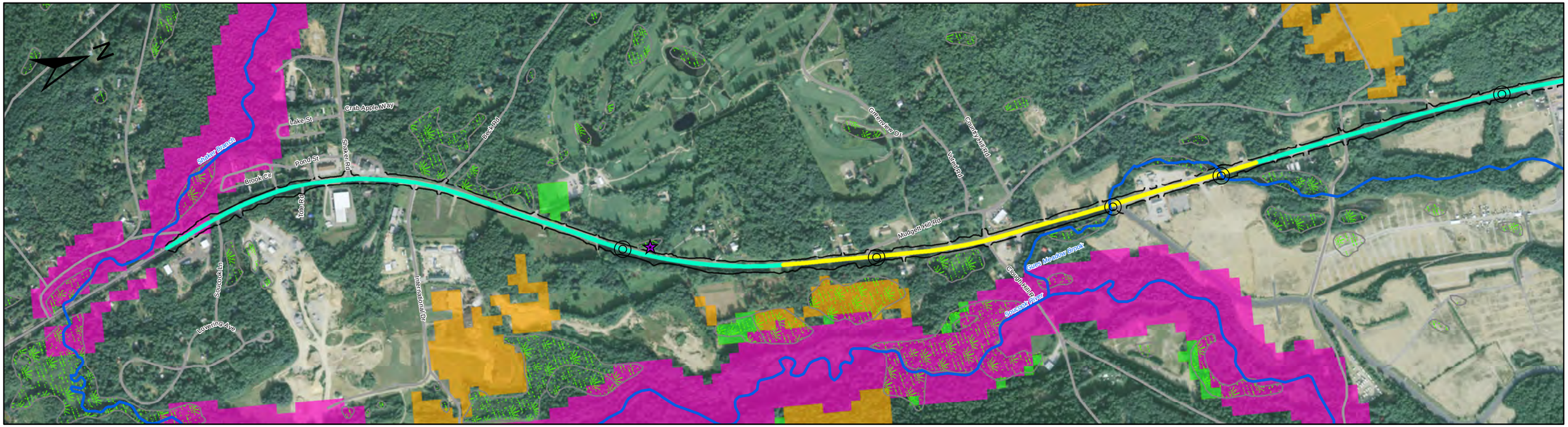
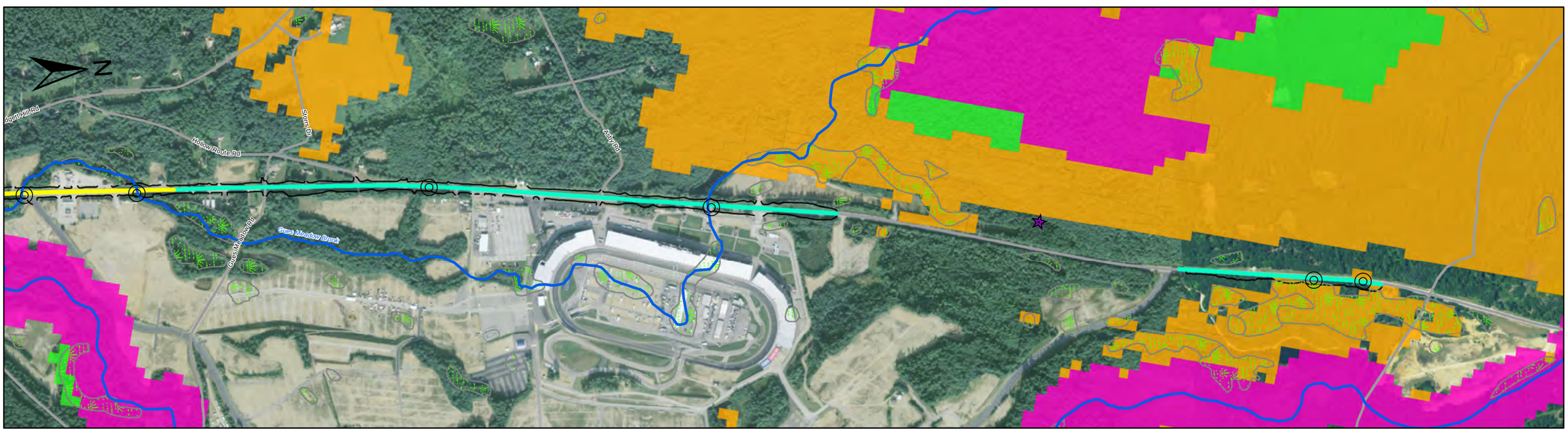
Figure 6 – Habitat Features





Rare Plant

Streams

Stream Crossing

National Wetland Inventory (NWI)

Project Limits

Phase One

Phase Two

Cuts and Fills

NH Wildlife Action Plan Habitat Tiers

Highest Ranked Habitat in New Hampshire

Highest Ranked Habitat in Biological Region

Supporting Landscapes

Source: NH GRANIT - New Hampshire Wildlife Action Plan, NH Fish and Game, 2015.
New Hampshire Hydrography Dataset, USGS/US EPA/NHDES, September 2006.
National Wetlands Inventory, USFWS, 2001.

NH DEPARTMENT OF TRANSPORTATION
LOUDON-CANTERBURY 29613

HABITAT FEATURES

SCALE :	DATE :	FIGURE :
1 inch = 1,000 feet	SEPTEMBER 2017	6

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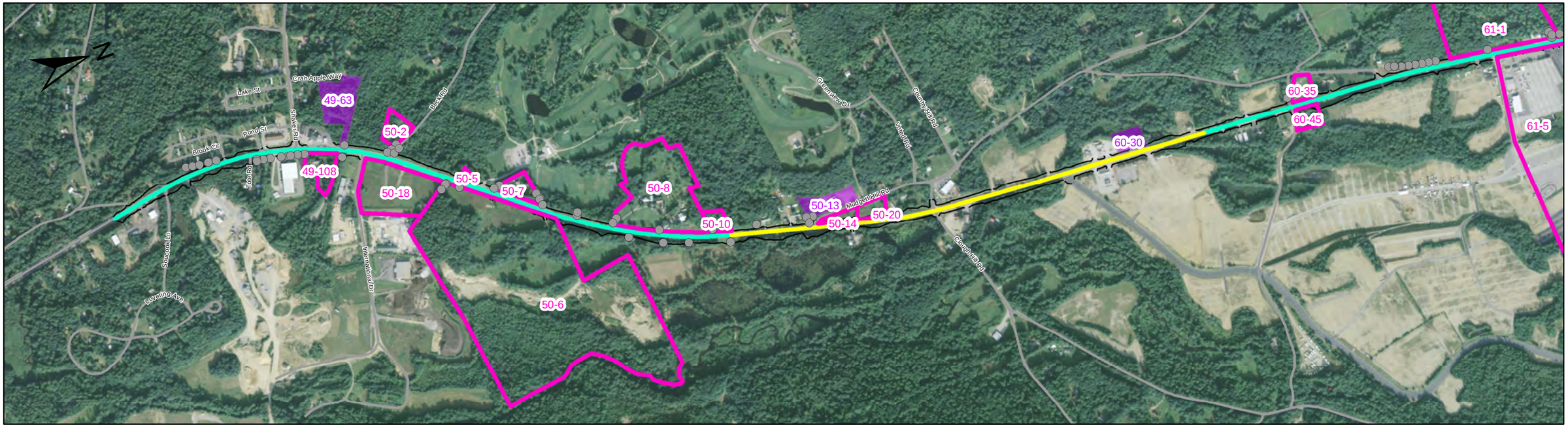
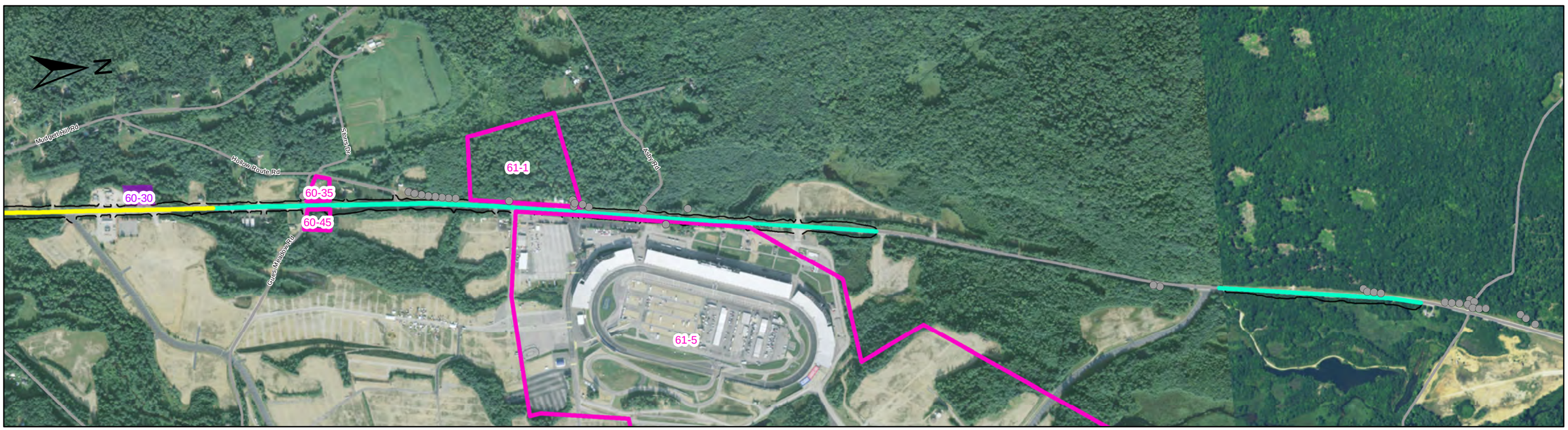
\\mjcolo-dc-x64\W\18038.14 NHDOT Loudon-Canterbury 29613\Draw\GIS\NEPA Figures\Habitat Features.mxd

Figure 7 – Cultural Resources





Project Limits

- Phase One
- Phase Two
- Cuts and Fills

- Previously Surveyed Properties (Not Eligible)
- Structures > 50 Years Old
- Stone Walls

