CATEGORICAL EXCLUSION

MEMORIAL BRIDGE (US ROUTE 1) REPLACEMENT PROJECT
PORTSMOUTH, NH - KITTERY, ME
A000(911), 13678F

March 2011

New Hampshire DOT

U.S. Department of Transportation
Federal Highway Administration

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

Memorial Bridge (US Route 1) Replacement Project

Portsmouth, NH-Kittery, ME
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INTRODUCTION

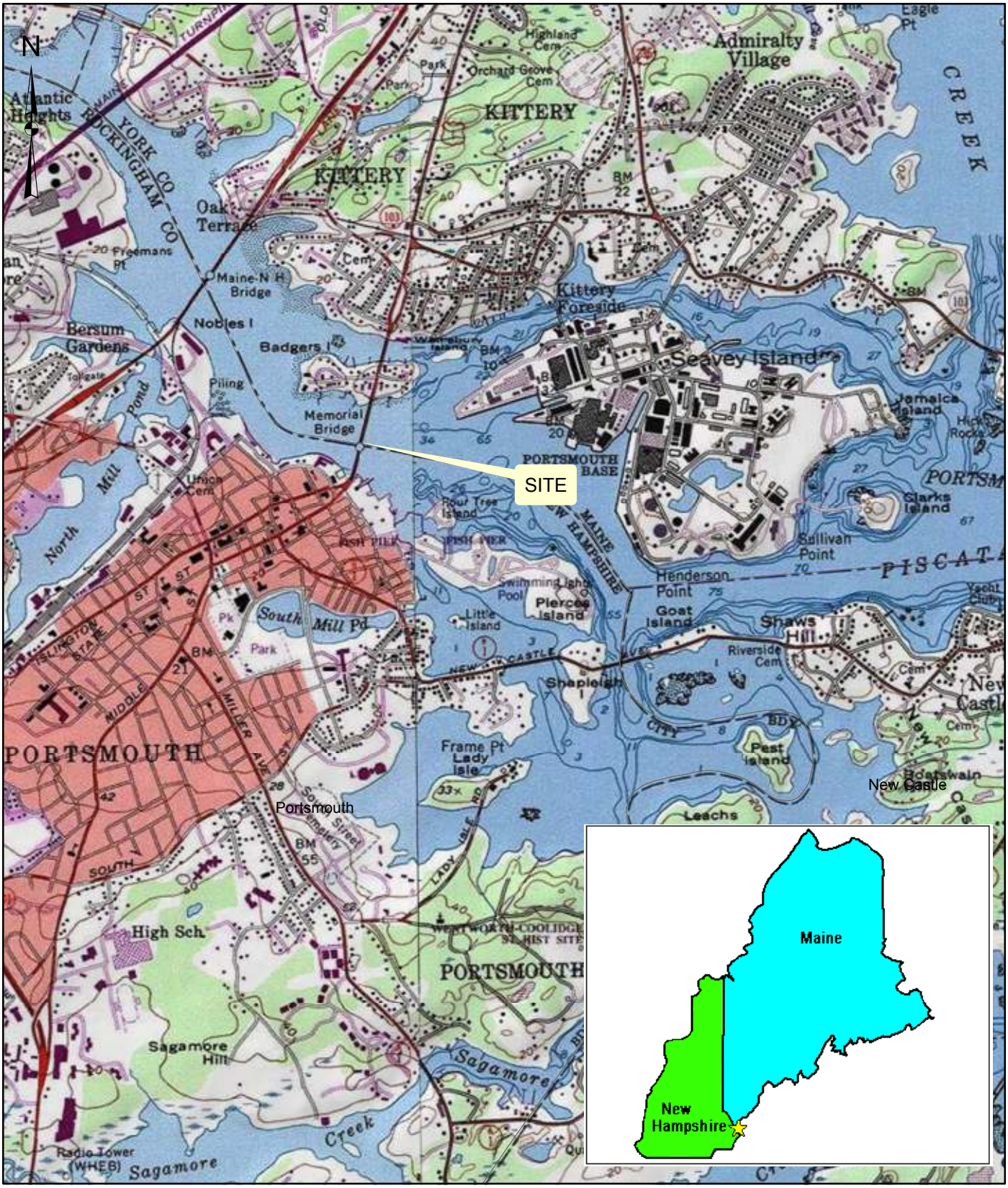
In accordance with the National Environmental Policy Act of 1969 (42 USC 4332(2)(c)) as implemented at 23 CFR 771.117(d)(3), the Categorical Exclusion addresses the replacement of the bridge that carries US Route 1 over the Piscataqua River (Memorial Bridge Facility), and has been prepared using a systematic, interdisciplinary approach to assess the engineering considerations and environmental effect of this undertaking.

EXISTING CONDITIONS

The New Hampshire Department of Transportation (NHDOT), in cooperation with the Federal Highway Administration (FHWA) and the Maine Department of Transportation (MaineDOT), proposes to replace the Scott Avenue Bridge (Bridge No. 246/083, the Portsmouth approach), the Memorial Bridge (Bridge No. 247/084) over the Piscataqua River, and the Kittery Approach Spans (Bridge No. 5276). All three structures are on US Route 1, a principal urban arterial connecting Portsmouth's business district in New Hampshire with Badger's Island in the Town of Kittery, Maine. The three separate structures carry US Route 1 a distance of approximately 0.25 miles (Figures 1, 2, 3, 4, and 5). The Memorial Bridge is jointly owned by the NHDOT and MaineDOT, and the Scott Avenue Bridge is owned and maintained by the City of Portsmouth. MaineDOT owns and maintains the Kittery Approach Spans. For the purposes of this document the three bridges are known collectively as the Memorial Bridge facility.

Memorial Bridge

Construction of the Memorial Bridge was completed in 1923 and is one of the oldest operational moveable bridges in the US. The bridge consists of three steel truss spans, spanning a total of 900 feet in length, including the main channel vertical lift span. The movable portion of the bridge, the lift span, accommodates industrial, commercial, and recreational navigation on the Piscataqua River. The bridge is raised every half hour between 7 a.m. and 7 p.m. during the peak river traffic season (May 15th through October 31st) and on demand between 7 p.m. and 7 a.m. The bridge also opens on an "on call basis" for commercial vessels in excess of 100 tons. Roadway traffic is regulated by signals and gates at each end of the bridge, and supervised by one bridge operator and two gatetenders 24 hours a day, 365 days a year. The vertical lift span has 274 feet of horizontal navigational clearance between the fenders, and 150 feet of vertical clearance (above mean high water) when fully opened (Figures 13 and 14). Vertical clearance when closed is 21 feet above mean high water. The lift span consists of steel trusses and two towers that extend 200 feet above the river channel. The bridge operator's house is located on the lift span and rises with the bridge, and gatetenders' booths are located at either end of the lift span on the west side of the roadway. The curb-to-curb width on the bridge is 28 feet, with one 14-foot travel lane in each direction and 6-foot sidewalks on both sides of the bridge. Because of the steel grating on the floor of the vertical lift span, cyclists are directed to walk bicycles over the bridge on the sidewalks.



0 0.25 0.5 1 Miles

NEW HAMPSHIRE DOT

PORTSMOUTH, NH

MEMORIAL BRIDGE (U.S. ROUTE 1) REPLACEMENT

LOCUS

SCALE :	DATE :	FIGURE :
1:24,000	MARCH 2011	1

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0 100 200 400 Feet

Photo locations for Figures 4, 6-11 shown in inset

NEW HAMPSHIRE DOT
PORTSMOUTH, NH

MEMORIAL BRIDGE (U.S. ROUTE 1) REPLACEMENT

PROJECT AREA

SCALE :	DATE :	FIGURE :
1:4,800	MARCH 2011	2

New Hampshire DOT

U.S. Department of Transportation Federal Highway Administration

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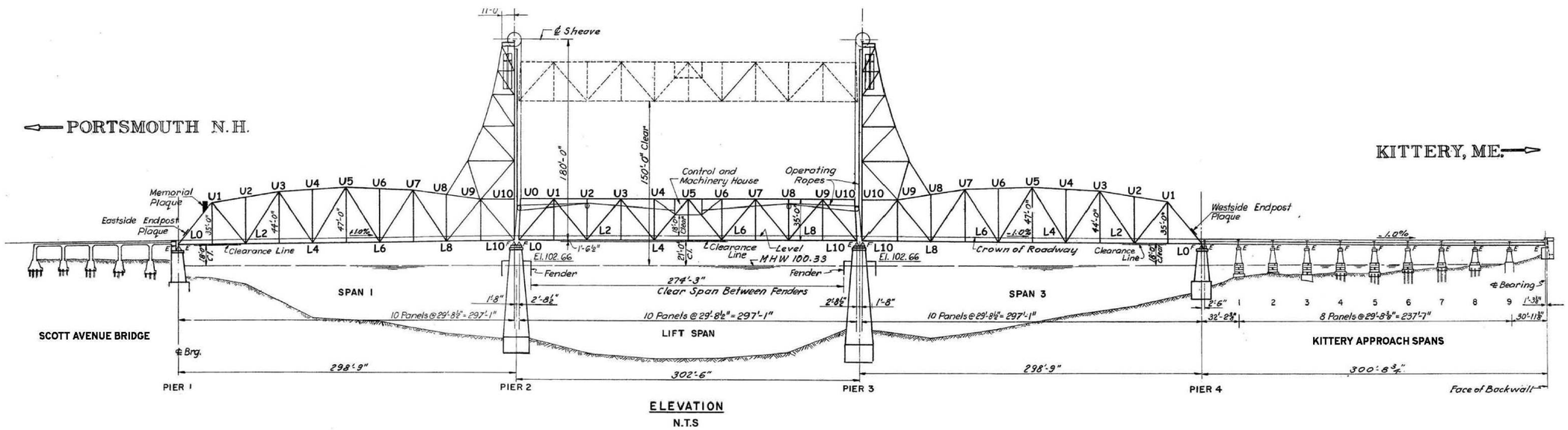

ELEVATION
N.T.S

0 100 200 400 Feet

NEW HAMPSHIRE DOT
PORTSMOUTH, NH

MEMORIAL BRIDGE (U.S. ROUTE 1) REPLACEMENT
EXISITING BRIDGE ELEVATION VIEW
(VIEW LOOKING WEST)

APPROXIMATE SCALE :	DATE :	FIGURE :
1:1,200	MARCH 2011	3

New Hampshire DOT

Source: Memorial Bridge Rehabilitation Project Final Environmental Study, May, 2008 NHDOT

U.S. Department of Transportation Federal Highway Administration

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Path

Figure 4 - View looking northeast at Memorial Bridge and north edge of Scott Avenue Bridge from Portsmouth waterfront

Scott Avenue Bridge

The Scott Avenue Bridge was built at the same time as the Memorial Bridge and is a five-span concrete arch bridge, 120 feet in length. The Scott Avenue Bridge carries Scott Avenue (US Route 1 southbound) and Dutton Avenue (US Route 1 northbound) over the intersection of Daniel Street and State Street along the Portsmouth waterfront area. These approach roadways to the Memorial Bridge provide access to and from Daniel Street (US Route 1) southbound and State Street northbound in downtown Portsmouth. The Memorial Bridge approach roadway widens from 28 feet on the north end of the Scott Avenue Bridge to 47 feet at the south end as its roadways diverge onto Scott Avenue (southbound) and Dutton Avenue (northbound). The roadway consists of one 14-foot travel lane in each direction and is bordered by two 6-foot sidewalks with steel grating.

Figure 5 - View, looking south, of Kittery Approach Spans (left) and Memorial Bridge (right)

Roadway geometrics and traffic patterns south of the Scott Avenue Bridge are illustrated in Figures 6, 7, 8, 9, 10, and 11. Memorial Park occupies the triangular areas between Scott Avenue, Dutton Avenue, and municipal parking north of a short one-way eastbound connector road, Wright Avenue. Memorial Park is bisected by another short turnaround/connector road to the north for northbound traffic. The Memorial Bridge approach roadways are two lanes in each direction south of this turnaround, narrowing to one lane in each direction north on the Scott Avenue Bridge.

Traffic southbound from the Memorial Bridge or traffic from Daniel Street coming from under the Scott Avenue Bridge can turn around on Wright Avenue eastbound or can turn right (heading northwest) onto Bow Street. Traffic southbound from the Memorial Bridge can also turn around on a cut-through between Memorial Park and the municipal parking lot.

South of Wright Avenue, Daniel Street is one-way, with two lanes southbound. Traffic northbound on State Street, a two-lane one-way street, can bypass the bridge and turn around using either the connector through Memorial Park or can continue on State Street. Past the bridge approach, State Street northbound intersects the end of the Marcy Street approach, a two-way street, and continues to the Portsmouth waterfront to intersect Daniel Street at the turnaround under the Scott Avenue Bridge.

Vertical clearance under Scott Avenue is 12’-2” and is posted for 11’-10”, and the south bridge abutment defines the edge of Daniel Street/State Street under the bridge. The Scott Avenue Bridge has five sets of piers. Two sets of piers divide Daniel/State Street, which is two-way between Wright Avenue and Marcy Street, and separate the edge of Daniel Street from the waterfront area. Two sets of piers bisect the open waterfront area under the bridge, and the fifth pier adjoins the Memorial Bridge south abutment at the seawall, which defines the edge of the waterfront. The roadway alignment and the low vertical clearance under the bridge tend to reduce vehicular speeds under the bridge. Daniel Street (US Route 1) in the downtown area is posted for 15 mph, and State Street at Wright Street is posted for 20 mph.

The Kittery Approach Spans

The Kittery Approach Spans consist of a 300-foot viaduct with ten multi-stringer spans, with floorbeams at the end of each span, supported by reinforced concrete piers. The bridge deck is supported by purlins on top of the stringers. The Kittery Approach Spans connect Badger’s Island in Kittery to the truss flanking the vertical lift span of the Memorial Bridge. The 28-foot roadway is flanked on either side by 8’-10” sidewalks.

Bridge Approaches

The *Portsmouth Master Plan: Existing Conditions Report* identifies the local approaches to the Memorial Bridge as corridors/streets with a high incidence of crashes (defined as 20 or more total crashes from 1999 to 2003). State Street, the northbound approach, experienced 64 crashes along the roadway and 27 crashes that occurred at intersections for this time period. Daniel Street had 17 recorded crashes along the corridor and five crashes that occurred at intersections. The 1999 Update of the Kittery Comprehensive Plan indicates that US Route 1,

Figure 6– View Looking south at Scott Avenue Bridge (left) and Daniel Street.

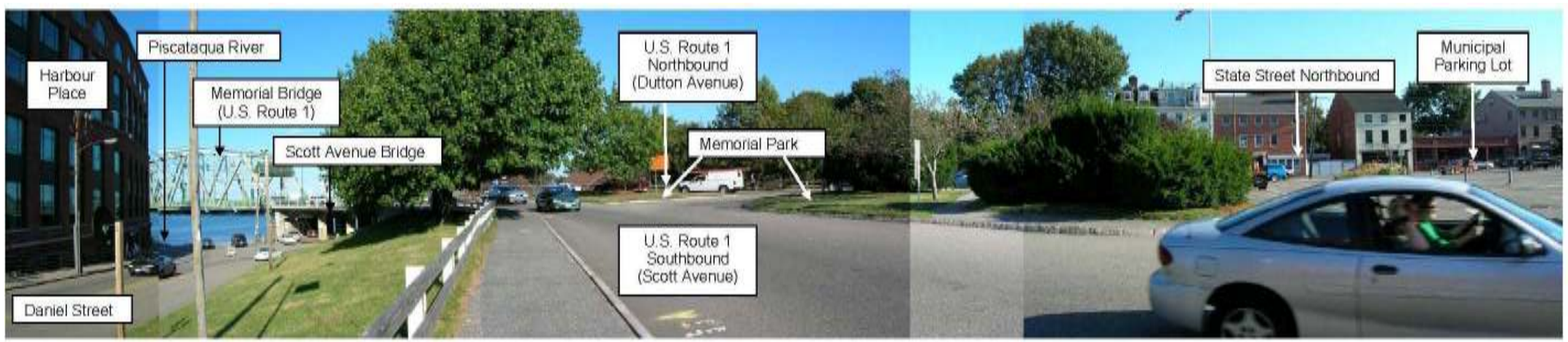


Figure 7 – View looking northeast at Memorial Bridge (left) and approach roadways to Memorial Bridge and Memorial Park

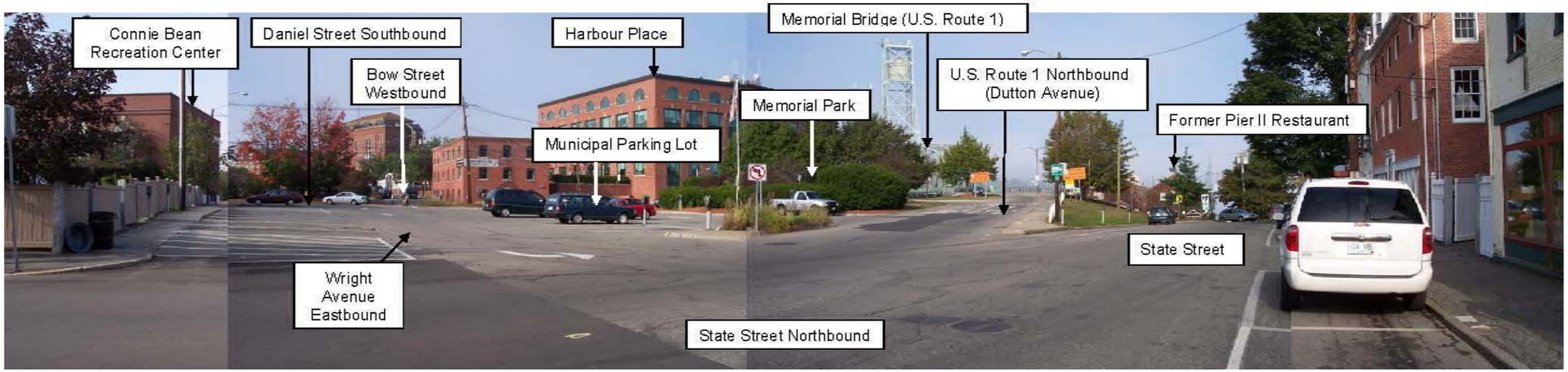


Figure 8 – View looking north at Wright Avenue (left), municipal parking lot, and Portsmouth Memorial Bridge Approach (right)

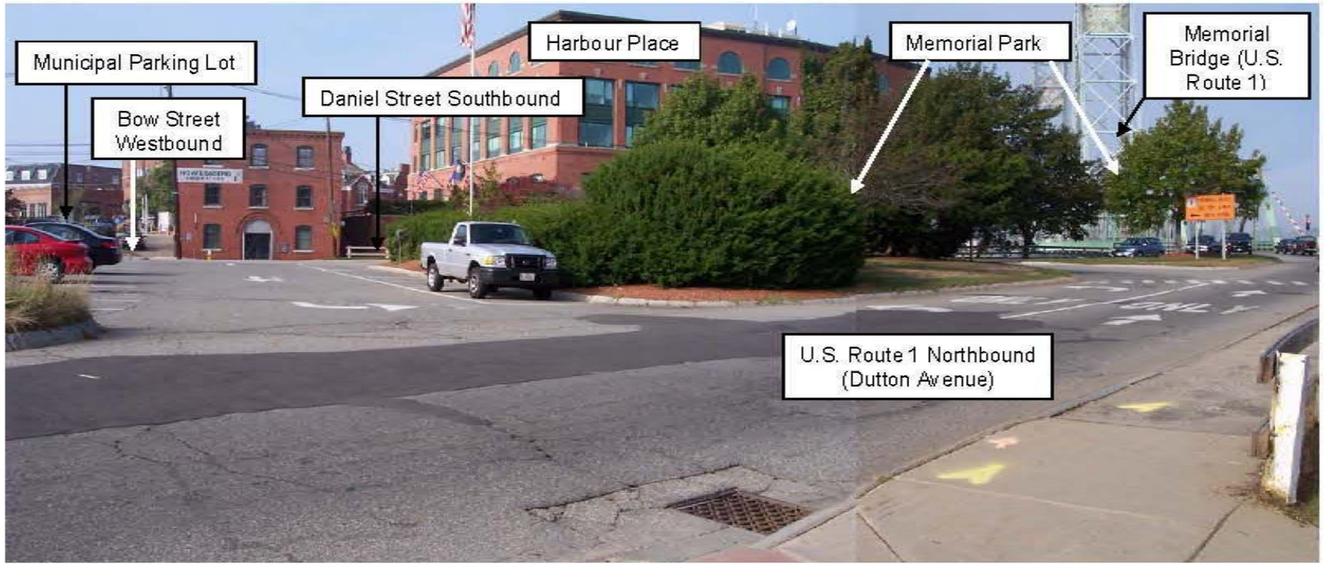


Figure 9 – View looking north at Memorial Park, with municipal parking lot at left and Memorial Bridge Approach at right**.**

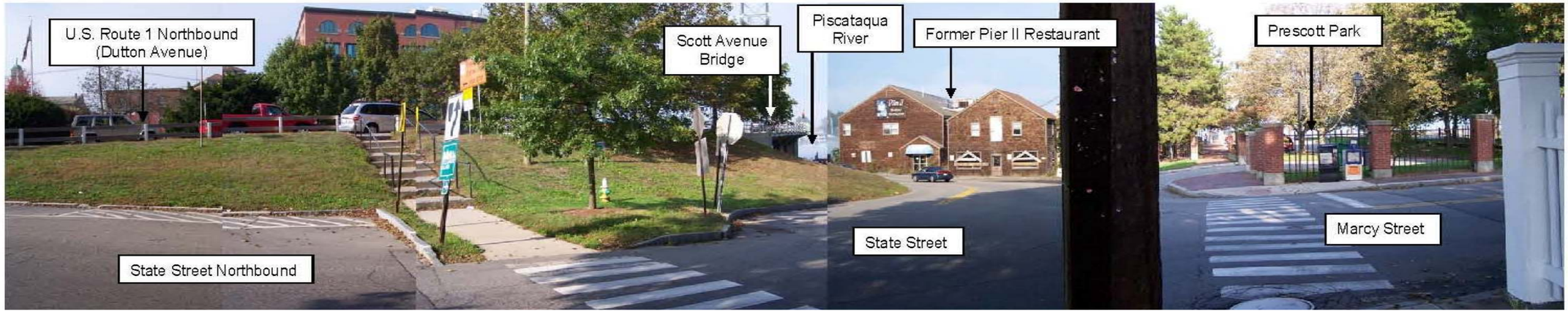


Figure 10– View looking northeast at U.S. Route 1 northbound (Dutton Avenue) approach to Memorial Bridge (left), former Pier II Restaurant on State Street, and Prescott Park and Marcy Street (right)

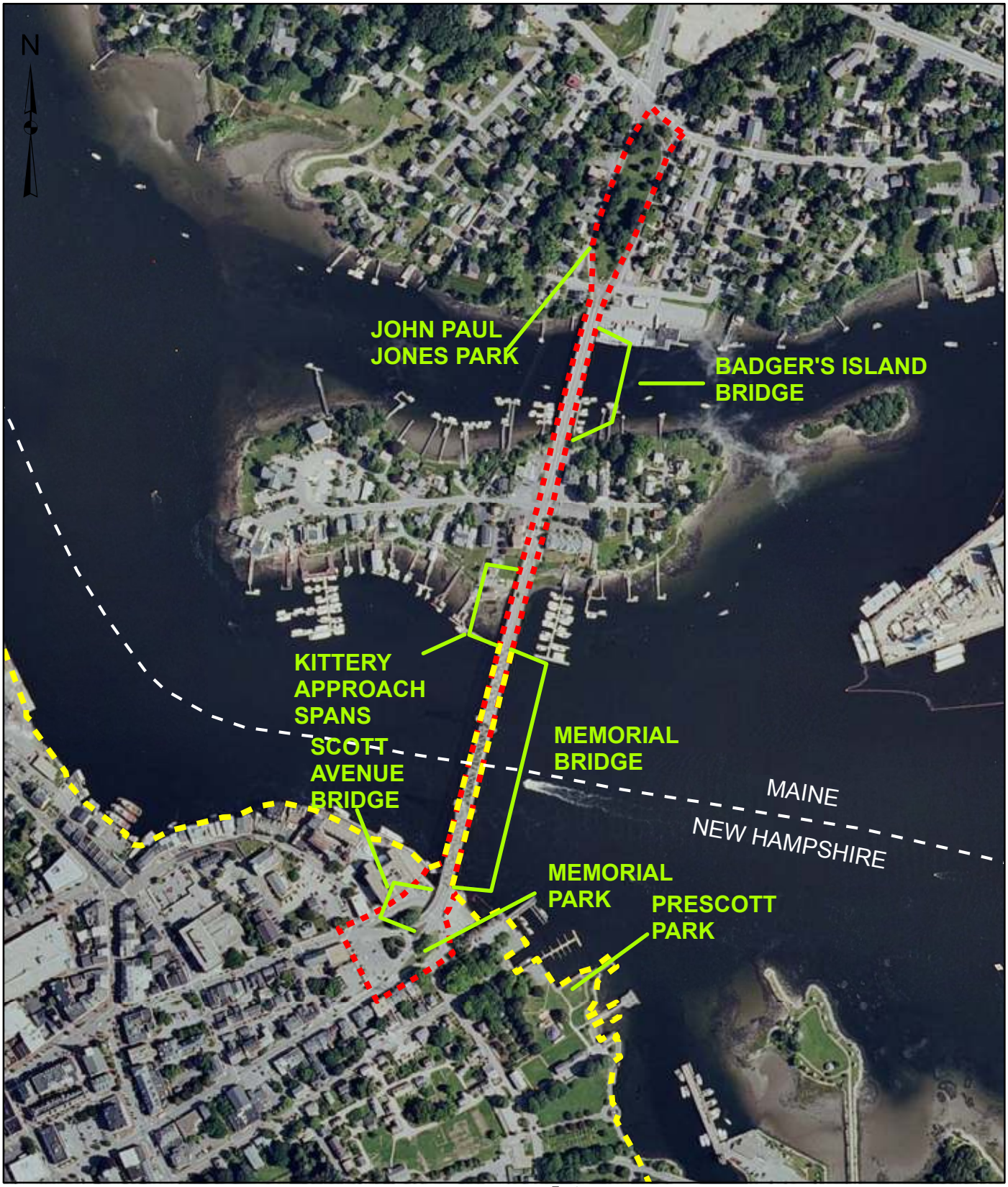
Figure 11 – View looking north at Scott Avenue Bridge (left) and former Pier II Restaurant (right)

including the US Route 1 bypass, is prone to the largest number of crashes in Kittery, particularly north at the traffic circle and retail outlets.
On the Portsmouth side, Daniel and State Streets, south of the bridge site, are lined with densely developed land uses in the Portsmouth business district. The downtown areas of Portsmouth that surround the bridge site are part of the Portsmouth Historic District. A partially constructed condominium complex adjoins the Scott Avenue Bridge, 14 feet to the northeast of the bridge. Prescott Park, which leads to Strawberry Banke, a National Register of Historic Places ("National Register") Historic District, is located approximately 250 feet to the east of the bridge. A privately owned parking garage at an office building (Harbour Place) that is available for use by the public is located approximately 90 feet to the west. Public parking spaces line the seawall along the waterfront area between Harbour Place and the Scott Avenue Bridge, and a portion of the area under the bridge is used for parking by the bridge operator and gatetenders. The municipal lot on both sides of Wright Avenue adjoins the south side of the Memorial Bridge approach, and parking spaces adjoin the south side of Memorial Park. On-street parking is available on both sides of Daniel Street, south of Wright Avenue, and State Street, south of Marcy Street.

Badger's Island adjoins the north side of the Memorial Bridge facility and includes residential and condominium developments, small business and retail uses, and two marinas. Badger's Island is connected to the Maine mainland shoreline by a separate structure along US Route 1, the Badger's Island Bridge.

The Memorial Bridge facility (the three span Memorial Bridge, Scott Avenue Bridge, and Kittery Approach Spans) and the parks that were constructed as part of the original design of the bridge are eligible for the National Register of Historic Places (Figure 12). The following have been determined to be eligible for the National Register:

- The Memorial Bridge Historic District includes the Memorial Bridge, Scott Avenue Bridge, and Kittery Approach Spans, and extends south to include the Memorial Park in Portsmouth and north to include the John Paul Jones Memorial Park in Kittery.
- The Memorial Bridge was determined to be individually eligible for the National Register in 1988 and includes the lift span (determined eligible in 1982) and the flanking tower/truss spans. The earlier determination of eligibility was confirmed by the FHWA in consultation with the NHSHPO on March 9, 2006.
- The Scott Avenue Bridge and adjoining Memorial Park were determined to be individually eligible for the National Register in 2004.
- The Kittery Approach Spans, extending north to Badger's Island, are also individually eligible for the National Register.
- The Badger's Island Bridge, extending north from Badger's Island to the mainland in Maine, was determined to be National Register eligible in July 2001.
- The John Paul Jones Memorial Park, north of the Badger's Island Bridge, was listed in the National Register in 1977.
- The Portsmouth Historic District has also been determined to be eligible for listing in the National Register by consensus determination.



0 250 500 1,000 Feet

HISTORIC DISTRICTS

Memorial Bridge Historic District

Portsmouth Historic District*

*Limits of the Portsmouth Historic District eligible for listing in the National Register of Historic Places as determined by consensus determination.

NEW HAMPSHIRE DOT
PORTSMOUTH, NH

MEMORIAL BRIDGE (U.S. ROUTE 1) REPLACEMENT

HISTORIC DISTRICTS

SCALE :	DATE :	FIGURE :
1:6,000	MARCH 2011	12

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PURPOSE AND NEED

Background

The Memorial Bridge is a gateway to the seacoast regions of New Hampshire and Maine. The bridge is an important connector between the downtown Portsmouth business district and the Town of Kittery, including Badger's Island, the commercial districts that extend north along US Route 1 and east along Government Street (Kittery Foreside District), the Portsmouth Naval Shipyard to the east off Seavey Island, and retail outlets further to the north.

US Route 1 on the Memorial Bridge carried an average annual daily traffic volume of approximately 11,000 vehicles per day in 2009. Approximately 5 percent of the traffic consisted of trucks. Vehicles over three tons currently cannot use the bridge due to the posted weight restriction. The vertical lift span on the bridge currently lifts approximately 4,000 times per year for navigational traffic on the Piscataqua River, which is an important port that accommodates major industrial users, regional fuel deliveries, and recreational and tourist boat traffic.

The bridge is also a heavily used corridor for cyclists and pedestrians, and is the only pedestrian/bicycle connection between New Hampshire and Maine in this region. Counts taken over a 15-hour period (6 a.m. to 9 p.m.) on a clear day on Friday April 31, 2006 recorded approximately 500 pedestrians and 140 bicycles, and roughly 300 pedestrians and 85 bicycles were recorded over a 13-hour period (8 a.m. to 9 p.m.) on the following rainy Saturday.

The Memorial Bridge (US Route 1) is 87 years old and has experienced considerable structural deterioration. The history of maintenance and repairs performed to the bridge is outlined in Table 1. Due to fatigue and wear over time, the mechanical components are in need of complete replacement. The steel framing of the bridge has experienced substantial corrosion. In particular, the open steel grating deck of the lift span allows wintertime applications of de-icing salts to corrode the underlying steel structure of the lift span. The lattice-type members also create pockets for containment of moisture. This corrosion requires that the lift span be either replaced or rehabilitated.

The Scott Avenue Bridge is also 87 years old, and has experienced advanced deterioration. Based on structural inspections performed in 2003, the Scott Avenue Bridge has been classified as functionally obsolete. Moreover, the bridge piers that divide and adjoin the underpassing roadway present safety hazards for vehicles, and the piers bisecting the waterfront restrict access for pedestrians.

The Kittery Approach Spans are also 87 years old. Although previously only repairs to the deck were recommended, more recent inspections have revealed that deterioration has progressed much further than had previously been thought. The floor beams, roadway stringers, and deck are all in poor condition. In order to meet the current American Association of State Highway and Transportation Officials (AASHTO) load rating criteria, extensive repairs and reinforcement would be needed.
The current (2011) weight restriction of three tons, prompted by structural deficiencies found during 2009 and 2010 inspections of the Memorial Bridge and Kittery Approach Spans, prohibits

all trucks and some emergency vehicles from crossing over the bridge. Kittery, the Portsmouth Naval Shipyard, the City of Portsmouth, and other surrounding communities (including Newington and Rye) have cooperative emergency response agreements, and the preferred route of first responders between downtown Portsmouth and Kittery is the Memorial Bridge.

The Memorial Bridge is the # 1 ranked bridge on the NHDOT Bridge Priority List, signifying that this is the highest priority bridge project in the state for repair/replacement. The Memorial Bridge is also on the NHDOT Red List of bridges due to low Federal Sufficiency Ratings. The list includes bridges that require two annual inspections, because of their known deficiencies, poor conditions, weight restrictions, or construction type. According to the May, 2010 NHDOT Red List, the Federal Sufficiency Rating of the Memorial Bridge, on a scale of 0 to 100 (0=worst, 100=best), is a 6.0. The sequence of events leading to the current proposed action (Replacement of the Scott Avenue Bridge, Memorial Bridge, and Kittery Approach Spans) is detailed below.

Project History

Bridge inspections in 2003 indicated that the overall condition of the Memorial Bridge superstructure (steel framing and deck above the concrete piers) was serious, and the decks on both the Memorial Bridge and the Kittery Approach Spans were in poor condition. Structural inspections on the Scott Avenue Bridge indicated the concrete and reinforcing were undergoing active deterioration and that complete replacement of the bridge was required.

The mechanical components of the Memorial Bridge include the counterweight ropes and sheaves that support the lift span from the two bridge towers, the trunnions (the axles of the sheaves), counterweights, and equalizers (that attach the ropes to the counterweights). The fatigue life of the existing trunnion shafts, condition of the equalizers, and overstress in the counterweight ropes were of particular concern.

The existing trunnion shafts, in addition to being under-designed by today's standards, are at the end of their useful life due to the number of lift cycles over their years of service. As part of the 2003 inspection and study, calculations performed revealed that the trunnions do not meet today's AASHTO standards for design and are at the end of their useful life due to fatigue. This is the primary reason that inspections were scheduled every six months by NHDOT since that time. Subsequent inspections through the fall of 2007 revealed no further visible deterioration in the trunnion shafts, but continued semi-annual inspections were recommended until trunnion removal and replacement during construction.

The existing size and number of counterweight ropes do not meet current AASHTO standards for rope capacity. The equalizers that attach the ropes to the counterweights also show signs of wear at the attachment points (boreholes and pins). Calculations show that stresses on the equalizers are within allowable limits, but the sizes of some of the boreholes that hold the pins in place had become enlarged or elongated and required monitoring. Subsequent inspections through the fall of 2007 revealed further deterioration in both the ropes and the equalizer boreholes. Three counterweight ropes were replaced under an emergency contract in 2008.

A previous project, the "Memorial Bridge (US Route 1) Rehabilitation Project", proposed to replace the Scott Avenue Bridge, to rehabilitate the Memorial Bridge (including a replacement of the lift span), and to repair the Kittery Approach Spans. Following the approval of the 2008 Environmental Study by FWHA for the Memorial Bridge Rehabilitation Project, the project was put out to bid. The bid costs were 30% higher than had been anticipated, and as a result, the two states of Maine and New Hampshire signed a Memorandum of Agreement (MOA) to conduct a bi-state planning study to assess long-term transportation needs, which resulted in the "Maine-New Hampshire Connections Study" (Connections Study). The MOA included provisions for inspections of both the Sarah Mildred Long and Memorial bridges.

Structural inspections performed as a result of this agreement in May and June of 2009 revealed that deterioration of the Memorial Bridge had progressed further, and after an emergency repair of one of the gusset plates, the weight limit was lowered to three tons. In May, 2010, another inspection occurred of all the primary truss members that had rated HS10 or lower in November 2009. Using more detailed inspection methods, it was revealed that deterioration had progressed on all the recently inspected members, and new areas of deterioration were found. The condition of the overall bridge structure was lowered from "Poor" to "Serious."

The Kittery Approach Spans were also inspected during May and June of 2009. The Kittery Approach Spans were found to have top flange section loss of 50% to 100% in some areas, corrosion holes in the webs of 6 of 10 floorbeams, and corrosion and section loss on the bottom flange of several floorbeams. In addition, the exterior roadway stringers were found to be in poor condition, with as little as ¼ inch thickness remaining in the top flange on some of the stringers. The level of deterioration of the Kittery Approach Spans rendered rehabilitation impractical, because of the large number of bridge members that would need to be replaced. In addition, the piers supporting the Kittery Approach Span were also recommended for replacement. The piers were constructed in 1919, and are unlikely to meet current requirements for seismic design.

Statement of Purpose

The Purpose of the Project is to address the current structural deficiencies associated with the Memorial Bridge facility to provide a safe, secure and effective multi-modal movement of people and goods across and upon the Piscataqua River between Kittery, Maine and Portsmouth, New Hampshire, while supporting the region's economic, cultural, historic, archeological, and natural resources and the community's quality of life.

Statement of Need

The Need for the Project is based on the following transportation deficiencies:

a) Structural deficiencies exist that threaten accessibility to and mobility within the region and require the current 3-ton load postings on the Memorial Bridge which precludes emergency response vehicle usage and any truck traffic;
b) Decreased reliability of the lift span and increasing maintenance needs of the Memorial Bridge are causing unnecessary delays to marine and land transportation;
c) Multi-modal (pedestrian, bicycle, maritime traffic, vehicular) opportunity is limited by inadequate or outdated facilities;

d) The location of the operator's control house on the lift span poses logistical safety concerns in the event that the bridge is stuck in the up position, in which case the operator would have difficulty descending, and also does not permit access to facilities such as running water and sanitary facilities;
e) The steel grating on the floor of the lift span does not permit safe operation of bicycles on the bridge and therefore safe interaction of bicycles and motor vehicles on the roadway surface;
f) The wood planking and railing on the sidewalks of the bridge require replacement, and the sidewalk surface is slippery when wet; and
g) The multiple piers under the Scott Avenue Bridge present impediments to safe vehicular and pedestrian access under the bridge, and the steel grating on the overhead sidewalks does not allow safe bicycle access.

Goals

In order to achieve the stated Purpose and Need, the Project will strive to achieve the following goals:

(1) Improve local and regional economic growth and stability, tourism and recreational opportunities by addressing the deficiencies associated with the Memorial Bridge;
(2) Maintain vehicle access to Portsmouth and Kittery downtowns and Portsmouth Naval Shipyard via the Memorial Bridge;
(3) Improve bicycle and pedestrian access across the Piscataqua River;
(4) Reduce operational and maintenance costs (currently $1.1 million per year for the Memorial Bridge);
(5) Avoid or minimize detrimental impacts to the historic significance and integrity of the Kittery-Portsmouth area;
(6) Conserve the aesthetic setting and environmental quality of the Piscataqua River; and
(7) Improve emergency response and emergency evacuation efficiency across the Piscataqua River.

Table 1-**History of Major Maintenance on the Memorial Bridge**

1929	Repair of fender around Pier 2 and bridge repainting
1933	Replacement of counterweight sheaves of north tower
1940	Replacement of counterweight sheaves of south tower
1944	Repair of sidewalk stringers
1946	Redecking of lift span
1950	Replacement of end dams and scuppers and curb repairs
1952	Replacement of end dams
1959	Spur gear replacement
1960	Redecking of Spans 1 and 3 of the Memorial Bridge and Kittery Approach Spans Scupper replacement Cleaning, priming and painting of Memorial Bridge Fender replacement Repair of Kittery Approach Piers Machinery brakewheel replacement
1961	Lifting girder modifications, rope connection replacement Rebalancing of counterweights Replacement of counterweight ropes Replacement of equalizers
1970	Sidewalk railing repairs
1972	Installation of cable TV wiring crossing Memorial Bridge
1975	Replacement of operating machinery Extension of control house/machinery house Replacement of electrical systems
1981	Replacement of traffic barriers, advanced warning gates, and traffic signals Replacement of bridge rail and sidewalk timbers New gate tenders' booths and new utility sheds Truss repairs (verticals, lower chord, upper chord, gusset plate connections) Lift span floorbeam, lift span stringer, and deck repairs Miscellaneous steel repairs and expansion joint replacement Tower counterweight guide replacement and tower repairs Counterweight and lift span guide casting replacement Replacement of timber platform at top of tower and all operating ropes Replacement of bearings, Piers 1 and 4 Repairs to pedestals at Piers 2 and 3 and concrete repairs to Pier 1 Fender system repairs Rebalancing of counterweight and replacement of counterweigh sheave trunnion bearin New lift span ladders for access to top of tower Control and machinery house improvements and electrical work
1999	New vertical barrier gate and new sidewalk gate Security camera installation and public address system and electrical wiring
2004	Stringer and lower chord gusset plate repairs
2008	Scheduled counterweight rope replacement (3 ropes)
2009	Gusset plate emergency repair
2010	Emergency repairs in December (gusset plates)

The project also proposes to address other deficiencies by achieving the following:

- Relocate the operator's control house so that it no longer poses logistical safety concerns and allows access to facilities such as running water and sanitary facilities.
- Provide a better surface for bicycles to allow the safe interaction of bicycles and motor vehicles on the roadway surface.
- Address deteriorated bridge fendering and wooden fender boards.
- Eliminate the present impediments to vehicular and safe pedestrian access caused by the multiple Scott Avenue Bridge piers and address the steel grating on the overhead sidewalks to allow safe bicycle access.

PROPOSED ACTION

The NHDOT, in cooperation with the FHWA and MaineDOT, proposes to replace the Memorial Bridge (US Route 1) facility over the Piscataqua River, including its components: the Memorial Bridge lift span / flanking spans, the Kittery Approach Spans, and the Scott Avenue Bridge (Portsmouth approach). US Route 1 is a principal urban arterial, connecting Portsmouth's business district in New Hampshire with Badger's Island in the Town of Kittery, Maine.

Design and construction of this project would follow a Design-Build process. Design-Build (DB) is a method of project delivery in which the design and construction phases of a project are combined into one contract. This can provide substantial time savings compared with the more traditional Design-Bid-Build approach, where the design and construction services must be undertaken in sequence. The DB process for this project would follow the completion of this evaluation.

Memorial Bridge Replacement (Lift Span and Flanking Spans)

The existing Memorial Bridge has three 300-ft spans that would be replaced with three 300-ft spans. The two existing concrete piers in the middle of the Piscataqua River would remain, with repairs made to their concrete surfaces and the potential replacement of the fendering system. While the replacement design would be determined during the DB process, the replacement bridge would be a three span bridge with a moveable center span that would accommodate at least as much horizontal and vertical clearances as the existing lift span. The roadway width would be increased from the existing 28 feet to 32 feet to accommodate one 11-foot travel lane and a 5-foot shoulder/bike lane in each direction. The roadway would have a solid surface as opposed to the open grate that currently exists on the lift span. Sidewalks would be provided on both sides of the bridge and would be 6 feet in width for the entire length of the bridge and would have a solid surface. The horizontal and vertical clearance for each of the three spans would not substantially change.

The existing south pier that is shared with the Scott Avenue Bridge in Portsmouth would be replaced. The existing north pier that is shared with the Kittery Approach Spans would also be replaced. These two piers would be completely removed and the new piers would likely be

located in the same location, however, they would be wider to accommodate the wider Memorial Bridge.

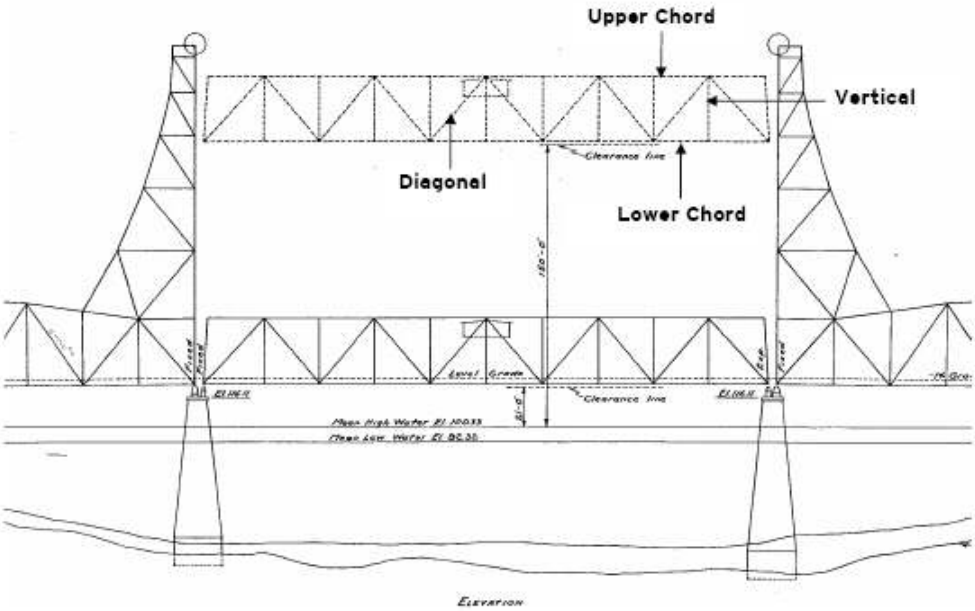


Figure 13 - Elevation View of Existing Memorial Bridge Lift Span

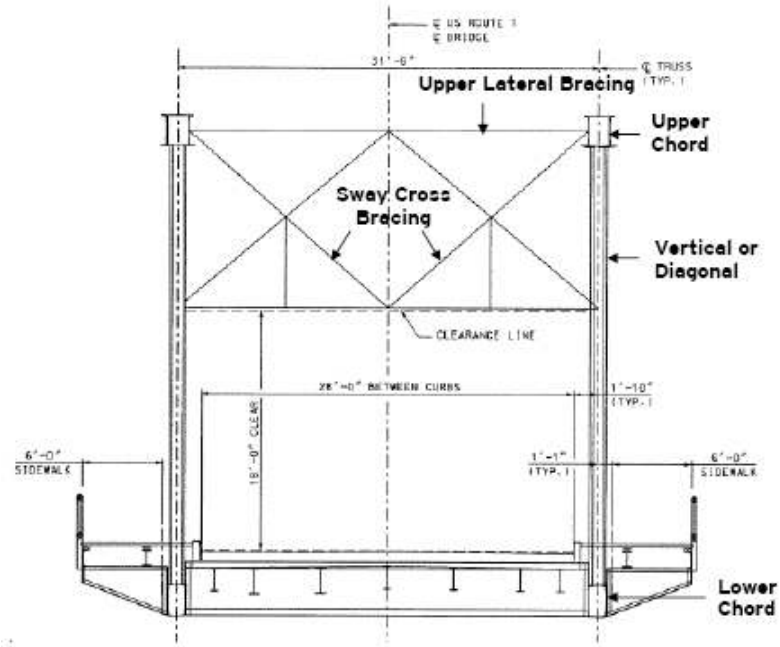


Figure 14- Cross-section View of Existing Memorial Bridge Lift Span

Scott Avenue Bridge Replacement

The project includes complete replacement of the existing five-span Scott Avenue Bridge (Bridge No. 246/083), the southern approach component of the Memorial Bridge facility, with a two-span structure. The existing bridge is 120 feet in length and is curved. The roadway on the bridge would vary in width from 32 feet curb to curb (two 11-foot travel lanes and 5-foot shoulder/bike lanes) at the north end to 47 feet at the south end, where the road approaches and diverges at Memorial Park. The road continues on either side of the park as Scott Avenue (US Route 1 southbound) and Dutton Avenue (US Route 1 northbound). The width of the sidewalks on either side of the overpassing Memorial Bridge approaches would remain at 6 feet, and the steel grating would be replaced with solid decking. The underpassing roadway would incorporate two 12-foot travel lanes with two 4-foot shoulders. The vertical clearance would remain the same or would be slightly increased over the existing (12'-2") clearance.

The existing south pier of the Memorial Bridge is shared with the Scott Avenue Bridge and would be replaced as discussed above. All of the other foundations for the existing Scott Avenue Bridge (south abutment and five piers) would be partially removed as necessary to construct the proposed Scott Avenue Bridge. This partial removal shall consist of removing the respective abutment and pier stems to a few feet below the ground surface. To minimize excavations, existing footings and/or piles would only be removed when in direct conflict with a proposed footing or pile element.

This design would result in fewer piers under the bridge, with the five sets of existing bridge piers replaced by one bridge pier (Figure 15). This would also increase the horizontal clearances under the bridge and would remove bridge piers from the middle of the roadway and from the roadside clear zone. The new configuration would provide fewer impediments to drivers and would create a more open environment along the waterfront area for pedestrians. This configuration would also allow incorporation of two 4-foot shoulders and a sidewalk along the north side of Daniel/State Streets under the bridge. Fewer bridge piers would also decrease the construction duration and cost.

Figure 15- Comparison of Existing (left) and Proposed Scott Avenue Bridge (right)

The area under the Scott Avenue Bridge is currently used for parking by the bridge operator and gatetenders, and this parking would be reconfigured. The proposed design includes the addition of an emergency generator under the Scott Avenue Bridge, adjacent to the Memorial Bridge abutment, which would be used in the event of a power failure on the Memorial Bridge. This generator would be housed in an enclosure to reduce noise.

Kittery Approach Span Replacement

The proposed project includes the complete replacement of the historic Kittery Approach Spans, the northern approach component of the Memorial Bridge facility. While the replacement structure type would be determined during the DB process, the replacement bridge would likely be a multi-span structure, but with fewer than the existing ten spans because of design and maintenance considerations. The existing piers would be removed to several feet below the river substrate or to bedrock. The existing north pier of the Memorial Bridge is shared with the Kittery Approach Spans and would be replaced as discussed above. The north abutment would also be replaced near its existing location and would be 4 feet wider to accommodate a wider bridge. The roadway width would be increased from the existing 28 feet to 32 feet to accommodate one 11-foot travel lane and 5-foot shoulder/bike lane in each direction. Solid surface sidewalks would be provided on both sides of the bridge and would be 6 feet in width.

Construction Phasing

The construction of the project would involve the following:

- A complete roadway closure of the Memorial Bridge facility/US Route 1 of up to eighteen months to allow the Memorial Bridge, the Scott Avenue Bridge, and the Kittery Approach Spans to be replaced. The section of US Route 1 affected would extend from the south end of Memorial Park in Portsmouth and to the south end of US Route 1 on Badger's Island in Kittery.
- It is anticipated that two navigational closures of three to five days duration each may be required for the float in and float out of the lift span.
- Daniel Street under the Scott Avenue Bridge would be completely closed to through traffic during the construction of the Scott Avenue Bridge. Access to Prescott Park and private properties would be maintained at all times.

The alternative routes would involve use of I-95 and the US Route 1 Bypass (Sarah Mildred Long Bridge), but traffic would be directed to I-95 as the major detour route. During the up to eighteen month bridge closure, construction signing would be placed to advise motorists of the changed conditions. There would be detour signs placed directing those wanting to cross the river to use I-95. These signs would also explain that access has been maintained to downtown Portsmouth or Kittery. Existing traffic signal timing may need to be adjusted to accommodate the increased traffic along detour routes. The detour routes using the US Route 1 Bypass (Sarah Long Bridge) would add at least three miles to the trip of a car traveling from downtown Portsmouth to Badgers Island or the reverse. This trip could be longer for large trucks, because they may not be able to maneuver some of the turns. These trucks would need to use arterial

roads, and this could mean a total increase of about 6 miles to their trip. Large trucks, over 3 tons, are currently prohibited from using the Memorial Bridge facility.

With the exception of the lift span replacement, construction activities would occur from 7 a.m. to 7 p.m. Construction for the lift span replacement would occur 24 hours a day to minimize navigational outages. The total construction duration is anticipated to be approximately 24 months.

Cost and Schedule

The proposed action for the Memorial Bridge facility has an estimated design and construction cost of approximately $90 million. The DB team is expected to begin design of the replacement structures by the end of 2011. Construction activities would likely begin in 2012 with the details to be determined by the DB team. There would be a period of time before the actual bridge closure for the DB team to design, order, and have manufactured the mechanical and electrical components required for the lift span. It is also anticipated that major structural components of the Memorial Bridge, including the lift span, would be constructed off site and floated into place after the existing structure is removed.

ALTERNATIVES TO THE PROPOSED ACTION

Alternatives for the Memorial Bridge facility, including the Memorial Bridge lift span / flanking spans, the Scott Avenue Bridge, and the Kittery Approach Spans, were considered during project planning and design, as described in the following sections. As described earlier in this document (Project History), the project underwent an iterative process during the Connections Study in 2008-2010 to develop and screen a wide range of conceptual alternatives for both the Memorial Bridge and the Sarah Mildred Long Bridge. The conceptual study alternatives ranged from limited bridge rehabilitation of the Memorial Bridge to full bridge replacement in the same or different locations, and considered alternative designs (such as a clear span). Each alternative was comprised of an option for the Memorial Bridge and an option for the Sarah Mildred Long Bridge. Sixty-three such alternatives were developed, and evaluated with a fatal flaw analysis that compared each alternative on basic merits including satisfying the Purpose and Need, constructability, financial feasibility, permittability and degree of environmental impact.

Initially, a multi-round fatal flaw analysis was conducted for the Connections Study to evaluate and identify alternatives that were unreasonable and should not be considered further. Following this analysis, evaluation criteria were established based on the Purpose and Need of the Connections Study to evaluate those alternatives that remained. The stated purpose of the Connections Study was:

> "…to identify and evaluate feasible long-term (2035) transportation strategies that facilitate the safe, secure and effective multi-modal movement of people and goods across and upon the Piscataqua River between Kittery, Maine and Portsmouth, New Hampshire and which support the region's economic, cultural,

historic, archeological and natural resources objectives and its community quality of life."

Memorial Bridge Facility Options – Connections Study

This section describes the options developed during the Connections Study for the Memorial Bridge facility that were rejected and why. A detailed list of anticipated impacts can be found in the Final Fatal Flaw Report for the Connections Study. (Note that some of the Connections Study options encompassed the Kittery Approach Spans and the Scott Avenue Bridge, which are discussed separately in this document.)

No-Build

The No-Build option assumed that the Memorial Bridge would have become unavailable for use due to structural issues, and would have been closed within one to three years. This option was carried forward for detailed evaluation and is described below.

Memorial Bridge Option 1 (MB1)

This option would have rehabilitated the existing bridge on existing alignment, including replacing the lift span, with existing clearances and reuse of the existing abutments and piers. This option met the Purpose and Need of the Connections Study at the time that the Fatal Flaw analysis was conducted, and was carried forward for further evaluation. This is the rehabilitation alternative that is described in more detail below.

Memorial Bridge Option 2 (MB2)

This option would replace the superstructure of the existing bridge, including the lift span, with similar navigational clearances and reuse of the existing abutments and piers. This option met the Purpose and Need of the Connections Study, and was carried forward for further evaluation. This option became ultimately the Proposed Action of this Categorical Exclusion.

Memorial Bridge Option 2A (MB2A)

This option would replace Memorial Bridge with a new vertical lift bridge on a new alignment either immediately upstream or downstream of the existing bridge. The vertical and horizontal clearances of the lift span would be similar to the existing. This option was eliminated because a bridge on a new alignment would have much greater property impacts, right-of-way acquisition costs, and impacts to historic resources than one on the existing alignment.

Memorial Bridge Option 3 (MB3)

This option would replace Memorial Bridge with a new vertical lift bridge on the existing alignment. However, the vertical clearance of the bridge when lowered would be increased from 21 feet to 70 feet to reduce the number of lifts by 50%. This option was eliminated because a higher profile would have much greater property impacts, right-of-way acquisition costs, and impacts to historic resources than one with the existing vertical clearance.

Memorial Bridge Option 3A (MB3A)

This option would replace Memorial Bridge with a new vertical lift bridge on a new alignment either immediately upstream or downstream of the existing bridge. The vertical clearance of the bridge when lowered would be increased from 21 feet to 70 feet to reduce the number of

lifts by 50%. This option was eliminated because a raised bridge on a new alignment would have much greater property impacts, right-of-way acquisition costs, and impacts to historic resources than one on the existing alignment.

Memorial Bridge Option 4 (MB4)

This option would replace Memorial Bridge with a new high-level fixed span on the existing alignment. The vertical clearance would be 150 feet, which equals the current clearance of the bridge when raised. This option was eliminated because of the extreme impacts to property and historic resources in both Portsmouth and Kittery. Impacts would extend for several blocks into downtown Portsmouth.

Memorial Bridge Option 5 (MB5)

This option would close and remove the existing Memorial Bridge. This option was eliminated because it would close the only means for pedestrians and bicyclists to cross the Piscataqua River, and so did not meet the Connections Study Purpose and Need. Furthermore, there was no public support for an option that did not maintain vehicular traffic on US Route 1. It would also require replacement of the Sarah Mildred Long Bridge with a bridge of sufficient capacity to handle the increase in vehicular traffic. The option is substantively the same as the No-Build alternative discussed below, because under the No-Build, the bridge would eventually have to be removed because of safety considerations. Therefore Option 5 does not meet the Purpose and Need.

Memorial Bridge Option 6 (MB6)

This option would replace Memorial Bridge on the existing alignment with a pedestrian and bicycle only lift bridge. It would maintain the existing vertical and horizontal clearances for navigational purposes. This option was eliminated because it did not meet several of the study goals such as maintaining or improving access to the downtown Portsmouth and Kittery areas, maintaining access to the Portsmouth Naval Shipyard, and improving emergency evacuation across the Piscataqua River. Furthermore, this option has no funding source from NHDOT and there was no public support for an option that did not maintain vehicular traffic on US Route 1. This option does not meet the Purpose and Need.

Memorial Bridge Option 7 (MB7)

This option would close and remove the existing Memorial Bridge, but would accommodate bicycle and pedestrian crossings by providing a zero-fare transit service between downtown Portsmouth and Kittery via the Sarah Mildred Long Bridge. This option was carried forward from the fatal Flaw analysis, but was ultimately eliminated because it did not meet several goals, such as maintaining or improving access to the downtown Portsmouth and Kittery areas, maintaining access to the Portsmouth Naval Shipyard, and improving emergency evacuation across the Piscataqua River.

Memorial Bridge Lift Span / Flanking Spans Options Carried Forward

This section describes the options developed for Memorial Bridge that were carried forward for further consideration in the Connections Study, in addition to the Proposed Action described earlier. The following options are evaluated in terms of their ability to meet the stated Purpose and Need of the Memorial Bridge Replacement Project, provided earlier in this document.

Memorial Bridge Lift Spans / Flanking Spans – No Build

Under the No Build alternative, structural deterioration of the Memorial Bridge lift spans / flanking spans would continue, posing a safety hazard and requiring more frequent closures for emergency repairs or mechanical failures. Continued structural deterioration would eventually affect the load ratings for the bridge, which already prevent or impede some emergency responders from using it. The bridge is the most direct route between Kittery and downtown Portsmouth. The current 3-ton weight restriction prohibits access to the bridge by larger emergency vehicles and larger trucks. Kittery, the Portsmouth Naval Shipyard, the City of Portsmouth, and other surrounding communities (including Newington and Rye) have cooperative emergency response agreements, and the preferred route of first responders between downtown Portsmouth and Kittery is the Memorial Bridge. Over time, if no repairs were performed, the bridge would be permanently closed to vehicular traffic and may not be operational to accommodate navigation on the Piscataqua River. Because of the safety hazard imposed by the structure if it were left in place, it would eventually have to be removed.

Failure of the mechanical components of the bridge would result in the bridge being stuck in either the open or closed position, which could represent a substantial disruption to roadway and/or navigational traffic in the region. Failure in the closed position could impact critical wintertime fuel deliveries for the New England region, shipments to upstream industrial users, and commercial fisheries. During the summer, the channel is also heavily used for recreation and tourism charters. Failure of the bridge in the open position would disrupt the flow of traffic to and from the Portsmouth downtown area that adjoins the bridge site. The bridge is heavily used by local vehicular traffic making trips between Portsmouth, Badger's Island, and Kittery, including commuters to the Portsmouth Naval Shipyard. The bridge is an important corridor for pedestrians and cyclists and represents the only crossing of the Piscataqua River in this region for these users.

The capital cost to remove the Memorial Bridge is expected to be $9.3 million. The 100-year life cycle cost of this alternative is expected to be negligible since the bridge would be removed. This alternative does not meet the Purpose and Need of this project, and was therefore not selected.

Memorial Bridge Lift Spans / Flanking Spans –Rehabilitation

This option would have rehabilitated the existing Memorial Bridge lift spans / flanking spans while maintaining the existing vertical and horizontal clearances. At the time that the Connections Study was underway, the rehabilitation of the Memorial Bridge was believed to be a viable option. However, subsequent to the completion of the Final Fatal Flaw Report, a detailed inspection report of the Memorial Bridge provided the basis for NHDOT's and MaineDOT's determination that rehabilitation was not reasonable and viable due to its poor structural condition. Specifically:

- The bottom truss chords, gusset plates, and roadway deck would continue their accelerated deterioration due to their location under the road and walkway, where they are subject to application of de-icing agents.
- Rehabilitation of the existing structure would still have miles of seams between the plates

and angles, and the 240,000 rivets would continue to provide avenues for ongoing deterioration.

- The exact level of deterioration that has occurred is impossible to ascertain, and therefore the true cost of rehabilitation would be difficult to pinpoint. This level of uncertainty could result in higher contractor bids or costly change orders during the rehabilitation.
- The bottom chords would probably all need to be replaced. If the rehabilitation were performed in place, the truss would need to be temporarily supported to bring the chord to a "no-load" condition, which would require an extensive temporary support structure.
- There are structural issues with loading previously unloaded members (the bottom chords) when temporary supports are removed.

The current condition of the Memorial Bridge would likely require that it be moved off-site in order to replace or rehabilitate its steel members. Each of the three 300-foot sections of the bridge would be floated out on barges and taken to a site where each section would be dismantled, the members repaired or replaced, and reassembled. It is not clear if this option is reasonable from an engineering standpoint, without encountering substantial issues with ensuring that the structure does not collapse or become damaged in the process. Bridge members that are excessively corroded would be replaced with new members. Until the bridge is disassembled and cleaned, it is unknown how many members would need to be replaced, but would likely fall within the range of 50% to 70% (which includes 100% of the lift span). The rehabilitated 300-foot sections would then be floated back into place. The Memorial Bridge would be closed for at least one year during construction.

The capital cost to rehabilitate Memorial Bridge in this manner is estimated between $125 and $140 million. The 100-year life cycle costs of rehabilitation are anticipated to be $510 million. The life cycle costs are due to the riveted gusset plates to connect members, which have proven susceptible to pack rust and prone to deterioration. In addition, major rehabilitation projects would be required every 25 years, due to the continued deterioration of the gusseted connections.

Based on this inspection report, MaineDOT and NH DOT recommended that all alternatives involving the rehabilitation of the Memorial Bridge be dismissed from further analysis in the Connections Study, subject to review and approval of all documentation. The conclusion of the Connections Study was that the Memorial Bridge Replacement Option alone would be carried forward to further environmental permitting, conceptual design, estimated cost refinement, funding feasibility, and project delivery.

The rehabilitation does not meet the Purpose and Need of this Environmental Study and was therefore not selected.

Scott Avenue Bridge (Portsmouth Approach) Options

During the Memorial Bridge Rehabilitation Project, prior to the Connections Study, five build alternatives were developed and screened for the historic Scott Avenue Bridge component of the Memorial Bridge Replacement Project. Four of these alternatives, plus the No-Build alternative, were eliminated from further consideration for the reasons described below.

Scott Avenue Bridge – No Build

Structural inspections of the Scott Avenue Bridge identified the deteriorated condition of the bridge and active deterioration of the concrete. The No-Build alternative would render the bridge unsafe for vehicular travel. The structure would eventually become a safety hazard and have to be removed. As such, this alternative did not meet the Purpose and Need of this project, and was therefore not selected.

Scott Avenue Bridge – Rehabilitation of the Existing Bridge

The Rehabilitation alternative would provide substantial repairs to, and replacement of, members of the existing structure. However, this alternative was not considered practicable due to the deteriorated state of the existing bridge. As such, this alternative did not meet the Purpose and Need, and was therefore not selected.

Scott Avenue Bridge – Three-Span Steel Beams with Cast-in-Place Concrete Deck

This alternative would construct two piers under the Scott Avenue Bridge, or one more pier than the proposed action. This alternative is estimated to cost approximately $50,000 less than the two-span alternative (proposed action). This alternative would slightly increase the vertical clearance of the bridge by 3 inches to 12’5”, but would place a pier in the 7-foot clear zone for the roadway. This pier would present a hazard to drivers and would also prevent installation of a sidewalk along the eastbound roadway. For these reasons, this alternative did not meet the Purpose and Need, and was therefore not selected.

Scott Avenue Bridge – Four-Span Cast-in-Place Rigid Frame

This alternative would involve the greatest vertical clearance, at 13’2”, but would increase the impediments to vehicular and pedestrian traffic under the bridge. This alternative would construct three piers under the Scott Avenue Bridge, which would include a pier dividing the two travel lanes and a pier within the 7-foot clear zone. This alternative would result in the greatest number of piers under the bridge, which would prevent sidewalk installation. This alternative is also the most costly, at approximately $350,000 more than the proposed action. For these reasons, this alternative did not meet the Purpose and Need, and was therefore not selected.

Scott Avenue Bridge – Three-Span Cast-in-Place Rigid Frame

This alternative would slightly increase the bridge vertical clearance by 4 inches to 12’6”. This alternative would construct two piers under the Scott Avenue Bridge, or an additional pier within the 7-foot clear zone that would also prevent sidewalk installation along the eastbound roadway. This alternative was estimated to cost approximately $250,000 more than the proposed action. For these reasons, this alternative did not meet the Purpose and Need and was therefore not selected.

Kittery Approach Spans Options

Only two alternatives for the historic Kittery Approach Spans component of the Memorial Bridge replacement were considered during the conceptual design phase, as described in the following section. Discussion of these alternatives is somewhat limited as consensus was reached quickly on the practicability of the proposed treatment of the Kittery Approach Spans. All alternatives would involve removal of substantial portions of the original structure.

Kittery Approach Spans – No-Build

The No-Build alternative would consist of patching the Kittery Approach Spans decks and repairing the bridge piers. This was the proposed action under the Memorial Bridge Rehabilitation Project. However, in light of inspection information (see below), it is apparent that if the Kittery Approach Spans were not replaced, the bridge would become unsafe for vehicular travel. Because the bridge would eventually need to be removed due to safety concerns, the no-build would not meet the Purpose and Need of the project, and was therefore not selected.

Kittery Approach Spans – Rehabilitation of the Existing Spans

Recent inspections of the Kittery Approach Spans revealed that deterioration had progressed further than had been previously understood when the spans were proposed to be rehabilitated. The floor beams, roadway stringers, and deck are all in poor condition. In order to meet the current American Association of State Highway and Transportation Officials (AASHTO) load rating criteria, extensive repairs and reinforcement would be needed. If the structures were rehabilitated, the bridge deck and railing would have to be replaced, and most of the stringers would have to be replaced. The rehabilitation would require that the superstructure be jacked up and temporarily supported, and other structural members would need to be cleaned, repaired, reinforced, and painted. For these reasons, rehabilitation of the Kittery Approach Spans was found to be not viable, would not meet the project Purpose and Need, and was therefore not selected.

EVALUATION OF ENVIRONMENTAL EFFECTS

The effects of the project relative to the following social, economic, natural and cultural resources/issues have been reviewed. Resources/issues that are not discussed in the body of the report were investigated, however, no impacts were evident, and as such, these resources/issues are omitted from the environmental documentation. The resources and issues deemed applicable for this project are indicated in **BOLD** type.

Resources / Issues

Social / Economic

Transportation Patterns
Safety
Community Services
Displacements
Neighborhoods
Navigation
Energy Needs
Recreation
Public Lands
Air Quality
Noise
Hazardous Materials/ Contaminated Materials
Land Acquisition
Land Use
Tax Base
Business Impacts
Farmlands
Environmental Justice
Utilities
Construction Impacts

Natural

Coastal Zone
Water Quality / Surface Water / Wetlands
Groundwater
Floodways / Floodplains
Wildlife Habitat / Fisheries
Endangered Species / Natural Communities
Essential Fish Habitat
NH Designated Rivers
Wild & Scenic Rivers
Stream Rechannelization
Forestlands

Cultural

Aesthetics
Historical
Archaeological
Stonewalls

Transportation Patterns / Safety / Community Services

The Memorial Bridge carried an annual average daily traffic volume of approximately 11,000 vehicles per day in 2009, with approximately 5% trucks. The project will improve the safety and reliability of the movable lift span on the Memorial Bridge, which will improve traffic operations and minimize disruptions and bridge closures due to emergency repairs that would continually be needed if deficiencies are not addressed.

The project would also increase the live load rating on the Memorial Bridge and will remove current weight restrictions for vehicles over three tons. This would enable larger emergency vehicles and larger trucks to utilize the bridge. The City of Portsmouth, Town of Kittery, and Portsmouth Naval Shipyard have cooperative emergency response agreements with each other and surrounding communities. Communities that rely on the bridge for mutual aid on the Maine side also include Elliot and York, and on the New Hampshire side include Newington, New Castle, Rye, and Greenland. Pease Fire and Rescue at the Pease International Tradeport also relies on the bridge as part of mutual aid agreements that it has with 32 communities in the Seacoast region and the Portsmouth Naval Shipyard. First responders to and from Kittery and downtown Portsmouth would use the Memorial Bridge as the most direct route across the Piscataqua River. The removal of the weight limits on the bridge would represent a major benefit for emergency services between Maine and New Hampshire.

The use of solid decking on the lift span would also permit bicyclists to safely ride on the roadway surface, alongside vehicles. Pedestrian safety will be improved by the addition of 6 foot wide solid-surface sidewalks on either side of the bridge.

The project would upgrade safety conditions for the bridge operator by relocating the control house from the lift span to the south tower. The addition of an emergency generator would also improve reliability of the lift span operation by providing a backup source of power in the event of a power outage.

There are no other long-term traffic impacts associated with the project, since the project would not change the roadway capacity or configuration of US Route 1 or the bridge approach roadways.

The new Scott Avenue Bridge would improve safety conditions under Scott Avenue for vehicles, bicycles, and pedestrians by removing four sets of piers that divide and closely border underpassing Daniel/State Street. The removal of the piers would allow vehicles to pass under the structure without having to weave between piers, and would improve safety and accessibility for pedestrians and bicycles by adding two 4-foot shoulders and a sidewalk.

There would be no changes to the permanent road system in Portsmouth, although the municipal parking lot would be modified. Currently, access into the parking lot is provided on the west side from Scott Avenue and Daniel Street, and access out of the lot is on the east side onto Dutton Street and State Street. The City of Portsmouth would like to close off the access onto Dutton Avenue/State Street and provide access into and out of the parking lot from Scott Avenue/Daniel Street.

The construction of the project would entail a complete bridge and roadway closure and traffic detours over an approximately 18-month period. During this period, the Memorial Bridge (US Route 1) between the Portsmouth waterfront and Badger's Island would be completely closed to vehicular traffic. The approximately 11,000 vehicles per day that use the Memorial Bridge to cross the Piscataqua River would have to use the US Route 1 Bypass (Sarah Long Bridge) or Interstate 95 (Piscataqua River Bridge). Pressures of increased volumes of traffic on the Sarah Long Bridge (US Route 1 Bypass) are a substantial concern, because it is also a lift bridge. There is also the potential for increased traffic on the temporary Connector Road that connects the Route 1 Bypass to Market Street. Therefore, during the closure of the Memorial Bridge, traffic would be directed with signage to the I-95 Piscataqua River Bridge. I-95 has greater capacity and is better suited to accept the additional traffic. However, surveys conducted for this project indicate that more local motorists would choose to use the US Route 1 Bypass (Sarah Long Bridge) in spite of the possibility of closure during lifting operations (Exhibit B).

During those times when the bridge is closed to pedestrians and bicyclists, a shuttle service would be employed to transport them across the river.

The local streets in downtown Portsmouth and Kittery would remain open during construction. Traffic on Daniel and State Streets would experience some delay during the demolition and reconstruction of the Scott Avenue Bridge. The portion of Daniel Street under the Scott Avenue Bridge would be completely closed to traffic during construction of the Scott Avenue Bridge. The existing turn-around between Dutton Avenue and Scott Avenue on Wright Avenue would remain open, as will the access to the municipal parking along Wright Avenue.

Northbound traffic on State Street would not be allowed to pass under the Scott Avenue bridge. Access to Prescott Park and the Pier II condominium development would be maintained, however, traffic would have to exit onto southbound State Street and then use Marcy and Court Streets. Access to Harbour Place would not be available from State Street under the bridge. This traffic would pass through the municipal parking lot on Wright Avenue and then make a right turn onto Daniel Street on the west side of the bridge. Traffic exiting Harbour Place would also use Daniel Street southbound.

Access to all properties would be maintained during construction. Although there would be a short-term loss of existing parking spaces to accommodate construction activities under and around the Scott Avenue Bridge, this loss of parking would be temporary. This construction is anticipated to affect the six municipal spaces along the waterfront, four spaces that adjoin the south side of Memorial Park, and the aisle parking at Memorial Park. In addition, the truck loading zone in front of Harbour Place would be temporarily affected.

Navigation

The Piscataqua River is an important commercial deepwater port for the Seacoast regions of New Hampshire and Maine. The Memorial Bridge is located within Portsmouth Harbor, which is the only harbor for deep-draft vessels between Portland, Maine and Gloucester, Massachusetts. The main navigational channel under the bridge can accommodate deep-draft vessels with up to

34 feet of draft depth. The combination of deep water and swift currents keeps the river ice-free in the winter, making this North America's closest ice-free port to Europe and the only deep water port in the State of New Hampshire.

Because of the strong tidal currents, there is a requirement that larger vessels moor or shift at the dock only at slack tides, and larger vessels (lengths over approximately 600 feet) accessing upstream industrial terminals must either retain the services of a mooring master or obtain U.S. Coast Guard permission. The shipping industry is located entirely in New Hampshire, and vessels that are moored either permanently or seasonally in New Hampshire tidal waters require a mooring permit from the New Hampshire Port Authority.

Shipping of lumber, mineral salt, gypsum, and other products is of major economic importance. Upstream users include several energy terminals, the New Hampshire Port Authority terminal area, and other major industrial users. Critical fuel deliveries occur primarily in the cold-weather or wintertime months. The river accommodates commercial fisheries originating from points upstream and recreational users originating from boatyards and marinas upstream of the bridge. There are a number of charters and ferries for tourists that operate primarily during the warm-weather season extending from about March to November.

A navigational survey was sent in November 2005 to commercial operators, tug boat pilots, marinas, boatyards, and a recreational boat hauler asking them to identify potential navigational requirements pertinent to them (Exhibit B). The U.S. Coast Guard and local harbormasters, and the New Hampshire Port Authority were also consulted. The majority of the users surveyed reported minimal impacts from previous bridge closures and indicated that short-term closures (of a few days) were generally acceptable.

The project would involve two navigational impacts of several days duration. It is anticipated that most of the bridge work would be conducted during the spring or summer months, which would avoid disruptions to critical wintertime fuel deliveries, but may overlap with the peak recreational navigational season. Navigational closures during construction would most likely be limited to two outages of three to five days duration each to accommodate the float-out and float-in of the lift span. The first outage is anticipated to be implemented in mid-February to early March, and the second outage is anticipated to be implemented five and a half months later (early August). Construction closures would impact vessels that cannot safely pass under the bridge in the closed position (normally 21 feet of vertical clearance over mean high water). At times, contractor scaffolding would need to be erected underneath the bridge, which would reduce the vertical clearance another 2 to 5 feet. Coordination would be performed with the U.S. Coast Guard to provide advanced notice to mariners of changes in operation of the Memorial Bridge throughout the construction period.

Energy Needs

As discussed above under Navigation, the Piscataqua River accommodates several large energy terminals located upstream of the bridge that rely on frequent shipments primarily over the wintertime months. According to responses from the navigational survey, four to six days was reported to be the maximum length of bridge outages that these users can accommodate. The

season for fuel deliveries was reported to extend from September to May. Upstream energy companies include Sprague Energy of New England, Public Service of New Hampshire, and Irving Oil Corporation. Construction affecting navigation will likely occur between mid-February and early March, and again in August. Because bridge outages are expected to be limited to three to five days at a time, no substantial impacts on the critical fuel deliveries should occur as a result of the project.

Recreation/Public Lands

The project would provide for better long-term accommodation of pedestrian and bicycle use on the Memorial Bridge and under the Scott Avenue Bridge, as discussed under Transportation Patterns / Safety / Community Services. The project would incorporate solid decking to accommodate cyclists on the roadway and would provide upgraded sidewalks and bridge railings on the Memorial Bridge. Under the new Scott Avenue Bridge, a new sidewalk and shoulders would be incorporated on Daniel / State Streets and the existing bridge piers near or in the roadway and along the waterfront would be eliminated. The open steel grating on sidewalks on top of the Scott Avenue Bridge would be replaced by solid surfaces. The drainage grates on the Memorial Bridge would be perpendicular to the direction of travel to safely accommodate bicycle access. Consideration would be given to incorporating signage to promote safe dual use of the US Route 1 Bridge by motor vehicles and bicycles. During construction, pedestrian and bicycle traffic on the Memorial Bridge would be disrupted over an approximately 18-month period, but a shuttle service would be operated to provide access across the river for pedestrians and cyclists. Maintenance of pedestrian and bicycle traffic during construction is addressed under Transportation Patterns / Safety / Community Services.

The project would involve construction in close proximity to the Harbour Place marina and would temporarily displace parking spaces along the waterfront in this area during construction. It is anticipated that several spaces along the waterfront and on the south side of Memorial Park would be affected by the construction activities. These spaces represent a very small proportion of parking in the downtown area and should not have a substantial impact on recreational access. Access to the sidewalk connecting to the marina would be maintained at all times.

The construction of the project would involve temporary impacts to Memorial Park, a city-owned park in Portsmouth. Memorial Park consists of two triangular grassed islands between the Memorial Bridge approach roadways and Wright Avenue that are bisected by a turnaround on the approach. The northern triangle includes a memorial plaque, and the southern triangle includes shrubbery, a flagpole, and a footpath (Figures 7, 9, and 16). The City of Portsmouth is considering plans to redesign the park to incorporate a memorial site for Dr. Martin Luther King, Jr., but no design plans have been developed for the park and memorial site. The reconstruction of the Scott Avenue Bridge would involve a direct temporary impact to the park.

The small size and location of this park within the midst of the US Route 1 approach roadways does not promote heavy use for recreation (Figure 16). The park has been determined to be eligible for the National Register of Historic Places and is considered to be a historic Section 4(f) property. (Section 4(f) properties are addressed in more detail in the *Section 4(f) Evaluation* for this project.) Memorial Park is not considered by the City of Portsmouth to be a significant

recreational resource, in the context of the city's recreational goals and objectives and given the park's setting (its proximity to nearby Prescott Park, a significant recreational resource) (see correspondence from the City of Portsmouth in Exhibit A). The memorial plaque in Memorial Park would be temporarily relocated during construction. The park would be restored to pre-construction conditions upon completion of construction. Coordination has been performed with the City of Portsmouth and cultural resource agencies regarding plans for the park, and this coordination would continue regarding plans for construction and restoration within the park and for the plaque.

Figure 16 - View of the northern triangle of Memorial Park, looking southwest

The New Hampshire Department of Resources and Economic Development (NHDRED) has indicated that the only property subject to protection under Section 6(f) of the U.S. Land and Water Conservation Act in the project vicinity is Prescott Park. Access to Prescott Park would be maintained during construction, and the project would not involve direct impacts to the park. Consultation with NHDRED has been performed regarding project plans, and NHDRED has confirmed that the project would not require a Section 6(f) use requiring special conditions. The NH Office of Energy and Planning, Conservation Land Stewardship (CLS) Program indicated that there are no CLS interests in the project area. Consultations with the Maine Department of Conservation also indicated that there are no Section 6(f) Land and Water Conservation Act issues associated with the project in Maine (Exhibit A).

The Connie Bean Community Center, an indoor municipal recreation facility, adjoins Wright Avenue and the municipal parking lot at the corner with Daniel Street (Figures 6 and 8). There would be no direct impacts to this recreational facility.

Air Quality

Pursuant to requirements established under the Clean Air Act Amendments of 1990, the project area within the State of New Hampshire is located within a moderate nonattainment area for ozone. In Maine, the project area was redesignated in December 2006 by the U.S. Environmental Protection Agency as a maintenance area for ozone. The project area is in attainment with respect to the National Ambient Air Quality Standards (NAAQS) for other criteria pollutants (carbon monoxide, nitrogen dioxides, volatile organic compounds, and particulate matter (PM10)). For those areas in non-attainment, transportation projects must demonstrate conformity with the State Implementation Plan for air quality. In Maine, the project is part of the Kittery Area Comprehensive Transportation Study (KACTS) Transportation Improvement Program (2008-2011) (June 20, 2007). In New Hampshire, the project was considered in the *FY 2007-2010 Conformity Determinations for Transportation Improvement Programs, Transportation Plans, and Regional Emissions Analysis of Transportation Projects in New Hampshire's Non-attainment Areas* (January 10, 2007). As a bridge rehabilitation project that does not involve capacity improvements, the project was determined to be exempt from conformity requirements. Though exempt from the requirements of the U.S. Clean Air Act, the National Environmental Policy Act (NEPA) also requires consideration of the project's impact on air quality.

The proposed action is to replace the Memorial Bridge (US Route 1) over the Piscataqua River, including its components: the Memorial Bridge lift span / flanking spans, the Kittery Approach Spans, and the Scott Avenue Bridge (Portsmouth approach). Following construction, this project will not result in any meaningful changes in traffic volumes, vehicle mix, location of the existing facility, or any other factor that will cause an increase in emissions impacts relative to pre-construction conditions (prior to vehicle weight restrictions). As such, FHWA has determined that this project will generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special Mobile Source Air Toxic (MSAT) concerns. Consequently, this project is exempt from analysis for MSATs.

Moreover, U.S. Environmental Protection Agency regulations for vehicle engines and fuels will cause overall MSATs to decline significantly over the next 20 years. FHWA predicts MSATs will decline in the range of 57 percent to 87 percent from 2000 to 2020, based on regulations now in effect, even with a projected 64 percent increase in vehicle miles traveled (VMT) nationally. This will both reduce the background level of MSATs as well as the possibility of even minor increases in MSAT emissions from this project.

In summary, the project will not involve increases in roadway capacity or substantial alterations to the existing roadway geometry. The project will not change traffic patterns or generate additional traffic that will result in changes in vehicular emissions after completion of construction. When completed, the project will not contribute to violations of the NAAQS and will not have any long-term substantial impacts on air quality.

During the construction period, complete closure of the roadway may divert traffic from the Memorial Bridge to the US Route 1 Bypass or I-95. This may result in localized reductions in

vehicular emissions over the short term in the more heavily populated areas of downtown Portsmouth and Kittery along US Route 1.

Noise

The project will replace the existing Memorial Bridge facility on the same alignment and configuration. The project does not include reconstruction or realignment of existing roadways that will result in permanent changes in traffic noise or increases in the ambient noise environment. Since the project will not involve new or expanded highway construction, it is not considered to be a Type I highway project, in accordance with FHWA Noise Regulations (23 CFR 772), and does not require a formal noise impact analysis. The project will not change the proximity of the roadways to adjoining sensitive receptors and will not alter traffic patterns. The project will remove the weight restriction on the bridge, so future truck traffic volumes will be more in line with previous volumes, which comprised approximately 5% of the total bridge traffic. The traffic noise expected following construction of the proposed action, therefore, is expected to be in line with previous traffic noise conditions.

The proposed construction will include an emergency generator to be installed under the Scott Avenue Bridge. Preventative maintenance will require that the generator be run for a half hour once per week. This generator will be housed in an enclosure to improve security and provide soundproofing, and test runs will be scheduled during daytime hours. With implementation of these measures, noise impacts to the adjoining Pier II development and Harbour Place are expected to be minimal.

In order to meet the project schedule, construction activities, with the exception of the lift span replacement, will be scheduled between 7 a.m. and 7 p.m. Monday through Saturday. These activities will be scheduled during daytime hours to minimize disturbance to adjoining residences. During the float-in and float-out for the Memorial Bridge lift span replacement, work will be scheduled to be performed around the clock to minimize navigational outages. Although construction activities will temporarily increase noise levels in the project area, it is fully expected to return to normal (pre-construction levels) after the project has been completed.

Hazardous Materials/Contaminated Materials

An initial site analysis was performed for the proposed action. This review included a database search of Federal, New Hampshire, and Maine databases using FirstSearch Technology software; a review of New Hampshire Department of Environmental Services (NHDES) files; and interviews with the Portsmouth and Kittery fire chiefs. The results of the environmental records review is attached as Exhibit C.

NHDES files indicate that the Harbour Place development, northwest of the Scott Avenue Bridge, was formerly the site of the Portsmouth Gas Works, which operated a manufactured gas plant. