3

Affected Environment and Environmental Consequences

This chapter describes the existing conditions that may be affected by the Project, and analyzes the environmental consequences of the Project, including a comparison of the probable consequences of the five reasonable alternatives and the No-Action Alternative.

Existing conditions are the current natural, cultural, and social conditions of an area that are subject to change, both directly and indirectly, because of a proposed Federal action. The resources and issues analyzed for the Project include:

- Wetlands and Surface Waters
- Water Quality and Pollutant Loading
- Floodplain and Hydrodynamics
- Wildlife and Fisheries
- Threatened and Endangered Species
- Farmlands
- Air Quality
- Noise
- Parks, Recreation and Conservation Lands
- Cultural Resources
- Contamination and Hazardous Materials
- Visual Resources
- Construction Impacts
- Social and Economic Resources
- Navigation
- Relationship of Local Short-term Uses vs. Long-term Productivity
- Irreversible and Irretrievable Commitment of Resources
- Cumulative Impacts

Evaluating and documenting existing conditions is a multi-step process that involves regulatory and data review to describe the existing conditions within the Study Area. Generally, the review of the existing conditions considers the Study Area as defined in **Chapter 1**, *Introduction*, and as depicted in **Figures 1.1-1** and **1.1-2**. However, the analyses of Air Quality, Cultural Resources, Visual and Aesthetic Resources, Environmental Justice, Socio-Economic Conditions, and Cumulative Impacts consider areas outside of the main project Study Area. Each resource-specific Study Area is clearly defined in the sections of this chapter.

Impacts, also known as "*effects,*" may be direct, indirect, temporary, and/or permanent.[20] Direct effects are caused by the action and occur at the same time and place. Indirect effects are caused by the action, are later in time or farther removed in distance, but are still reasonably foreseeable. Temporary impacts are short-term impacts that occur during the construction period. Conversely, permanent impacts are those which permanently change the existing environment.

Impacts may also be beneficial or adverse. Where applicable, each resource section considers the potential need for mitigation measures when adverse impacts are unavoidable. Potential permitting and compliance requirements are described in **Chapter 5**, *Project Commitments* and in **Chapter 6**, *Federal and State Actions Required*.

3.1 Wetlands and Surface Waters

Wetland and surface water resources within the Study Area include Little Bay and several small wetlands. Wetlands are a landform containing features such as surface water or saturation, characteristic wetland plants, and hydric soils which provide evidence for saturated conditions for an extended period of time. The major waterbody within the Study Area is Little Bay at the entrance to the Great Bay Estuary adjacent to the Piscataqua River. No freshwater streams or rivers exist within the Study Area.

Federal protection of wetlands is regulated under Section 404 of the Clean Water Act and Section 10 of the Federal Rivers and Harbors Act. The ACOE is charged with the duty of overseeing and regulating activities in wetlands at the federal level. Under Section 404, the US Environmental Protection Agency and the US Fish and Wildlife Service (USFWS) also review permit applications for wetland impacts.

The State of New Hampshire regulates activities in wetlands under NH Revised Statutes Annotated (RSA) 482-A, which grants regulatory authority to the NH Department of Environmental Services (NHDES) Wetlands Bureau. Under this statute, all proposals to dredge or fill wetlands must be permitted by the NHDES Wetlands Bureau. In accordance with NH RSA 482-A:3(IV)(b), modification of "*man-made non-tidal drainage ditches, roadside and railroad ditches, detention basins, ponds and wetlands that have been legally constructed to collect, convey, treat, or control stormwater and spring run-off*" does not require permitting under most circumstances. The NHDES Wetlands Permit application must also consider impacts below the

[20] Council on Environmental Quality. 1981. *Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations*. 46 Federal Register 18026. Accessed from https://www.energy.gov/sites/prod/files/G-CEQ-40Questions.pdf. Accessed on October 10, 2018.

highest observable tide line (HOTL) and within the tidal buffer zone (TBZ). The HOTL is defined in Env-Wt 602.23 as "*a line defining the farthest landward limit of tidal flow, not including storm events, that can be recognized by indicators such as the presence of a strand line of flotsam and debris, the landward margin of salt tolerant vegetation, or a physical barrier that blocks inland flow of the tide.*" The TBZ is defined in Env-Wt 602.52 as "*the area identified in RSA 482-A:4, I as bordering on tidal waters within 100 feet of the highest observable tide line, which can contain banks, upland areas, bogs, salt marsh, swamps, meadows, flats, or other lowlands subject to tidal action.*"

The NHDES Shoreland Program regulates construction, excavation, or filling activities within 250 feet of waterbodies protected under the Shoreland Water Quality Protection Act (RSA 483-B). Protected waterbodies include public waters defined under RSA 483-B:4(XVI) including all water subject to the ebb and flow of the tide, which is applicable to Little Bay. Any disturbance proposed within 250 feet from the reference line of protected waterbodies requires permitting through the NHDES Shoreland Program. Communities also have the ability to enact their own ordinances to regulate activities in and surrounding wetlands and surface waters. However, since the Project would be state-funded, local zoning ordinances do not apply.

3.1.1 Affected Environment

A brief description of the wetlands and surface waters documented within the Study Area is provided below. The locations of wetlands and surface waters for the greater Spaulding Turnpike Improvements Project were originally determined using the information contained on NWI and USGS maps. These resources were then delineated by environmental scientists in 2003, with portions of this delineation reviewed in April 2009. Additionally, all wetlands within the Study Area were field verified again on January 20, 2020. The location of existing wetlands and surface waters are identified on **Figure 3.1-1**, *Wetland and Surface Water Resources*. Note that new wetlands delineations as well as function and value assessments will be conducted during final design of the Project in accordance with the NHDES Wetlands Bureau rules in effect at the time of the permit application.

Wetlands

Within Newington, wetlands in the Study Area include a small wetland located immediately south of the pedestrian approach ramp to the GSB and just south of the water crossing which drain via a deeply cut channel to the Little Bay shoreline. This wetland is composed of a series of interconnected palustrine emergent ditches. Principal functions and values of this wetland include floodflow alteration by providing a water conveyance for surface water runoff to enter Little Bay. Additionally, there is a wetland located east of Shattuck Way and north of the Spaulding Turnpike that collects and conveys sheet flow from these roadways. While this wetland intersects the Study Area, it is outside of the location of the Action Alternatives. A non-jurisdictional detention basin has been constructed in Newington between the existing pedestrian approach ramp to the GSB and the Spaulding Turnpike as part of the larger Newington-Dover, Spaulding Turnpike Improvements Project.

A non-jurisdictional drainage area is located within Hilton Park in Dover, southwest of the Spaulding Turnpike. This is a short drainage swale that collects runoff from the pedestrian approach ramp to the GSB and drains to an existing culvert with a stone headwall. The culvert exists under dense invasive vegetation (multi-flora rose and oriental bittersweet).

Surface Waters

The major waterbodies within and adjacent to the Study Area include Little Bay, the Great Bay Estuary, and the Piscataqua River. The Great Bay Estuary is a large tidal embayment covering approximately 17 square miles and contains 144 miles of shoreline. The tidal exchange between the Great Bay and Piscataqua River involves enormous volumes of water and is known to have unusually strong tidal currents.

The Piscataqua River is a major tidally-influenced river system that forms part of the border between Maine and New Hampshire and drains approximately 1,400 square miles of watershed. The Piscataqua River is formed by the confluence of the Cocheco and Salmon Falls Rivers, approximately 12 miles north of the Study Area. Near the Study Area, the Piscataqua River is typically 2,000 to 3,500 feet wide and has a substrate composition of sand and mud.

The Little Bay represents the lower part of the Great Bay Estuary and includes the narrow section between Dover and Newington where it joins the Piscataqua River to the east. The Little Bay receives flow from the Bellamy River to the north, the Oyster River to the west, and Great Bay to the southwest. The watershed of Little Bay is approximately 112 square miles. The substrate of Little Bay is composed of sand and mud. The top-of-bank and ordinary high water of Little Bay within the vicinity of the GSB was delineated as part of the field verification and delineation work conducted in 2003. The functions and values of Little Bay in the Study Area include floodflow alteration, fish and shellfish habitat, sediment/toxicant/ pathogen retention, nutrient removal/retention/transformation, production export, sediment/shoreline stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, visual quality/aesthetics, and threatened/endangered species habitat.

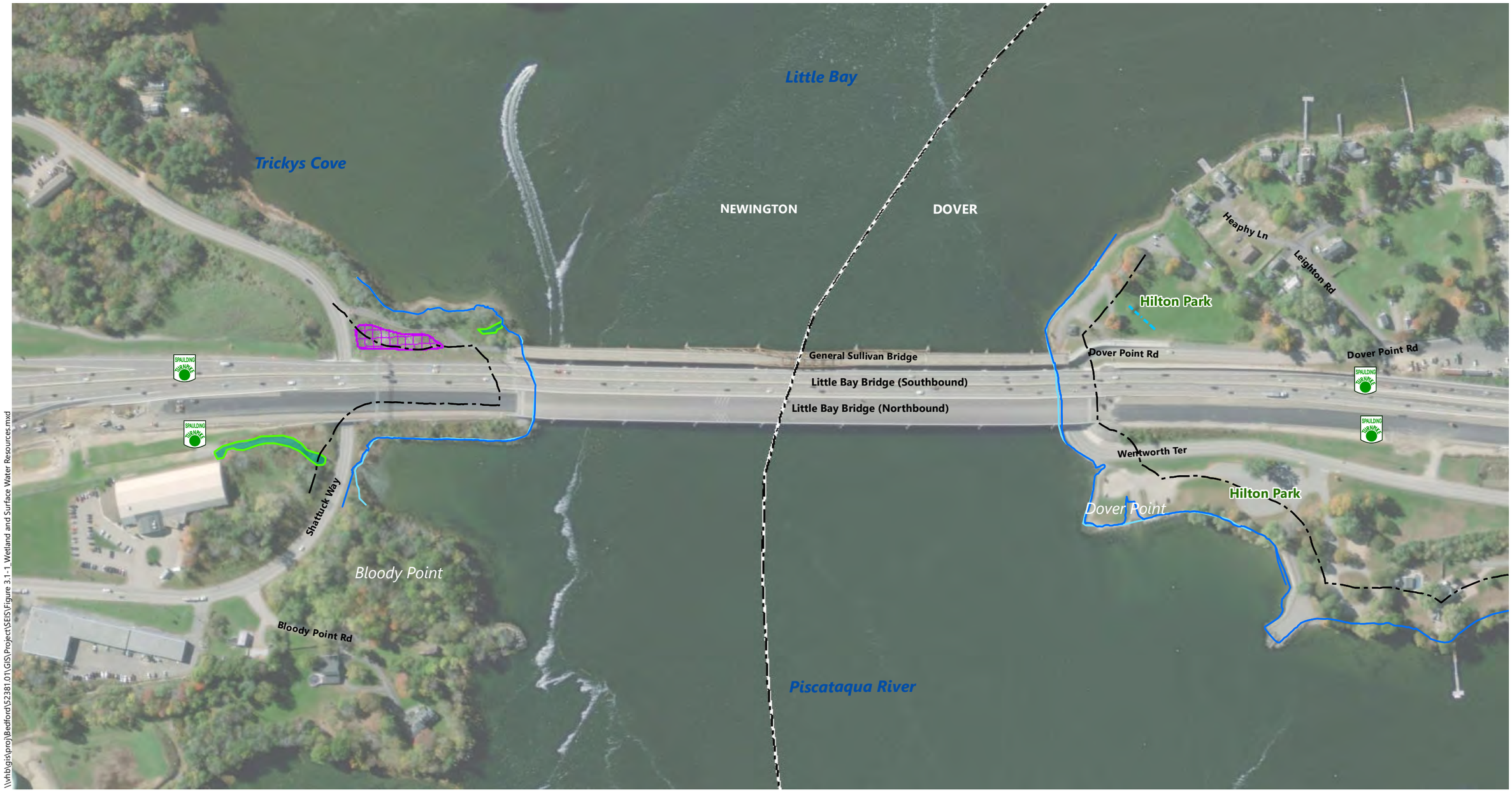
Tidal Habitats

Additional features of the Little Bay include the top-of-bank and ordinary high water of Little Bay, as well as the HOTL and TBZ. The HOTL defines the farthest landward limit of tidal flow, not including storm events. The TBZ is located within 100 feet of the HOTL. Additionally, the Protected Shoreland of Little Bay includes a 50-foot Waterfront Buffer, a 150-foot Natural Woodland Buffer, and a 250-foot Protected Shoreland Buffer.

The Study Area contains a wide diversity of bottom types and habitat types, according to a study of marine intertidal and subtidal habitats and bottom types, as well as areas of submerged aquatic vegetation completed by the University of New Hampshire (UNH).[21] Nine different bottom types were mapped: intertidal hard bottom with rockweed; intertidal mudflat, intertidal rock/algal/abundant mussel; intertidal rock/algal/soft sparse mussel; intertidal salt marsh;

[21] Grizzle, R. and M. Brodeur. 2003. Spaulding Turnpike Environmental Impact Study: Technical Report for Phase 1 – Data Collection and Coordination (Assessment of Existing Conditions in Little Bay). Progress Report on Jackson Estuarine Laboratory Work Tasks 1-4. Jackson Estuarine Laboratory, University of New Hampshire, Durham, NH.

Figure 3.1-1



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.1-1_Wetland and Surface Water Resources.mxd

0 125 250 500 Feet

Legend

- Town Boundaries
- Wetland Edge
- Top of Bank
- Tidal Buffer Zone
- Non Jursdictional Drainage
- Highest Observable Tide Line
- Wetland Resource Area
- Non Jurisdictional Detention Basin

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General Sullivan Bridge Supplemental EIS

Wetland and Surface Water Resources

U.S. Department of Transportation Federal Highway Administration

New Hampshire DOT Department of Transportation

Source: VHB, NH GRANIT

intertidal scattered rock/algal/soft sediment; subtidal kelp bed; subtidal macroalgal (non-kelp) bed; and subtidal mussel reef. See **Figure 3.1-2** for the location of these habitat types.

Intertidal Habitats

Intertidal areas near the bridges consist of peaty deposits in several areas, expansive unvegetated mudflats, and rocky bottoms with scattered patches of soft sediments. Intertidal habitats near the bridges were grouped and mapped by six major types: hard bottom with rockweed; mudflat; rock/algal/abundant mussel; rock/algal/soft sparse mussel; salt marsh; and scattered rock/algal/soft sediment. Salt marsh is restricted to the intertidal zone, forming a narrow fringe along Trickys Cove. Field inspection of the areas under and on both sides of the existing bridges indicates that there is some narrow fringe salt marsh in some places, although only a few feet wide in the immediate vicinity of the bridges.

Salt marsh habitat is dominated by cord grass (*Spartina* spp.). Intertidal mudflats are relatively narrow and only occur in two areas east of the bridges on the Dover Point (north) side. In contrast, there are expansive mudflats on both sides of the bridges on the Newington (south) side. All intertidal mudflat habitat is at least potential clam habitat. Except for a few scattered patches of soft-sediment deposits, the remaining intertidal habitats near the bridges are all on rocky bottoms and vary mainly by the presence or absence of rockweeds and mussels. These habitats grade into similar habitat types sub-tidally.

Subtidal Habitats

Subtidal areas consist mainly of rocky bottom types ranging from small gravel to large boulders interspersed with widely scattered patches of soft sediments. This area is a tidal rapid which regularly experiences tidal currents up to approximately 9 to 10 feet per second on spring tides. Therefore, organisms must be adapted for high-flow conditions or live in micro-environments (*e.g.,* patches of soft sediment) protected from the currents. All four mapped habitat types are ecologically diverse and apparently (based on the numbers of epibenthic organisms observed) very productive. Of note are the kelp (dominated by *Laminaria* spp.) and mussel beds.

3.1.2 Environmental Consequences

Impacts to wetlands and surface waters within the Study Area were initially identified and permitted under the larger Newington-Dover, Spaulding Turnpike Improvements Project. The NHDES issued Wetlands Permit 2006-02007 in June 2009 for the Spaulding Turnpike Improvements Project, which permitted up to approximately 20.4 acres of impact to palustrine, riverine, and estuarine wetlands. Upon completion of the final plans for the proposed GSB Project, a new Wetlands Permit application would be developed for the Project.

Updated impacts to wetland and surface water resources were calculated for each Action Alternative. Further information regarding the anticipated direct and indirect impacts to wetland and surface water resources is provided below. A summary of the proposed permanent and temporary impacts within areas of wetlands jurisdiction is provided in **Table 3.1-2**.

Table 3.1-2 Permanent and Temporary Wetland Impacts

Alternative	Wetland (acres)		Bed/Bank of Little Bay (acres)		Tidal Buffer Zone (acres)	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
No-Action	0	0	0	0	0	0
Alternative 1	0	0.1	0	0.8	0	0.9
Alternative 3	0	0.1	0	0.8	0	0.9
Alternative 6	0	0.1	0.1	0.8	0	0.9
Alternative 7	0	0.1	0.1	0.8	0	0.9
Alternative 9	0	0.1	0	0.8	0	0.9

3.1.2.1 Direct Impacts

No-Action Alternative

Under the No-Action Alternative, no direct permanent impacts to wetlands, the bed/bank of Little Bay, or the Protected Shoreland of Little Bay are anticipated to occur under the No-Action Alternative since there would be no changes to the existing GSB infrastructure or surrounding area. However, it is important to note that the NHDOT would be required to remove the GSB if it no longer serves a transportation purpose under the terms of USCG permits issued for the LBB construction and expansion. Removal of the GSB would require temporary impacts associated with construction access.

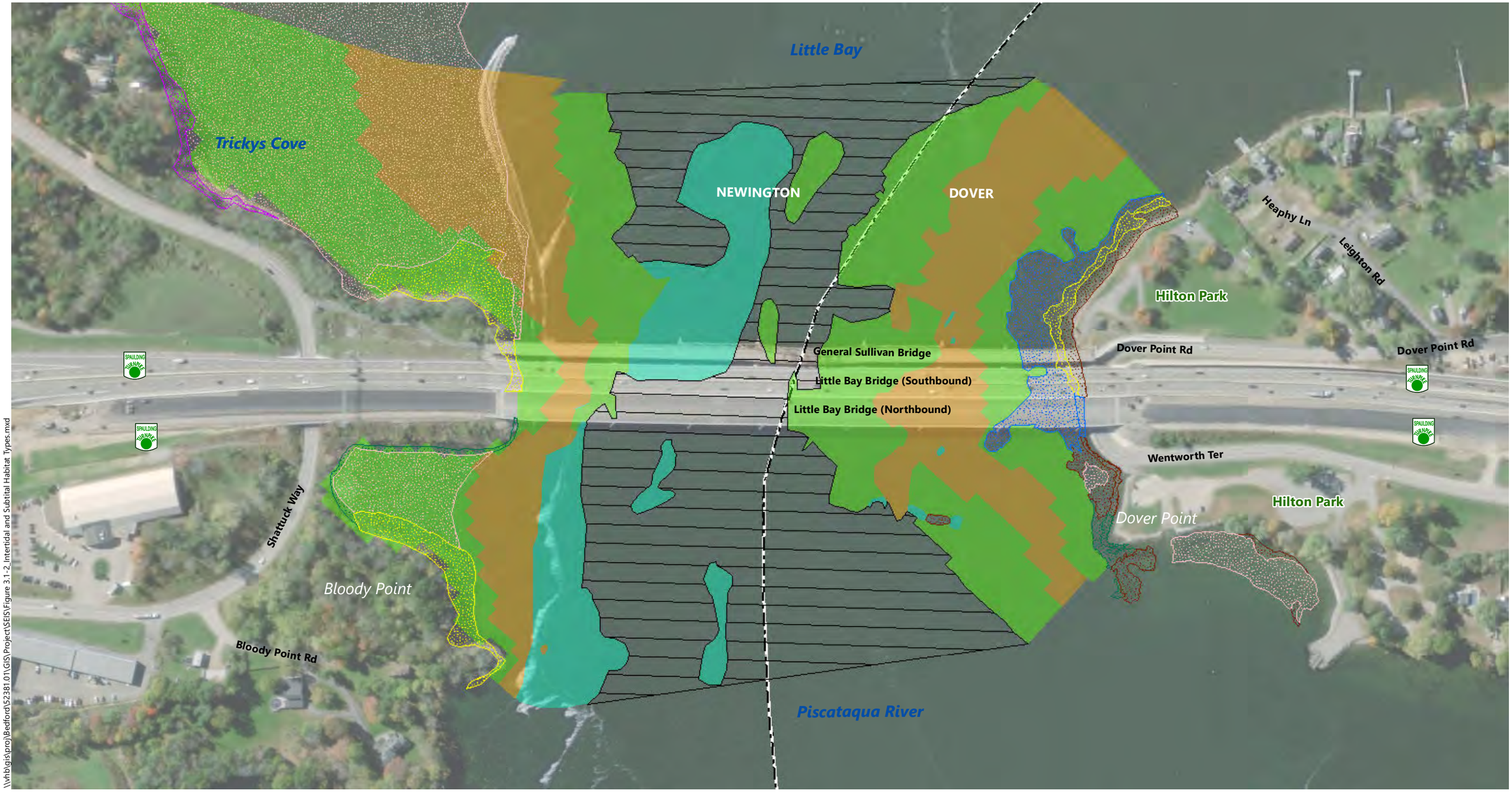
Alternative 1

Alternative 1 would not result in any direct permanent impacts. However, direct temporary impacts to jurisdictional wetlands would result from the placement of construction access causeways and trestle structures within Little Bay (approximately 260 feet long on the Newington side and approximately 130 feet long on the Dover side). Use of the causeway and trestle structures would temporarily impact approximately 0.8 acre within the bed and bank of Little Bay. The trestles would be installed using pile bents and would be approximately 450 to 460 feet long from the Newington side and 470 to 480 feet long on the Dover side.

Installation of the causeways and trestles would affect several functions and values of the Little Bay including fish and shellfish habitat, wildlife habitat, recreation, and visual quality; however, these impacts would be temporary in nature and of a relatively short duration.

Alternative 1 would also temporarily impact the non-jurisdictional drainage area located in Hilton Park south of the Spaulding Turnpike for the full length of the drainage swale during construction. This feature would be restored upon completion of the work. Impacts to this feature would result from construction access and equipment staging. Temporary geotextile fabric and crushed stone would be placed over this swale. If deemed necessary, a temporary culvert would be placed to allow the swale to convey drainage until the work is complete.

Figure 3.1-2



\\vhb\gis\proj\Bedford\52381.01\GIS\Project\SEIS\Figure 3.1-2_Intertidal and Subtital Habitat Types.mxd

0 125 250 500 Feet

Legend

Town Boundaries

Intertidal Habitats

- Hard Bottom with Rockweed
- Mudflat
- Rock/Algal Abundant Mussel
- Rock/Algal Sparse Mussel
- Salt Marsh
- Scattered Rock/Algal Soft Sediment

Subtidal Habitats

- Kelp Bed
- Macroalgal (Non-Kelp) Bed
- Mussel Reef
- Other

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Intertidal and Subtidal Habitat Types

U.S. Department of Transportation
Federal Highway Administration

New Hampshire DOT
Department of Transportation

Source: VHB, NH GRANIT

Similarly, the wetland located immediately south of the GSB pedestrian approach ramp in Newington would be temporarily impacted from the placement of geotextile fabric and crushed stone or other means of stabilizing the ground surface.[22] These measures would be removed upon completion of the work and the wetland would be restored to pre-construction conditions. This wetland would still be able to convey stormwater runoff from upland areas into Little Bay throughout the duration of construction since measures would be taken during construction to allow water to continue to flow into the bay.

Temporary impacts within the TBZ of Little Bay would also result from proposed construction access and staging areas in the Study Area of both Newington and Dover. As shown on the Preliminary Construction Impact Plans (**Appendix D**), construction access would generally follow existing paved and previously-developed areas in Newington and Dover.

Direct permanent impacts within the 250-foot Protected Shoreland buffer of Little Bay are not anticipated to occur under Alternative 1 since the existing footprint of the GSB would be retained. Impacts to the Protected Shoreland of Little Bay would be limited to the temporary use of construction access and staging areas. As previously mentioned, the proposed construction access would generally follow existing paved areas adjacent to the GSB.

The temporary causeways and trestles would have direct temporary impact intertidal and subtidal habitats located within Little Bay according to the study conducted by UNH. The study identified rock/algal abundant mussel and rock/algal sparse mussel habitat near the shoreline of Little Bay along the Newington and Dover coastlines, which would be temporarily impacted by the proposed causeways and trestles. Additionally, approximately 30 percent of area proposed to be temporarily filled by the placement of the causeways is mapped as kelp/microalgal beds. The pile bents proposed to support the temporary trestles would result in additional temporary impacts to kelp/macroalgal beds. Impacts to intertidal and subtidal habitats are anticipated to rebound upon removal of the temporary causeways and trestles once construction is complete. The installation of these causeways and trestles would also impact approximately 0.2 acre of blue mussel shellfish bed located under the GSB. Further information regarding impacts to blue mussel shellfish beds are provided in **Section 3.4**, *Wildlife and Fisheries*.

Alternative 3

Impacts to wetlands, surface waters, and tidal habitats under Alternative 3 would be the same as the impacts proposed under Alternative 1.

Alternative 6

Under Alternative 6, direct permanent impacts within the bed/bank of Little Bay would occur due to the removal of GSB Pier 1 and installation of a new pier (likely a drilled shaft pier) within Little Bay to support a new bridge span. This new pier would permanently impact rock/algal habitat located in the area where the GSB Pier 1 is proposed to be removed and replaced. These impacts would be localized to the pier location and are not anticipated to negatively impact the rock/algal habitat type as a whole.

Like Alternative 1, direct temporary impacts within the bed and banks of Little Bay would result from the temporary placement of causeways and trestles used during construction to remove the GSB and construct the new Alternative 6 bridge structure.

Direct permanent impacts within the TBZ and 250-foot Protected Shoreland of Little Bay are similar to Alternative 1. However Alternative 6 would result in additional permanent impacts to the Protected Shoreland because the curved approach span on the Dover end of the bridge would need to be replaced, along with construction of a new pier in within Hilton Park.

Alternative 7

Impacts to wetlands, surface waters, and tidal habitats under Alternative 7 would be the same as the impacts described under Alternative 6.

Alternative 9 (Preferred Alternative)

Impacts to wetlands, surface waters, and tidal habitats under Alternative 9 would be the same as the impacts proposed under Alternative 1. However, note that the temporary effects associated with construction access for Alternative 9 would be shorter in duration than for Alternative 1, since the expected construction duration would be 1.5 years (versus 3 years for Alternative 1).

3.1.2.2 Indirect Impacts

No-Action Alternative

Under the No-Action Alternative, no indirect impacts to wetlands or the bed and bank of Little Bay are anticipated. As noted above, the USCG has required that the GSB be removed if it no longer serves a transportation purpose. If the GSB is removed, including its pier foundations, then potential hydrodynamic effects may occur. This effect has not been fully analyzed. However, based on hydrodynamic modeling previously conducted for other alternatives, this effect is not expected to be adverse.

Action Alternatives

While Alternatives 6 and 7 involve direct wetland impacts from the replacement of GSB Pier 1 and the construction of a new pier within Little Bay near the Dover shoreline, no indirect impacts are anticipated from the pier replacement or construction of a new pier. The replacement pier would be smaller than the existing GSB Pier 1 and would not substantially impair the flow of water within the Little Bay or impact tidal currents or wave energy. The new pier proposed to be installed along the Dover shoreline under Alternatives 6 and 7 would only have a minor impact to the flow of water, tidal currents, or wave energy. The use of BMPs during construction would minimize any indirect impacts to the Little Bay or other jurisdictional wetlands located near the proposed work that could occur (erosion and sedimentation) during construction activities.

[22] Geotextile and crushed stone are proposed to be used within the unpaved staging areas for a safe and reliable construction access and equipment staging while protecting the wetland from rutting and erosion.

3.1.3 Mitigation

Since the Action Alternatives would involve temporary ground disturbance within and directly adjacent to wetlands and the Little Bay, wetland impacts would be avoided or minimized through the implementation of the following environmental commitments:

- NHDOT will submit a permit application to the NHDES Wetlands Bureau for the wetland impacts resulting from the Preferred Alternative. NHDOT will coordinate with state and federal resource agencies, and the communities of Newington and Dover to identify whether project-specific mitigation is required for the GSB Project.
- Applicable erosion and sediment control BMPs would be used throughout construction to protect wetlands and surface waters from sediment, erosion, pollution, and contaminants.
- Unpaved staging areas are to be protected with temporary geotextile fabric under crushed stone.
- Disturbed areas will be restored to as near pre-existing conditions as practicable once construction is complete. All disturbed and graded areas would be seeded and mulched as needed. Disturbed areas that have been seeded and mulched would be considered stable once 85-percent vegetative growth has been achieved.
- Appropriate pollution preventative measures and BMPs as outlined within the *New Hampshire Stormwater Manual Vol. 3 – Erosion Control and Sediment Controls During Construction* (December 2008), available online at NHDES's website, shall be employed to assure that any detrimental impacts are minimized to the extent practicable.

3.2 Water Quality and Pollutant Loading

The 2007 FEIS and final design efforts for the LBBs and overall Spaulding Turnpike improvements included an initial qualitative water quality assessment that was based on a relative comparison of the amount of new impervious area that would be created by each build alternative. New impervious area represents an indicator of the amount of potentially added stormwater volume and associated pollutant load that may be discharged to area water bodies.

Subsequent to the 2007 FEIS and in response to the 401 Water Quality Certificate issued for the LBBs and Spaulding Turnpike Improvements, more detailed pollutant loading analyses were completed to assess whether the Spaulding Turnpike Improvements would meet the anti-degradation provisions of the New Hampshire surface water quality standards (Env-Wq 1708). Specifically, the pollutant loading analyses were used to assess whether any increased discharge of stormwater would result in an increase in pollutant loads, specifically total suspended solids, total phosphorus and total nitrogen that would result in a substantial lowering of the water quality conditions in the receiving water consisting of the Little Bay, Piscataqua River and other tributaries.

These pollutant loading analyses focused primarily on the proposed roadway mainline and LBB expansion and accounted for pre and post-development conditions including existing and proposed impervious areas and the anticipated treatment effects of planned stormwater BMPs included in the 2007 Preferred Alternative design.

The previous pollutant loading analyses indicated that the average annual pollutant loads of total suspended solids, total phosphorus and total nitrogen discharged to the Little Bay and Piscataqua River from the project area would be reduced by approximately 5,580, 6.2 and 44.5 pounds, respectively, under post-development conditions compared to the estimated pre-development loads due to the proposed stormwater BMP treatment included in the roadway improvement design.[23] In other words, there would be a net water quality benefit with respect to future stormwater volumes discharged from the project area. In fact, based on the NHDES pollutant loading methodology, these pollutant load reductions are essentially equivalent to eliminating approximately two acres of existing impervious area within the project area even with the added lanes and roadway width resulting from the project.[24]

Even though the planned GSB improvements were not included in the pollutant loading analyses discussed above, no substantial increases in impervious area or stormwater volumes are anticipated with the proposed GSB design alternatives, discussed herein. In fact, a narrower bridge deck is anticipated compared to the existing GSB since the project seeks to accommodate only pedestrian and non-motor vehicle uses. A narrower bridge deck would result in less impervious area compared to the existing GSB, which would only add to the water quality benefits that are already anticipated with the stormwater treatment BMPs included in the mainline roadway and LBB improvements.

Given the results of the previous pollutant loading analyses, additional stormwater treatment would only be considered necessary if the proposed GSB design alternatives would potentially increase the amount of impervious area and related stormwater volumes relative to existing conditions. Stormwater generated from the proposed GSB design alternatives would be discharged through bridge scuppers to the Little Bay similar to the existing GSB.

A qualitative water quality assessment was conducted for the various GSB design alternatives to compare differences in the planned bridge deck widths and associated impervious area for each of the proposed design alternatives relative to the existing GSB deck area. This analysis was used to assess whether the proposed GSB design alternatives would potentially increase or decrease the future impervious and stormwater volumes relative to existing conditions and to identify which of the alternatives would have the least or greatest amount of impervious area associated with the planned bridge deck. Since the proposed replacement alternatives are essentially

[23] CHA. 2013. Spaulding Turnpike Contract #M, Stormwater Management Report, Volume 1, Slope and Drain, Newington prepared by VHB and Contract #L Stormwater Management Report, Slope and Drain. Technical Report prepared by CHA, dated February 11, 2013.

[24] The NHDES Simple Method Pollutant Loading Model used in the previous analyses indicates that 1.0 acre of roadway area would generate approximately 20.4 lbs. of nitrogen per year if left untreated and discharged directly to the water body. Thus, 2.0 acres of additional, untreated impervious area would generate approximately 40.8 lbs. of nitrogen per year, which is nearly equivalent to the estimated net reduction resulting from the stormwater treatment proposed for the portion of the project draining to the Little Bay.