NH DEPARTMENT OF TRANSPORTATION
LOUDON-CANTERBURY 29613

CULTURAL RESOURCES

SCALE :	DATE :	FIGURE :
1 inch = 1,000 feet	SEPTEMBER 2017	7

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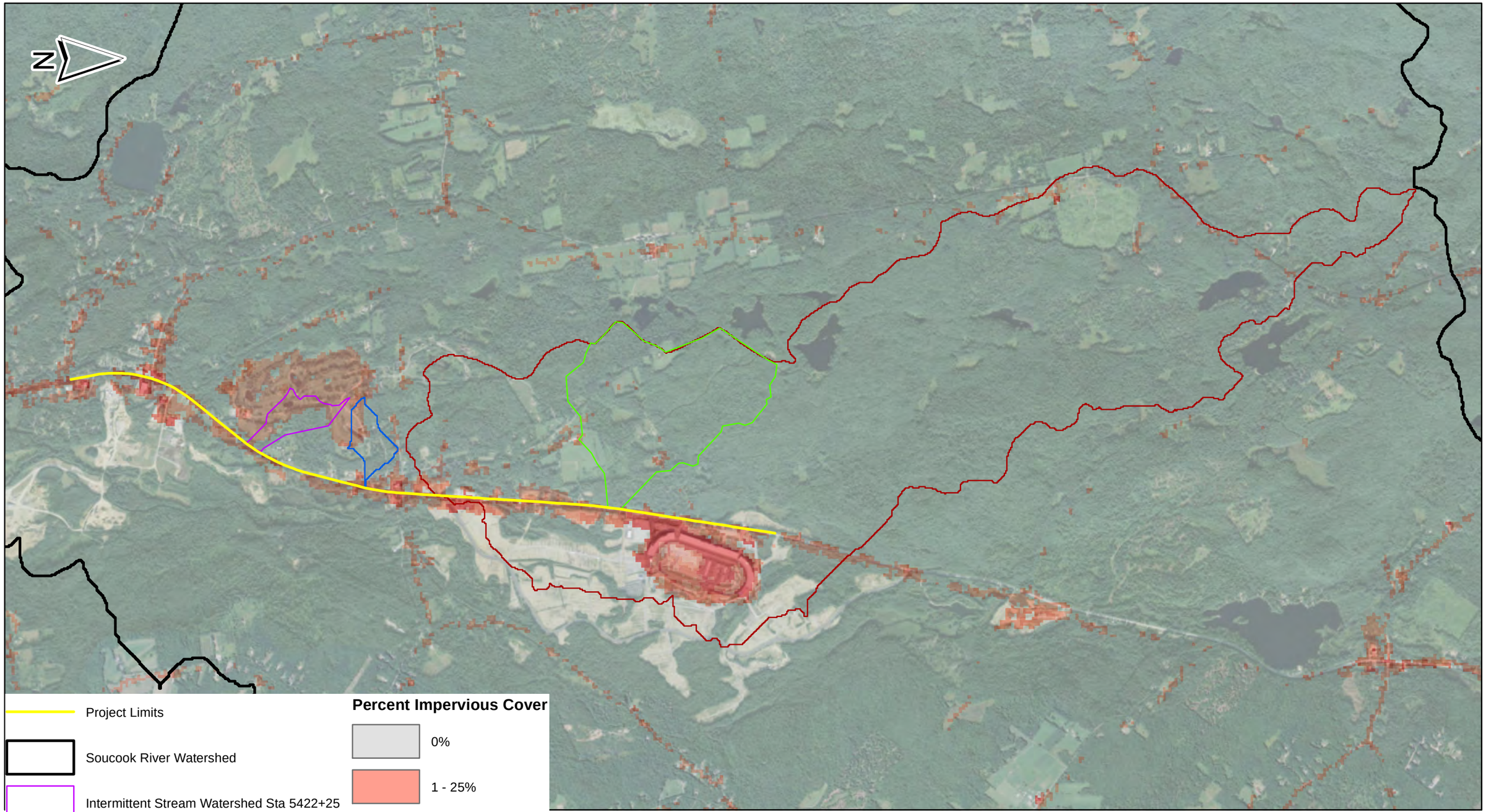
\\mjcolo-dc-x64\M\18038.14 NHDOT Loudon-Canterbury 29613\Draw\GIS\NEPA Figures\Cultural Resources.mxd

Figure 8 – Impervious Cover



Project Limits

Soucook River Watershed

Intermittent Stream Watershed Sta 5422+25

Intermittent Stream Watershed Sta 5453+80

Intermittent Stream Watershed Sta 5513+70

Gues Meadow Brook Watershed

Percent Impervious Cover

0%

1 - 25%

26 - 50%

51 - 75%

76 - 100%

Source: NH GRANIT - National Land Cover Dataset, 2011;
NH Stream Stats - Watershed Delineation, 2017

NH Department of Transportation
Loudon-Canterbury, 29613

IMPERVIOUS COVER

SCALE :	DATE :	FIGURE :
1 inch = 2,300 feet	MARCH 2017	8

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Exhibit 1 – FHWA Independent Utility Concurrence

U.S. Department of Transportation
Federal Highway Administration

New Hampshire Division

53 Pleasant Street
Suite 2200
Concord, NH 03301
603-228-0417

March 24, 2016

In Reply Refer To: HDA-NH

Ms. Victoria F. Sheehan,
Commissioner
New Hampshire Department of Transportation
7 Hazen Drive
Concord, NH 03302-0483

Attn: Mr. Christopher M. Waszczuk, P.E. Director of Project Development

Subject: Independent Utility Concurrence Request for Loudon-Canterbury, 29613 NH Route 106 Corridor Improvements Project

Dear Ms. Sheehan:

We have reviewed Mr. Waszczuk's January 21, 2016 letter concerning the subject, project and request for FHWA's concurrence in the Department's finding that the proposed project/action is considered as a standalone project, with independent utility.

After reviewing the request, and the March 2012 Environmental Study completed for the 11-mile NH Route 106 corridor which the project is located within, we concur in the Department's assessment that the project has independent utility even if no additional transportation improvements are made in the area.

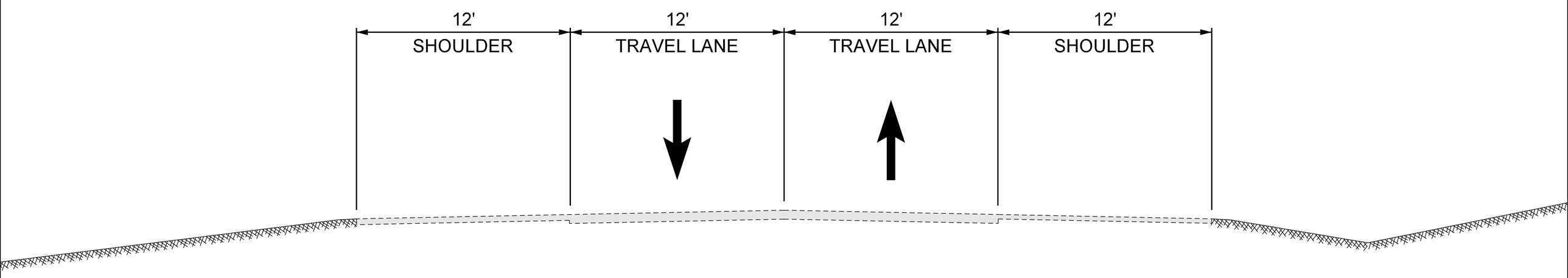
The NEPA documentation developed for the project should still describe how the project is part of the longer-range approach to NH Route 106 corridor improvements identified as a result of the 2012 Study, how the project was prioritized and/or the logical project termini developed and, how implementing the project has been determined not to force immediate improvements on the remainder of the facility.

If you have any questions, please call me at (603) 410-4870 or email me at Jamie.Sikora@dot.gov.

Sincerely,

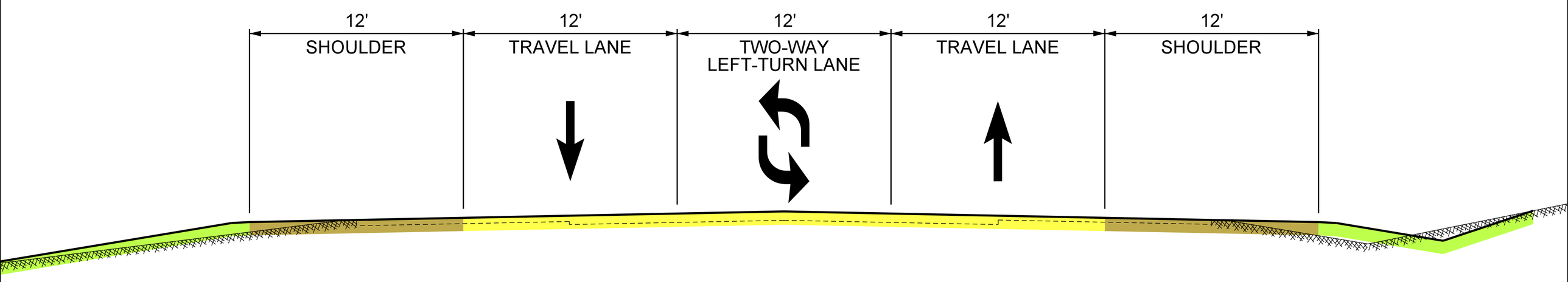
Jamison S. Sikora
Environmental Programs Manager

Exhibit 2 – Typical Roadway Sections



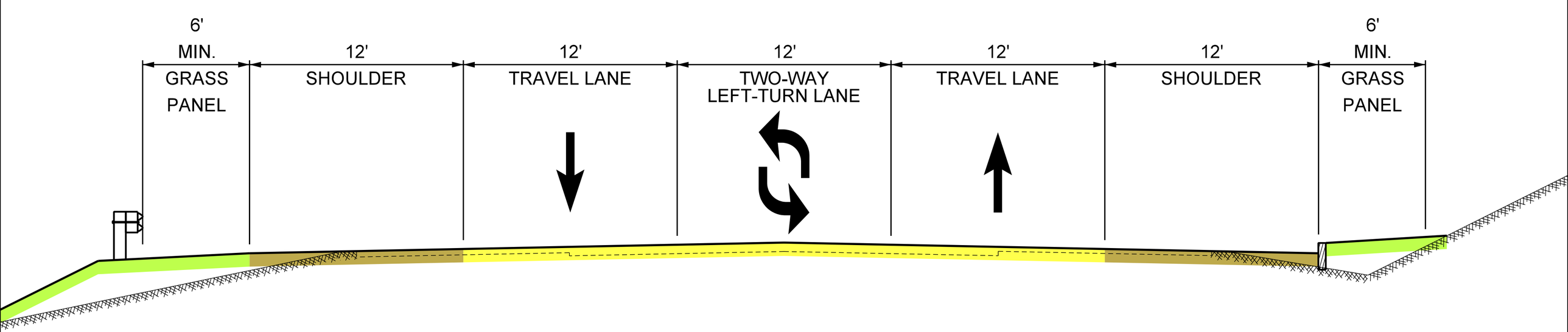
EXISTING NH 106

48' PAVEMENT WIDTH



PROPOSED NH 106

TWLTL CENTER LANE
60' PAVEMENT WIDTH



PROPOSED NH 106

TWLTL CENTER LANE & GRASS PANELS
60' PAVEMENT WIDTH

Exhibit 3 – Environmental Justice Population Analysis

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
INTER-OFFICE COMMUNICATION

DATE: March 27, 2015

FROM: JA Jay Ankenbrock, Chief of Labor Compliance,
Office of Federal Compliance

TO: Michael J. Dugas, P.E., Chief of Preliminary Design

RE: Environmental Justice Population Analysis, Project:
Loudon-Canterbury 29613

The attached analysis and recommendations are provided pursuant to Title VI of the Civil Rights Act of 1964 and Executive Orders 12898 & 13166. The intent of these statutes is to ensure fair and full participation and the equal receipt of benefits under Federally-assisted programs. Your efforts to accommodate and encourage participation by traditionally underserved groups, where significant, will ensure program access and minimize the potential for disproportionate project impacts on protected groups.

The table entitled "EJ Population Analysis" shows the presence of protected groups that might be impacted by the project. Personnel responsible for project planning/design and the coordination of public meetings/hearings should use this analysis to guide their outreach efforts under Title VI and in support of developing a context sensitive solution. Based on the availability of information and where appropriate, we have included specific outreach recommendations to facilitate public comment from underrepresented groups.

Please note that US Census American FactFinder data is used to provide to an EJ Population analysis for the project. If you have questions regarding this analysis, please contact me @ 271-2467.

Encls: EJ Population Analysis

Cc: Keith Cota, Chief Project Manager, Bureau of Highway Design
Peter Crouch, Traffic Systems Engineer, Bureau of Traffic
Kevin Nyhan, Administrator, Bureau of Environment
Julie Owen, Bureau of Right-of-Way

EJ Population Analysis for Project: Loudon-Canterbury 29613

STUDY AREA	AVG% Elderly Population	AVG % Minority Population	AVG % Low-income Population	AVG% LEP
Impacted Area – Merrimack County US Census Tract # 32, Block Group 1, Census Tract # 328, Block Group 1, Census Tract # 370, Block Group 1, Census Tract # 360, Block Groups 1, 2, &3,	**11.32%**	4.55%	3.58%	0.86%
Surrounding Area-Merrimack County, Census Tract #32, Block Groups 2 & 3; Census Tract #328, Block Group 2; Census Tract #330, Block Groups 1 & 2, Census Tract #329, Block Groups 2 & 3, Census Tract #350, Block Group 1, Census Tract #440, Block Group 2, Belknap County, Census Tract #9656, Block Group 1, Census Tract #9658, Block Group 3,	**13.09%**	7.78%	**11.84%**	2.11%

REMARKS:

* The population percentage identified is meaningfully greater than the surrounding area and constitutes an EJ population. Characteristics of this particular study area indicate that targeted outreach efforts to solicit public participation should be taken.

LEP Definition: Where there is a population of people who speak English as a second language less than well (as indicated by the U.S. Census data). When a particular LEP language group constitutes 5% of the impacted population, the Department is required to translate public information meeting notices and take appropriate measures to ensure language access. If this requirement exists, the Project Manager should contact the Title VI Coordinator for further assistance.

Impacted Area: The impacted area was defined by the project limits and the area in the immediate vicinity that most closely corresponds to the boundaries of Census Tracts and Block Groups

Surrounding Area: All Census Tracts and Block Groups outside of, and immediately adjacent to, the impacted area

Special Considerations: Special consideration should be given to any project features that affect pedestrian accessibility. This project constitutes an alteration in accordance with Title II of the Americans with Disabilities Act. As such, minimum ADAAG accessibility requirements apply, unless deemed technically infeasible.

- ADAAG was adopted as the 2010 Standards for Accessible Design on July 23, 2010 by the DOJ
  - http://www.ada.gov/reg3a.html#Anchor-Appendix-52467

For more information, I have provided a link to the Draft Public Rights-of-Way Guidelines (PROWAG)

- The Draft PROWAG (Revised Draft Guidelines for Accessible Public Rights-of-Way) was released in November 2005 and has not been adopted by DOJ or FHWA
- In 2006, FHWA issued a statement that the Draft PROWAG is to be considered best practice for making public rights-of-way accessible
  - http://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/background/revised-draft-guidelines
  - The Draft PROWAG includes specifications for detectable warnings and gives detailed information regarding their installation on curb ramps and on blended curbs, including at street corners, at cut-through islands and medians, and in front of buildings. It also has sections on accessible pedestrian signals (APS), roundabouts, channelized turn lanes, protruding objects, channelizing devices and barriers, and tactile and print signs.

Outreach Recommendations:

Resident/Agency Address	Org/Housing Type	Contact Name/Number
Concord Public Library 45 Green St Concord, NH 03301		Patricia Immen 603-225-8670
Concord Parks & Rec 14 Canterbury Rd Concord, NH 03301		David Gill 603-225-8690
Concord City Hall 41 Green St Concord, NH 03301		Suzanne Stevens 603-225-8570
Concord Community TV 170 Warren St Concord, NH 03301		Doris Ballard 603-226-8872
Greater Concord Chamber of Commerce 49 South Main St Suite 104 Concord, NH 03301		Timothy Sink 603-224-2508

Town of Loudon PO Box 7837 29 South Village Road Loudon, NH 03307		603-798-4541
Maxfield Public Library 8 Route 129 Loudon, NH 03307		Nancy Hendy 603-798-5153
Loudon Food Pantry 30 Chichester Road Unit D Loudon, NH 03307		603-724-9731
Young at Heart PO Box 7837 Loudon, NH 03307		Dorothy Mulkhey 603-783-9860 grammyjo@tds.com
Loudon Voanne Senior Housing 142 South Village Road, Loudon, NH 03307	Seniors	603-798-3190
Town of Canterbury PO Box 500 Canterbury, NH 03224		603-783-9955
Elkins Public Library 9 Center Road Canterbury, NH 03224		Susan LeClair 603-783-4386 sleclair@elkinspubliclibrary.org

Exhibit 4 – Correspondence: NH Fish & Game Conservation Lands

Christine J. Perron

From: Cook, Richard <Richard.Cook@wildlife.nh.gov>
Sent: Wednesday, June 22, 2016 11:52 AM
To: Christine J. Perron
Subject: F&G conservation easements, Loudon
Attachments: Route 106 DOT improvements (2).pdf

Christine,
The Fish and Game Department holds conservation easements on two of the properties along the route of the proposed 106 improvements you provided to Steve Walker. Can you provide me with more information on the type of impacts being proposed. Will all work be within the state's right-of-way? If not, will there any proposed take on the two properties indicated by the arrows on the attached figure?

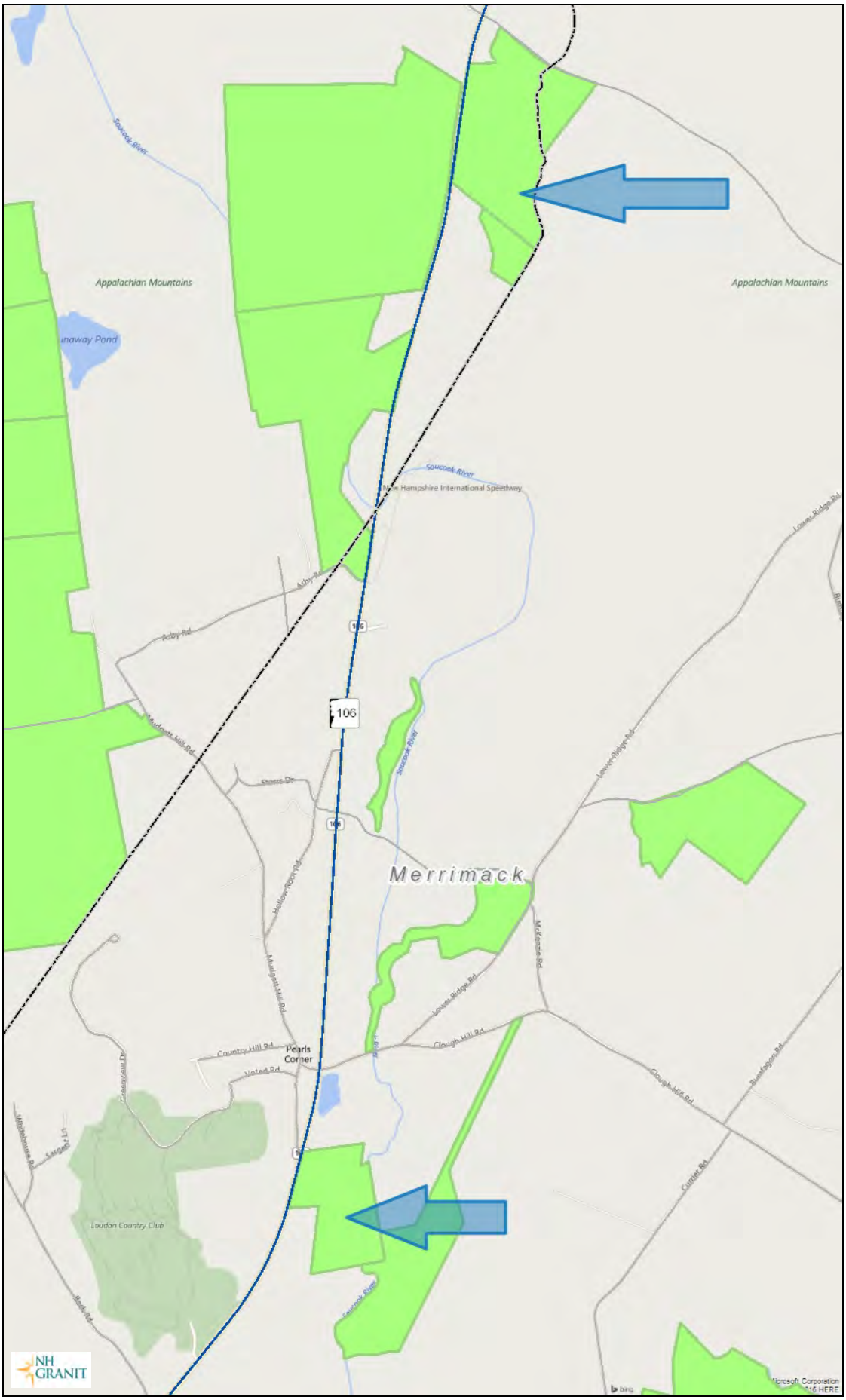
Thank you.

Rich

Richard Cook, Land Agent
NH Fish and Game Department
11 Hazen Drive, Concord, NH 03301
603-271-1133 richard.cook@wildlife.nh.gov
NH Fish and Game.....connecting you to life outdoors
www.wildnh.com, www.facebook.com/nhfishandgame

Did you know? *New Hampshire Fish and Game has been conserving New Hampshire's wildlife and their habitats since 1865*

Map by NH GRANIT



Legend

- State
- County
- City/Town
- Interstates
- Turnpikes
- US Routes
- State Routes
- Local Roads
- CL: Generic

Map Scale

1: 25,000

© NH GRANIT, www.granit.unh.edu

Map Generated: 6/22/2016

Notes

Exhibit 5 – Meeting Minutes: NH Fish & Game Conservation Lands

53 Regional Drive
Concord, NH 03313

Tel: (603) 225-2978
Fax: (603) 225-0095

McFARLAND JOHNSON
Established 1946

MEETING NOTES

PROJECT: Loudon-Canterbury 29613
(MJ Project No: 18038.14)

DATE OF MEETING: February 8, 2017

LOCATION: NHDOT Bureau of Environment Conference Room

SUBJECT: NH Fish & Game Smith Easement

PROJECT REPRESENTATIVES:

NHDOT: Keith Cota, Ron Crickard, Trent Zanes, Julius Nemeth, Erik Casey, Nancy Spaulding
NHFG: Richard Cook
OEP: Tracey Boisvert
MJ: Christine Perron

NOTES ON MEETING:

The purpose of the meeting was to discuss proposed impacts on a parcel on which NH Fish & Game (NHFG) holds a Conservation Easement, a property known as the Smith Easement. Richard Cook is the NHFG Land Agent. Tracey Boisvert is with the Conservation Land Stewardship Program, which monitors the easement.

Keith started the meeting by providing an overview of the project. In 1995, an Environmental Assessment (EA) was prepared for a project proposing to widen NH Route 106 to 5 lanes from I-393 in Concord to US Route 3 in Laconia, a distance of 21 miles. Interim improvements were also identified to address short-term needs. Since the completion of the EA, the interim improvements have been constructed as smaller, standalone projects. Traffic volumes did not increase as modeled and the 5-lane widening project was never funded.

In 2012, NHDOT reevaluated a portion of the 1995 EA study limits, extending 11 miles from I-393 in Concord north to a point 0.25 miles north of Ames Road in Canterbury. The purpose of this study was to determine if the 5-lane widening recommended in 1995 was still a valid design alternative that warranted continued consideration. This Corridor Study was completed in March 2012. Based on updated traffic growth trends, it was demonstrated that the 5-lane cross section was no longer necessary to satisfy anticipated future traffic demand in the area, and that a reduced 3-lane cross section would be appropriate. The 2012 Corridor Study identified a three-phased approach to construct improvements along the 11-mile study area.

The subject project is the first phase of the improvements identified in the 2012 Corridor Study. This project begins just south of Soucook Lane in Loudon and continues north for approximately 3.5 miles to just north of the Canterbury town line. This section of NH Route 106 is the oldest section of roadway within the 11-mile Corridor Study. NHDOT will separate this first phase into two separate construction

contracts. The project proposes to widen the roadway to accommodate an additional 12' lane to serve as a two-way left-turn lane. The travel lanes and shoulders would remain 12'. Overall widening would be approximately 12', resulting in a pavement width of 60', with 6' of widening on each side of the road in most locations.

The preliminary design plan (available on the NHDOT website – link is provided below) was reviewed. The Smith Easement is located on the east side of NH Route 106 at the beginning of Phase I of the project. Rich confirmed that the easement boundary follows the boundary of the speedway property. Trent summarized the work proposed in this area. The east side of NH Route 106 will be widened 6', which will require pushing the existing 2:1 slope back. The slope work will entail placing fill over existing ground, which would require cutting trees. Areas of this slope work and tree cutting are located beyond the existing right-of-way on the Smith Easement. Also, there are two drainage pipes that outlet on the property. Both pipes will need to be replaced and extended and both will likely be upsized as well. The proposed pipes would not result in more water outletting onto the Speedway property. The work as proposed will require permanent slope and drainage easements on the Speedway property.

It was noted that a previous NH Route 106 project in the 1970s acquired slope easements that extend onto the Smith Easement. However, these existing easements do not provide adequate space for the slope and drainage work that is proposed now.

Rich noted that the property is owned by the Speedway and coordination with the landowner would be required. Keith stated that the Department has been coordinating with the Speedway and they are very supportive of the project.

NHFG holds the Conservation Easement on this property, which was put into place in 2002 as mitigation for wetland impacts on Speedway property. No State funds were used in acquiring the easement. The easement language prohibits impacts to the property and has no allowance for public road improvements. The easement does include a section on condemnation. Rich noted that he discussed the proposed project with the NHFG staff attorney, who indicated that the proposed work would be a violation of the easement. Although NHFG does not have concerns with the proposed roadway improvements, a legal mechanism for completing the work must be identified. Any changes made to the Conservation Easement would need to go through the Charitable Trust Division of the AG's office.

It was noted that the proposed roadway work would not change the use of the property. Slope and drainage easements were proposed, not property acquisition. Keith said that a Public Hearing would be held this spring or early summer to establish the necessity for the project.

The following action items were identified:

1) Keith will seek input from the Attorney General's office and would work with NHFG to identify any potential flexibility in the conservation easement. Specifically, Keith will be looking for input on whether a finding of public need would supersede the language in the conservation easement.

2) NHDOT will get more information on the existing slope easements on the property. Specifically, the area of the easements and the area impacted outside these easements will be determined.

   Subsequent to the meeting, it was determined that the existing slope easements, established under two prior projects (P2440 and 10672) total 11,118 square feet. The current project would impact the slope within these existing easements, and also proposes 7,125 square feet of additional slope impact and 220 square feet of drainage impact for upgrades to two existing pipes.

3) NHDOT will look at the design options that would be required to avoid or minimize impacts outside the existing slope easements. It was noted that a slope of 1 ¾:1 could still be vegetated but a slope that is any steeper than that would require structural support and would unlikely support vegetation. The current slope and the proposed slope at this time are 2:1.

   During the meeting, Trent noted that widening more to the west side of NH Route 106 would introduce a curve into the alignment, which is considered problematic for the traffic volumes and traffic speed on this road.

The Public Hearing will be held this spring or early summer. Final Design and the Right-of-Way process will be completed by fall 2017. Construction is expected to begin in early 2018.

Submitted by:

Christine Perron
McFarland Johnson, Inc.

The Prelminary Design Plan is located at the following link:
https://www.nh.gov/dot/projects/loudoncanterbury29613/documents/29613_plan_phase1_11302016.pdf

Exhibit 6 – Correspondence: Land Conservation Investment Program

Christine J. Perron

From: Walker, Steve <Steve.Walker@nh.gov>
Sent: Tuesday, June 21, 2016 1:51 PM
To: Christine J. Perron
Cc: Boisvert, Tracey; Cook, Richard; Carpenter, William
Subject: RE: NHDOT Project - Loudon-Canterbury 29613

Hi Christine, There are no LCIP properties. There are F&G conservation easements and the State Forest so I have copied Rich and Bill in case they want to chime in on anything. Thanks steve

Steve Walker
Office of Energy and Planning
Stewardship Specialist
603-271-6834

From: Christine J. Perron [mailto:CPerron@mjinc.com]
Sent: Monday, June 20, 2016 2:54 PM
To: Walker, Steve
Subject: NHDOT Project - Loudon-Canterbury 29613

Good afternoon Steve,

The subject project is proposing improvements to a 4.5-mile section of NH Route 106. A location map is attached. McFarland Johnson is completing the environmental review for this project on behalf of NHDOT. I'm writing to find out if there are any LCIP concerns in the area that we should be aware of.

Happy Summer,
Christine

Christine Perron • Senior Environmental Analyst
McFarland Johnson
53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 128
www.mjinc.com

Exhibit 7 – Correspondence: NH Division of Parks and Recreation

Christine J. Perron

From: DRED: Land & Water Conservation Fund <LWCF@dred.nh.gov>
Sent: Wednesday, February 01, 2017 11:35 AM
To: Christine J. Perron
Subject: RE: NHDOT Project - Loudon-Canterbury 29613

Hi Christine,
Based on the information provided, there should be no impacts to any LWCF 6(f) property in the area that was funded through the National Park Service's State and Local Assistance Programs.
Thanks for checking!
Bill

Bill Gegas, Program Specialist
NH Department of Resources and Economic Development
Division of Parks and Recreation
172 Pembroke Road
Concord, NH 03301-5767
Tel: 603-271-3556
Fax: 603-271-3553
bill.gegas@dred.nh.gov
www.nhstateparks.org

From: Christine J. Perron [mailto:CPerron@mjinc.com]
Sent: Tuesday, January 31, 2017 10:37 AM
To: Gegas, Vasilios (Bill); DRED: Land & Water Conservation Fund
Subject: NHDOT Project - Loudon-Canterbury 29613

Good morning,

The subject project is proposing improvements to a 4.5-mile section of NH Route 106. A location map is attached. McFarland Johnson is completing the environmental review for this project on behalf of NHDOT. I'm writing to find out if there are any LWCF concerns in the area that we should be aware of.

Thank you,
Christine

Christine Perron • Senior Environmental Analyst
McFarland Johnson
53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 128
www.mjinc.com

Exhibit 8 – Correspondence: Land & Community Heritage Investment Program

Christine J. Perron

From: Paula Bellemore <pbellemore@lchip.org>
Sent: Wednesday, January 11, 2017 10:21 AM
To: Christine J. Perron
Subject: RE: NHDOT Project - Loudon-Canterbury 29613

HI Christine,
Sorry about that! I thought we had gotten caught up! LCHIP has not assisted in the protection of any natural, cultural or historic resources in the project area described. Please be aware that NH Fish and Game, Dept. of Resources and Economic Development and Department of Environmental Services all have assisted in conserving land along the proposed work area.

Paula

Paula S. Bellemore, Natural Resource Specialist
Land and Community Heritage Investment Program

13 West Street, Suite 3
Concord, NH 03301
603.224.4113
www.LCHIP.org

From: Christine J. Perron [mailto:CPerron@mjinc.com]
Sent: Wednesday, January 11, 2017 9:07 AM
To: Paula Bellemore
Subject: FW: NHDOT Project - Loudon-Canterbury 29613

Good morning Paula,

I am getting ready to prepare a NEPA document for the subject project and we don't seem to have a response from you regarding any potential LCHIP concerns.

Thanks,
Christine

From: Christine J. Perron
Sent: Monday, June 20, 2016 2:56 PM
To: 'Paula Bellemore' <pbellemore@lchip.org>
Subject: NHDOT Project - Loudon-Canterbury 29613

Good afternoon Paula,

The subject project is proposing improvements to a 4.5-mile section of NH Route 106. A location map is attached. McFarland Johnson is completing the environmental review for this project on behalf of NHDOT. I'm writing to find out if there are any LCHIP concerns in the area that we should be aware of.

Thank you,
Christine

Christine Perron • Senior Environmental Analyst

Exhibit 9 – Farmland Conversion Impact Rating

Christine J. Perron

From: Stephen Hoffmann
Sent: Monday, January 30, 2017 4:06 PM
To: 'Whitcomb, Peter - NRCS, Concord, NH'
Subject: RE: NHDOT Project - Loudon-Canterbury 29613, NH Route 106
Attachments: LoudonCanterbury_CPA_106.pdf

Hi Peter,

I completed Parts VI and VII, and based on the assessment criteria the project received a total point score of 58 out of 260 points. The project is in full compliance with the FPPA. I have attached the completed CPA-106 from for your records.

Thanks,
Steve

From: Whitcomb, Peter - NRCS, Concord, NH [mailto:peter.whitcomb@nh.usda.gov]
Sent: Friday, January 27, 2017 2:35 PM
To: Stephen Hoffmann <shoffmann@mjinc.com>
Subject: RE: NHDOT Project - Loudon-Canterbury 29613, NH Route 106

Steve,

Parts II, IV, and V of form CPA-106, the Farmland Conversion Impact Rating for Corridor Type Projects (attached) have been completed. The Relative Value of the project area is 28.

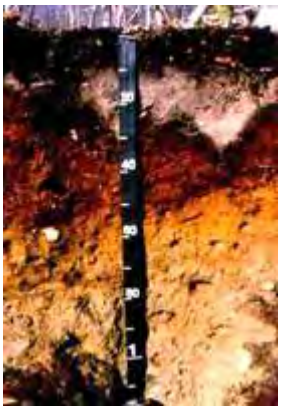
Please fill out Parts VI and VII. If the total point score is 160 or less, then the project is in full compliance with FPPA and no further action is required. If the total point score is above 160 points, then alternative design or location should be considered that might reduce the total point score. If this is not possible, then an explanation should be provided in Block 5 at the bottom of the form. Additional information about completing the form and the Farmland Protection Policy Act can be found at the following web site: http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/landuse/fppa/.

Please provide a final copy of the completed CPA-106 to me for NRCS records and retain a copy for your records, regardless of the total point score.

If you have any questions, please feel free to contact me.

Peter

Peter Whitcomb
Assistant State Soil Scientist
Cultural Resources Coordinator
Natural Resources Conservation Service
U.S. Department of Agriculture
The Concord Center, 10 Ferry St, Suite 211
Concord, NH 03301
Phone: 603-223-6024
peter.whitcomb@nh.usda.gov



"We are part of the earth
and it is part of us" - *Chief Seattle*

From: Stephen Hoffmann [mailto:shoffmann@mjinc.com]
Sent: Thursday, January 26, 2017 5:05 PM
To: Whitcomb, Peter - NRCS, Concord, NH <peter.whitcomb@nh.usda.gov>
Cc: Christine J. Perron <CPerron@mjinc.com>
Subject: NHDOT Project - Loudon-Canterbury 29613, NH Route 106

Good Afternoon Peter,

I am completing the environmental review of the subject project on behalf of NHDOT. This is a federally-funded project and FHWA is the lead federal agency. The proposed project is for improvements in response to traffic demands, along NH Route 106 in Loudon/Canterbury, NH (see attached Figure 1). The conceptual layout that is under consideration consists of widening the roadway to accommodate an additional lane. Depending on the location within the project area, the third lane would either be a 12' center turn lane (in areas with intersections and frequent driveways) or a 14' passing lane. The northbound and southbound travel lanes and shoulders would be 12' in width.

Farmland soil impacts outside the existing right-of-way were determined, and are shown in the attached Figure 2. The total area of impacts from the proposed project is approximately 1.25 acres. Farmland soils of local importance occur along the majority of the southern half of the project. There is one small area of prime farmland located in the project area. Impacts to prime farmland outside the existing ROW are less than 3 square feet. The remainder of the 1.25 acres of impacts are to farmland of local importance.

Form CPA-106 is attached with Parts I and III completed. Location maps are also attached. Please let me know if you need any additional information at this time.

Thanks,
Steve

Stephen Hoffmann • Environmental Analyst
McFarland Johnson
53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 136
www.mjinc.com

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 1/26/17	4. Sheet 1 of 1
1. Name of Project Loudon-Canterbury 29613	5. Federal Agency Involved FHWA	
2. Type of Project Roadway Widening	6. County and State Merrimack County, New Hampshire	
PART II *(To be completed by NRCS)*	1. Date Request Received by NRCS 1/27/17	2. Person Completing Form Peter Whitcomb
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 0 / Average Farm Size 125
5. Major Crop(s) corn silage, grass legume hay	6. Farmable Land in Government Jurisdiction Acres: 695,388 % 81.5	7. Amount of Farmland As Defined in FPPA Acres: 576,663 % 67.6
8. Name Of Land Evaluation System Used Merrimack and Belknap counties	9. Name of Local Site Assessment System N/A	10. Date Land Evaluation Returned by NRCS 1/27/17

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		1.25 ac			
B. Total Acres To Be Converted Indirectly, Or To Receive Services		0			
C. Total Acres In Corridor		434.8 ac			
PART IV *(To be completed by NRCS) Land Evaluation Information*					
A. Total Acres Prime And Unique Farmland		0			
B. Total Acres Statewide And Local Important Farmland		0.7			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted		0.01			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value		68			
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)*		28			
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	15			
2. Perimeter in Nonurban Use	10	10			
3. Percent Of Corridor Being Farmed	20	0			
4. Protection Provided By State And Local Government	20	0			
5. Size of Present Farm Unit Compared To Average	10	0			
6. Creation Of Nonfarmable Farmland	25	0			
7. Availablility Of Farm Support Services	5	5			
8. On-Farm Investments	20	0			
9. Effects Of Conversion On Farm Support Services	25	0			
10. Compatibility With Existing Agricultural Use	10	0			
TOTAL CORRIDOR ASSESSMENT POINTS	160	30	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland (From Part V)	100	28	0	0	0
Total Corridor Assessment (From Part VI above or a local site assessment)	160	30	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	58	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?
Corridor A	1.25	1/30/17	YES ☐ NO ☑

5. Reason For Selection:

The proposed project is for roadway improvements along NH Route 106 in Loudon/Canterbury, NH. The conceptual layout that is under consideration consists of widening the roadway to accommodate an additional lane. Depending on the location within the project area, the third lane would either be a 12' center turn lane (in areas with intersections and frequent driveways) or a 14' passing lane. The northbound and southbound travel lanes and shoulders would be 12' in width. All impacts will be located adjacent to the existing right-of-way and will not be located on property that is being

Signature of Person Completing this Part: Stephen Hoffmann, McFarland Johnson Inc.

DATE 1/30/17

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

Exhibit 10 – Correspondence: NHDES Drinking Water & Groundwater Bureau

Christine J. Perron

From: Rigrod, Pierce [Pierce.Laskey-Rigrod@des.nh.gov]
Sent: Friday, August 12, 2016 4:10 PM
To: Christine J. Perron
Subject: RE: NHDOT Project, NH Route 106, Loudon-Canterbury 29613

Hi Christine,

There are two community systems, Flintlock Apartments and KOS Manufactured Housing Community. DES is more concerned with those community wells. The well for Flintlock is ~96 feet from the road and the well for KOS Manufacturing Housing Community is ~ 572 feet from the road. Neither of their wells appear to have NACL levels that > 50 mg / L but avoiding other contaminants that may be present in runoff by means of conveying stormwater away and outside of wellhead protection areas is the general approach we suggest.

Filtration or infiltration practices being located away and outside of the wellhead protection area (WHPA) for community wells and conveyance out of the WHPA through a closed system when in close proximity, would be consistent with our MOU/protocol.

Here are some initial thoughts and the related protocol that I scan when projects are near public water supplies. This is based on the current WHPA data. Do you have access to that info?

Regards,
Pierce

- For the Flintlock (1402010-001) well (C system), which is well under 200 feet from the road and smaller than 57,600 GPD, our recommendations for "Level 4" protection based on an MOU we have with DOT is as follows:

NHDES Groundwater Protection Recommendations for Road Construction

Level 4 Protection Measures:

Applicability: Employing these measures would be appropriate in the following areas unless the bottom of the well is above the elevation of the roadway:

- within 400 feet of a large (≥ 57,600 Gallons/day) well serving a C or P public water system; or,
- within 200 feet of a small (<57,600 Gallons/Day) well serving a C or P public water system.

Recommended Protection Measures:

1) Closed drainage system out letting outside the level 4 area; and,

2) Raised railings; and,

3) Non-structural protection measures (Attachment 1).

- KOS Manufactured Housing Community, 1403010-001 (C system), is ~ 570 feet from the road. The following protections are called for:

Level 2 Protection Measures:

Applicability: These measures would be appropriate in any of the following areas:

- wellhead protection areas for wells serving community (C) and nontransient, noncommunity (P) public water systems (see Table 2 for a definition of well types); or,
- locally designated groundwater protection areas; or,
- GA1 areas (a classification reserved for groundwater of high value for future water supply).

However, level 2 measures would not be appropriate if any of the following were true:

- the areas also meet the applicability criteria for Level 3 or 4 protection measures; or,
- there is a competent impermeable layer between the area designated for protection and the road and it's drainage area.

Recommended Protection Measures:

1) Appropriate stormwater treatment BMPs (e.g. grassed swales, detention ponds, etc.); and,

2) Non-structural measures.

- NH Speedway's public water supply well (1407060-001) for the main office is about ~440 feet from the road, produces under 57,600 GPD, and the road runs through the middle of the WHPA. It is a non-transient, non-community (P) system. Our protocol calls for the following:

Level 3 Protection Measures:

Applicability: Employing these measures would be appropriate in any of the following areas:

- within 1000 feet of a large (≥57,600 Gallons/Day) well serving a C or P public water system; or,
- within 500 feet of a small (<57,600 Gallons/Day) well serving a C or P public water supply system.

However, Level 3 measures would not be appropriate if any of the following were true:

- the area is also within a level 4 area; or,
- there is a competent impermeable layer between the well's screened interval and the road and it's drainage area; or,
- the bottom of the well is above the elevation of the roadway; or,
- it is an overburden well and the wellhead protection area doesn't include the roadway or it's drainage area.

Recommended Protection Measures:

1) Lined grass swales (Diagram 1); and,

2) Lined snow storage areas (i.e. median strip); and,

3) Runoff diverted out of the area to the extent possible; and,

4) Raised railings; and,

5) Non-structural protection measures (Attachment 1).

From: Christine J. Perron [mailto:CPerron@mjinc.com]
Sent: Wednesday, August 03, 2016 11:26 AM
To: Rigrod, Pierce
Subject: RE: NHDOT Project, NH Route 106, Loudon-Canterbury 29613

Pierce,

No problem at all. I was just not sure if I sent my email to the right person. Now that I know you received it, getting your input is not urgent, so please feel free to respond when it's convenient for you.

Thank you,
Christine

From: Rigrod, Pierce [mailto:Pierce.Laskey-Rigrod@des.nh.gov]
Sent: Tuesday, August 02, 2016 3:51 PM
To: Christine J. Perron
Subject: RE: NHDOT Project, NH Route 106, Loudon-Canterbury 29613

Christine,

Sorry for the delay in responding. I have been busy and now back from vacation trying to catch up. I will review and have comments/input back to you by Monday. Is that ok?

Again, apologies.

Pierce

From: Christine J. Perron [mailto:CPerron@mjinc.com]
Sent: Thursday, July 07, 2016 10:59 AM
To: Rigrod, Pierce
Subject: NHDOT Project, NH Route 106, Loudon-Canterbury 29613

Good morning Pierce,

NHDOT is proposing the subject project, which will provide improvements to a 4.5-mile section of NH Route 106. A location map is attached. The conceptual layout that is under consideration consists of widening the roadway to accommodate an additional lane.

McFarland Johnson is completing the environmental review for this project on behalf of NHDOT. The proposed project will result in a wider roadway with increased impervious surface. Potential areas for stormwater treatment measures are currently being identified. In 2012, McFarland Johnson completed a corridor study of an 11-mile section of NH Route 106, which included the current project area. I'm attaching a map showing wellhead protection areas that were identified in 2012. I will be updating this information to ensure that the protection areas are accurate. For now, I was hoping to get your initial thoughts and potential concerns about the project in regard to groundwater. In particular, we are seeking input on factors that should be taken into account when locating and designing stormwater treatment.

Thanks for your time,
Christine

Christine Perron • Senior Environmental Analyst
McFarland Johnson
53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 128
www.mjinc.com

Exhibit 11 – NH Natural Heritage Bureau DataCheck Results Letter

Memo

NH Natural Heritage Bureau
NHB Datacheck Results Letter

To: Christine Perron, McFarland Johnson
53 Regional Drive
Concord, NH 03301

From: Amy Lamb, NH Natural Heritage Bureau
Date: 6/7/2017 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB17-1748 Town: Loudon, Canterbury Location: The project begins just south of Shaker Road at the State Maintenance Shed in Loudon and continues north for approximately 3.5 miles

Description: The project proposes to widen NH 106 to improve highway safety and mobility. The widened highway will provide two 12' wide travel lanes, two 12' wide shoulders, and a 12' wide center two way left turn lane.

cc: Kim Tuttle

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

Comments: Please continue to coordinate with NHB and NH Fish & Game.

Plant species	**State**[1]	**Federal**	**Notes**
Sensitive species	T	--	Please contact NH Natural Heritage (271-2215 x 323) if project impacts could occur in the area shown on the map.
Sensitive species	T	T	Please contact NH Natural Heritage (271-2215 x 323) if project impacts could occur in the area shown on the map.

Vertebrate species	**State**[1]	**Federal**	**Notes**
American Eel (*Anguilla rostrata*)	SC	--	Contact the NH Fish & Game Dept (see below).
Bridle Shiner (*Notropis bifrenatus*)	T	--	Contact the NH Fish & Game Dept (see below).
Wood Turtle (*Glyptemys insculpta*)	SC	--	Contact the NH Fish & Game Dept (see below).

[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 Resources and Economic Development
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DRED/NHB
172 Pembroke Rd.
Concord, NH 03301

NHB17-1748

Sensitive species
CANTERBURY
American Eel
Sensitive species
Bridle Shiner
American Eel
Wood Turtle
Legend
Plant (2)
Animal (4)
Community (0)
System (0)
Site bounds
0 0.2 0.4 0.6 0.8 1
Miles

New Hampshire Natural Heritage Bureau - Animal Record

American Eel (*Anguilla rostrata*)

Legal Status

Federal: Not listed
State: Special Concern

Conservation Status

Global: Apparently secure but with cause for concern
State: Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2008: Area 13330 Not enumerated.
General Area:
General Comments:
Management Comments:

Location

Survey Site Name: Soucook River
Managed By:

County: Merrimack
Town(s): Loudon
Size: 7.7 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2008: Clough Pond

Dates documented

First reported: 2008-10-01
Last reported: 2008-10-01

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

American Eel (*Anguilla rostrata*)

Legal Status

Federal: Not listed
State: Special Concern

Conservation Status

Global: Apparently secure but with cause for concern
State: Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 1999: Area 13397: Not enumerated.
General Area:
General Comments:
Management Comments:

Location

Survey Site Name: Gues Meadow Brook
Managed By: Soucook River WMA

County: Merrimack
Town(s): Loudon
Size: 1.9 acres
Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 1999: Bumfagon Brook

Dates documented

First reported: 1999
Last reported: 1999

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Bridle Shiner (*Notropis bifrenatus*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Rare or uncommon
State:	Listed Threatened	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2009: Area 12427: Occupied habitat. No details.2005: Area 12427: 80 observed, age and sex unknown. 2000: Area 849: 1 observed, age and sex unknown.

General Area: 2009: Area 12427: Occupied habitat throughout impounded reach.2005: Area 12427: Freshwater stream or river. 2000: Area 849: Freshwater stream or river.

General Comments: 2009: Area 12427: Most of Soucook mainstem surveyed. Far less suitable habitat than previously thought. Only two confirmed occupied reaches.2000: Area 568: One bridled shiner sampled by electrofishing by DES at index site 150 meters long.

Management Comments:

Location

Survey Site Name: Shaker Brook
Managed By:

County: Merrimack
Town(s): Loudon
Size: 18.2 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2005: Area 12427: Soucook River bridge crossing near the intersection of Rte 129 and 106. 2000: Area 849: Shaker Brook at DES Station 00M-7.

Dates documented

First reported: 2000-07-11 Last reported: 2009

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

New Hampshire Natural Heritage Bureau - Animal Record

Wood Turtle (*Glyptemys insculpta*)

Legal Status		**Conservation Status**	
Federal:	Not listed	Global:	Rare or uncommon
State:	Special Concern	State:	Rare or uncommon

Description at this Location

Conservation Rank: Not ranked
Comments on Rank:

Detailed Description: 2011: Area 13135: 1 adult observed.
General Area: 2011: Area 13135: Residential driveway.
General Comments:
Management Comments:

Location

Survey Site Name: Shaker Brook
Managed By:

County: Merrimack
Town(s): Loudon
Size: 7.7 acres Elevation:

Precision: Within (but not necessarily restricted to) the area indicated on the map.

Directions: 2011: Area 13135: 73 Clough Pond Road, Loudon.

Dates documented

First reported: 2011-08-13 Last reported: 2011-08-13

The New Hampshire Fish & Game Department has jurisdiction over rare wildlife in New Hampshire. Please contact them at 11 Hazen Drive, Concord, NH 03301 or at (603) 271-2461.

Exhibit 12 – US Fish & Wildlife Service Official Species List

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: April 24, 2017
Consultation Code: 05E1NE00-2017-SLI-0584
Event Code: 05E1NE00-2017-E-02756
Project Name: Loudon-Canterbury 29613

Subject: Updated 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: 05E1NE00-2017-SLI-0584

Event Code: 05E1NE00-2017-E-02756

Project Name: Loudon-Canterbury 29613

Project Type: TRANSPORTATION

Project Description: Roadway Improvement Project

Project Location:

Approximate location of the project can be viewed in Google Maps:
https://www.google.com/maps/place/43.35384181077788N71.4666504094053W

Counties: Merrimack, NH

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on your 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. See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area. Please contact the designated FWS office if you have questions.

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

Flowering Plants

NAME	STATUS
Small Whorled Pogonia *(Isotria medeoloides)* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1890	Threatened

Critical habitats

There are no critical habitats within your project area.

Exhibit 13 – USFWS Programmatic Consultation Project Submittal Form

Christine J. Perron

From: Crickard, Ronald <Ronald.Crickard@dot.nh.gov>
Sent: Tuesday, February 07, 2017 9:44 AM
To: 'susi_vonoettingen@fws.gov'
Cc: Martin, Rebecca; Christine J. Perron
Subject: Loudon-Canterbury 29613 NLEB
Attachments: 29613AppB_ProjectSubmittalFormRev07Dec2016.pdf; Figure 1 - Location Map.pdf; RTE_IPAC 29613.pdf

Good morning Susi, attached is the Project submittal form, location map, and the IPaC official species list for the referenced FHWA project. An Acoustic Survey was completed for the project area in accordance with the 2016 Indiana Bat Summer Survey Guidelines. Neither EchoClass nor SonoBat reported an MLE of <0.05 for MYSE for any site and survey night. Based on the results of this survey, probable absence of MYSE during the summer is assumed and no further surveys are required for this project. Based on these results, the Department/FHWA will be making a Not Likely to Adversely Affect determination for the NLEB.

Also, You will also notice on the IPaC official species list that small whorled Pogonia came up. The coordination is ongoing to determine if the Pogonia is in the project area.

Please let me know if you need anything else, or have any questions.

Thank you,
Ron

Ronald Crickard
Chief, Project Management
NH Department of Transportation
Bureau of Environment
7 Hazen Drive, Concord, NH 03302
Ph: (603) 271-7966
Fax: (603) 271-7199
rcrickard@dot.state.nh.us

Federal Highway Administration (FHWA), Federal Railroad Administration (FRA), and Federal Transit Administration (FTA)

Range-wide Programmatic Consultation for Indiana Bat and Northern Long-eared Bat

Project Submittal Form

Updated December 2016

If not using the Assisted Determination Key in the U.S. Fish and Wildlife Service (Service) Information for Planning and Conservation (IPaC) System, transportation agencies must provide this submittal form (or a comparable Service approved form) with provide project-level information for use of the range-wide programmatic consultation covering actions that may affect the Indiana bat and/or northern long-eared bat (NLEB). The completed form should be submitted to the appropriate Service Field Office prior to project commencement. For more information, see the Standard Operating Procedure for Site Specific Project(s) Submission in the User's Guide.

By submitting this form, the transportation agency ensures that the proposed project(s) adhere to the criteria and conditions of the range-wide programmatic consultation, as outlined in the biological assessment (BA) and biological opinion (BO). Upon submittal of this form, the appropriate Service Field Office may review the project-specific information provided and request additional information. For projects that may affect, but are not likely to adversely affect (NLAA) the Indiana bat and/or NLEB, if the applying transportation agency is **not** contacted by the Service with any questions or concerns within 14 calendar days of form submittal, it may proceed under the range-wide programmatic consultation and assume concurrence of the NLAA determination made by the Service in the BO. For projects that may affect, and are likely to adversely affect (LAA) the Indiana bat and/or the NLEB, the appropriate Service Field Office will respond (see recommended response letter template) within 30 calendar days of receiving a complete project-level submission, which includes, but may not be limited to this completed form.

Further instructions on completing the submittal form can be found by hovering your cursor over each text box.

---

1. Date: February 2, 2017FHWA

2. Lead agency: FHWA
   This refers to the Federal governmental lead action agency initiating consultation; select FHWA, FRA or FTA as appropriate.

3. Requesting agency: NHDOT
   This refers to the transportation agency completing the form (it may or may not be the same as the Lead Agency.

   Name: Ronald Crickard

   Title: Chief, Project Management

Phone: 603-271-3226

Email: Ronald.Crickard@dot.nh.gov

4. Consultation code[1]: 05E1NE00-2017-SLI-0584

5. Project name(s): Loudon-Canterbury 29613

6. Project description:
Please attach additional documentation or explanatory text if necessary

This project begins just south of Soucook Lane in Loudon NH and continues north for approximately 3.5 miles on NH Route 106 to just north of the Canterbury NH town line. The project proposes to widen the roadway to accommodate an additional 12' lane to serve as a two-way left-turn lane. The project will require some tree clearing.

An Acoustic Survey was completed for the project area in accordance with the 2016 Indiana Bat Summer Survey Guidelines. Neither EchoClass nor SonoBat reported an MLE of <0.05 for MYSE for any site and survey night. Based on the results of this survey, probable absence of MYSE during the summer is assumed and no further surveys are required for this project.

7. Project location (county, state): Merrimack County, NH
If not delineated in IPaC, attach shape files

8. For species other than Indiana bat and NLEB (from IPaC official species list):

☐ No effect – project(s) are inside the range, but no suitable habitat (see additional information attached).

☐ May affect – see additional information provided for those species (see attached or forthcoming).

Coordination is on going with the USFWS for Small whorled pogonia, which was reported in the IPaC Official Species list.

Please confirm and identify how the proposed project(s) adhere to the criteria of the BO by completing the following (see User Guide Section 2.0):

[1] Available through IPaC System Official Species List: https://ecos.fws.gov/ipac/

NO EFFECT

9. For Indiana bat/NLEB, if applicable, select your no effect determination:

- [ ] No effect – project(s) are outside the species' range. *submittal form complete*
- [ ] No effect – project(s) are inside the species range with no suitable summer habitat; project(s) must also be greater than 0.5 miles from any hibernaculum unless meeting exceptions listed below. *submittal form complete*
- [ ] No effect – project(s) do not involve any construction activities (e.g., bridge/ abandoned structure assessments, property inspections, planning and technical studies, property sales, property easements, and equipment purchases). *submittal form complete*
- [ ] No effect – project(s) are completely within existing road/rail surface and do not involve percussive or other activities that increase noise above existing traffic/ background levels (e.g., road line painting). *submittal form complete*
- [ ] No effect - project(s) are outside suitable summer bat habitat and limited to the maintenance of existing facilities (e.g., rest areas, stormwater detention basins) with no new ground disturbance.
- [ ] No effect – project(s) includes maintenance, alteration, or removal of bridge(s)/ structure(s) and indicate(s) no signs of bats from results of a bridge/abandoned structure assessment. *submittal form complete*
  Otherwise, please continue below.

MAY AFFECT, NOT LIKELY TO ADVERSELY EFFECT – W/O AMMS

10. For Indiana bat/NLEB, if applicable, select your may affect, NLAA determination (without implementation of AMMs):

- [x] NLAA – project(s) are inside the species range and within suitable bat habitat, but **negative** bat presence/absence (P/A) surveys; must also be greater than 0.5 miles from any hibernaculum. *submittal form complete*
- [ ] NLAA – project(s) are within 300 feet of the existing road/rail surface and in area that contain suitable habitat (but no documented habitat) that do not involve tree removal, but include percussives or other activities that increase noise above existing traffic/background levels (must also be greater than 0.5 miles of a hibernaculum). *submittal form complete*
- [ ] NLAA – project(s) are limited to slash pile burning (must also be greater than 0.5 miles from any hibernaculum). *submittal form complete*
- [ ] NLAA – project(s) are limited to wetland or stream protection activities associated

with compensatory wetland mitigation that do not clear suitable habitat (must also be greater than 0.5 miles from any hibernaculum). *submittal form complete*

☐ NLAA – project(s) *anywhere*, including within 0.5 mile of hibernacula, with suitable summer bat habitat present that are limited to the maintenance of existing facilities (e.g., rest areas, stormwater detention basins) with no new ground disturbance or tree removal/trimming. *submittal form complete*

Otherwise, please continue below.

MAY EFFECT, NOT LIKELY TO ADVERSELY AFFECT – WITH AMMs

11. For Indiana bat/NLEB, if applicable, document your may affect, NLAA determination by completing the following section (**with implementation of AMMs**; use #13 to document AMMs).

Affected Resource/Habitat Type:

a. Trees

☐ Verify that all tree removal occurs greater than 0.5 mile from any hibernaculum

☐ Verify that the project is within 100 feet of existing road/rail surfaces

☐ Verify that no documented Indiana bat and/or NLEB roosts and/or surrounding summer habitat within 0.25 mile of documented roosts will be impacted

Verify that all tree removal will occur outside the active season (i.e., will occur in winter)[2]:

Acres of trees proposed for removal:

b. Bridge/Structure Work Projects

Proposed work:

Timing of work:

Evidence of bat activity on/in bridge/structure? Yes: ○ No: ◉

☐ Verify that work will be conducted outside the active season, or if during the active season, verify that no roosting bats will be harmed or disturbed in any way

☐ Verify that work will not alter roosting potential in any way

[2] Coordinate with the local Service Field Office for appropriate dates

☐ Verify that all applicable lighting minimization measures will be implemented

MAY AFFECT, LIKELY TO ADVERSELY AFFECT

12. For Indiana bat/NLEB, if applicable, document your may affect, LAA determination by completing the following section (use #13 to document AMMs).

Affected Resource/Habitat Type:

a. Trees

☐ Verify that all tree removal occurs greater than 0.5 mile from any hibernaculum

Project Location:
☐ 0-100 feet from edge of existing road/rail surface
☐ 100-300 feet from edge of existing road/rail surface

☐ Verify that no documented Indiana bat roosts or surrounding summer habitat within 0.25 mile of documented roosts will be impacted between May 1 and July 31

☐ Verify that no documented NLEB roosts or surrounding summer habitat within 150 feet of documented roosts will be impacted between June 1 and July 31

Timing of tree removal:

Acres of trees proposed for removal:

b. Bridge/Structure Work Projects

Proposed work:

Timing of work:

☐ Verify no signs of a colony

☐ Verify that work will not alter roosting potential in any way

13. For Indiana bat/NLEB, **if applicable to the action type**, the following AMMs will be implemented[3] unless P/A surveys and/or bridge/abandoned structure assessments[4] have occurred to document that the species are not likely to be present:

✓ General AMM 1 (required for all projects):

The NH DOT NLEB Flyer will be posted on the Project bulletin board.

[3] See AMMs Fact Sheet (Appendix C) for more information on AMMs

[4] Structure assessment for occupied buildings means a cursory inspection for bat use. For abandoned buildings a more thorough evaluation is required (See User Guide Appendix D for bridge/abandoned structure assessment guidance).

- ☐ Tree Removal AMM 1
- ☐ Tree Removal AMM 2 (required for NLAA)
- ☐ Tree Removal AMM 3 (required for all projects)
- ☐ Tree Removal AMM 4 (required for NLAA)
- ☐ Tree Removal AMM 5 (required for LAA)
- ☐ Tree Removal AMM 6 (required for LAA)
- ☐ Tree Removal AMM 7 (required for LAA)

- ☐ Bridge AMM 1
- ☐ Bridge AMM 2 (required for all projects during active season)
- ☐ Bridge AMM 3 (required for NLAA during active season)
- ☐ Bridge AMM 4 (required for NLAA during active season)
- ☐ Bridge AMM 5 (required for all projects)

Structure AMMs are required for all Indiana bat projects, required for NLAA NLEB projects.

- ☐ Structure AMM 1
- ☐ Structure AMM 2
- ☐ Structure AMM 3
- ☐ Structure AMM 4

- ☐ Lighting AMM 1 (required for all projects during the active season)
- ☐ Lighting AMM 2 (required for all projects)

- ☐ Hibernacula AMM 1 (required for all projects)

14. For Indiana bat, if applicable, compensatory mitigation measures will also be required to offset adverse effects on the species (see Section 2.10 of the BA). Please verify the mechanism in which compensatory mitigation will be implemented and that sufficient information is provided to the Service.

Range-wide In-Lieu Fee Program, The Conservation Fund ☐

State, Regional, Recovery Unit-Specific In-Lieu Fee Program
Name:

Conservation Bank
Name:
Location:

Local Conservation Site(s)
Name:
Location:
Description:

Exhibit 14 – Correspondence: US Fish & Wildlife Service

Christine J. Perron

From: vonOettingen, Susi <susi_vonoettingen@fws.gov>
Sent: Friday, February 24, 2017 1:36 PM
To: Christine J. Perron
Subject: Fwd: Loudon-Canterbury 29613 NLEB

I thought this was put to rest? NHDOT also asked. No, I don't think further surveys are warranted.

****
Susi von Oettingen
Endangered Species Biologist
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(W) 603-223-2541 ext. 6418

www.fws.gov/newengland

---------- Forwarded message ----------
From: **vonOettingen, Susi** <susi_vonoettingen@fws.gov>
Date: Tue, Feb 7, 2017 at 10:03 AM
Subject: Re: Loudon-Canterbury 29613 NLEB
To: "Crickard, Ronald" <Ronald.Crickard@dot.nh.gov>
Cc: "Martin, Rebecca" <Rebecca.Martin@dot.nh.gov>, "Christine Perron (CPerron@mjinc.com)" <CPerron@mjinc.com>

Thanks Ron.

Is this the project that Rebecca will check in June for small whorled pogonia? I spoke with a few NH experts and we all feel that one plant in the transmission line was a stray. Most likely no more will be found.

Susi

****
Susi von Oettingen
Endangered Species Biologist
New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301
(W) 603-223-2541 ext. 6418

www.fws.gov/newengland

On Tue, Feb 7, 2017 at 9:43 AM, Crickard, Ronald <Ronald.Crickard@dot.nh.gov> wrote:

Good morning Susi, attached is the Project submittal form, location map, and the IPaC official species list for the referenced FHWA project. An Acoustic Survey was completed for the project area in accordance with the 2016 Indiana Bat Summer Survey Guidelines. Neither EchoClass nor SonoBat reported an MLE of <0.05 for MYSE for any site and survey night. Based on the results of this survey, probable absence of MYSE during the summer is assumed and no further surveys are required for this project. Based on these results, the Department/FHWA will be making a Not Likely to Adversely Affect determination for the NLEB.

Also, You will also notice on the IPaC official species list that small whorled Pogonia came up. The coordination is ongoing to determine if the Pogonia is in the project area.

Please let me know if you need anything else, or have any questions.

Thank you,
Ron

Ronald Crickard
Chief, Project Management
NH Department of Transportation
Bureau of Environment
7 Hazen Drive, Concord, NH 03302
Ph: (603) 271-7966
Fax: (603) 271-7199
rcrickard@dot.state.nh.us

Exhibit 15 – Correspondence: NH Fish & Game

Christine J. Perron

From: Henderson, Carol <Carol.Henderson@wildlife.nh.gov>
Sent: Friday, January 27, 2017 11:25 AM
To: Christine J. Perron
Subject: RE: NHDOT Project - Loudon-Canterbury 29613

Hi Christine:

As always, excellent meeting minutes. Considering that the perches are proposed to be addressed at some point, then I do not have any additional comments and I agree with the comments that were provide by others at the January meeting. I suspect that the project may impact more area after the stormwater issue is further discussed and look forward to hearing the project again in the near future. Overall, I believe you understand what the Department is looking for in terms of minimization of impacts within the streams especially since the T&E species were aquatic. Thanks for your consideration. Carol

---

From: Christine J. Perron [mailto:CPerron@mjinc.com]
Sent: Wednesday, January 25, 2017 9:19 AM
To: Henderson, Carol
Subject: NHDOT Project - Loudon-Canterbury 29613

Hi Carol,

We gave an update on the subject project at the January 18 Natural Resource Agency Meeting. I'm attaching our draft meeting minutes. Also attached is the NHB memo, which lists three vertebrate species of concern.
The proposed stream crossing work is described in detail in the minutes. To summarize, this project will be addressing 5 stream crossings:

- Two crossings are 15" pipes that carry intermittent streams – these will be replaced with a larger and longer pipe.
- Two crossings are Gues Meadow Brook and are both twin 72" pipes. These will be extended.
- One crossing is a 4x4 box extended with 48" pipes at each end. This carries an intermittent stream. This structure will be extended.

Three of these crossings are currently perched, and the perch will be addressed to the extent possible.

Since you were not at the January meeting, I wanted to touch base and find out if you have any concerns with the project at this time. The project will be discussed again, likely sometime this spring, to discuss final design prior to submitting permit applications.

Also, I wanted to let you know that one property on which NHFG holds an easement will be impacted by the project (by the widened roadway slope). I am working on scheduling a meeting between Rich Cook and the NHDOT design team.

Let me know if you would like any additional information.

Thanks Carol.

Christine

Christine Perron, CWS • Senior Environmental Analyst
McFarland Johnson
53 Regional Drive • Concord, NH 03301
OFFICE: 603-225-2978 ext. 128

Exhibit 16 – Section 106 Determination of Effect

New Hampshire DOT
Department of Transportation

Victoria F. Sheehan
Commissioner

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

William Cass, P.E.
Assistant Commissioner

LOUDON-CANTERBURY 29613
X-A004(201)
29613
RPR 7985

No Historic Properties Affected Memo

Pursuant to the Request for Project Review signed August 12, 2016, and for the purpose of compliance with regulations of the National Historic Preservation Act and the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the NH Division of Historical Resources (NHDHR) and the NH Division of the Federal Highway Administration (FHWA) have coordinated the identification and evaluation of historical and archaeological resources with plans to widen and rehabilitate NH Route 106 from just south of Soucook Lane in Loudon to just north of the Canterbury town line.

Project Description

This project begins just south of Soucook Lane in Loudon and continues north for approximately 3.5 miles to just north of the Canterbury town line. The purpose of this project is to respond to increasing development in the Loudon-Canterbury region as it relates to traffic demands imposed on NH Route 106. The existing roadway consists of two 12' shoulders and two 12' travel lanes for a pavement width of 48'. The project proposes to widen the roadway to accommodate an additional 12' lane to serve as a two-way left-turn lane. The travel lanes and shoulders would remain 12'. Overall widening would be approximately 12', resulting in a pavement width of 60', with 6' of widening on each side of the road in most locations. The roadway typical will be wider along one section of NH Route 106 between Clough Hill Road and the south entrance of the speedway, a distance of approximately 1,600 linear feet. This area experiences heavy pedestrian use during events at the NH Motor Speedway. In order to address safety concerns associated with large numbers of pedestrians and vehicles on the road at the same time, there will be an additional 6' offset to guardrail, resulting in a grass panel between the paved shoulder and guardrail.

Analysis

Based on a review pursuant to 36 CFR 800.4 of the architectural and/or archaeological significance of resources in the APE, we agree on the following:

- A Phase I archaeological survey was completed in the project area in 1995. There are three known archaeological sites located near but outside the APE the French site, the Parker site, and the Lovering Mill site. None of these resources will be impacted.
- There are three un-inventoried properties in the APE: Parcel 49-63 (house constructed 1964); Parcel 50-13 (commercial building constructed 1963); and Parcel 60-30 (commercial building constructed 1950). Minimal clearing, slope widening, and/or drainage work is proposed along the frontage of these parcels with NH Route 106.
- There are twelve previously inventoried properties in the APE. Ten of these were surveyed in 1993 and two were surveyed in 2011. All twelve properties were determined ineligible. Seven of these properties no longer contain extant structures (Parcels 50-18; 50-5; 50-6; 50-10; 50-14; 50-20; 60-45). On the remaining five parcels, there will be either no work or only minimal clearing, slope widening, and/or drainage work along the frontage of these parcels.

Public Consultation

A public information meeting was held on November 30, 2016. Letters seeking input on the project were sent to town officials and the Historical Society in Loudon and Canterbury. There are no consulting parties.

Determination of Effect

Based on a review pursuant to 36 CFR 800.4, we agree that work as proposed will not change the setting or viewshed near the parcels listed above and that no further survey work is needed. Should project plans change and any of the above mentioned sites be impacted, NHDOT will notify FHWA and NHDHR and complete all necessary surveys.

Section 4(f) *(to be completed by FHWA)*	*There Will Be:*	☒ **No 4(f);**	☐ **Programmatic 4(f);**	☐ **Full 4 (f);** or
	☐ **A finding of *de minimis* 4(f) impact as stated:** In addition, with NHDHR concurrence of no adverse effect for the above undertaking, and in accordance with 23 CFR 774.3, FHWA intends to, and by signature below, does make a finding of *de minimis* impact. NHDHR's signature represents concurrence with both the no adverse effect determination and the *de minimis* findings. Parties to the Section 106 process have been consulted and their concerns have been taken into account. Therefore, the requirements of Section 4(f) have been satisfied.			

In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

5/11/17

for Patrick Bauer, Administrator — Date
Federal Highway Administration

Jill Edelmann — 5/10/17
Jill Edelmann — Date
Cultural Resources Manager

Concurred with by the NH State Historic Preservation Officer:

5-11-17

for Elizabeth H. Muzzey — Date
State Historic Preservation Officer
NH Division of Historical Resources

c.c. Chris St. Louis, NHDHR
Jamie Sikora, FHWA
Ron Crickard, NHDOT
Christine Perron, MJ
Keith Cota, NHDOT

S:\Environment\PROJECTS\LOUDON\29613\Cultural\NoHistoricPropAffectedFHWA.docx

Exhibit 17 – Correspondence: Canterbury Conservation Commission

Canterbury Conservation Commission
PO Box 500
Canterbury, NH 03224

RECEIVE
JUL 18 201
McFarland Johns
Concord, NH

July 13, 2016

Christine Perron
Senior Environmental Analyst
McFarland Johnson
53 Regional Dr.
Concord, NH 03301

Dear Ms. Perron:

Thank you for notifying the Canterbury Conservation Commission of the impending improvements for NH Route 106, NH DOT Project, Loudon-Canterbury 29613. The Conservation Commission is concerned about the potential alterations and impacts to the following resources:

- a small stone wall section adjacent to the west side of Rt. 106 at Ames Road
- 4 culverts that cross under Rt 106
- the wetlands associated with Meadow Brook
- impact to adjacent Shaker State Forest

In addition, in the vicinity of Rt. 106:

- an award winning Tree Farm with a conservation easement with the Forest Society
- Canterbury Shaker Village, a national historic site

Also, please be advised that there is an infestation of Emerald Ash Borer insects on the west side of Rt. 106 near Asby Road.

Please keep continue to keep us informed about the road project and contact us if we can assist you further.

Kelly Short

Kelly Short, Chair
Canterbury Conservation Commission

Cc: Board of Selectmen, Town Administrator Ken Folsom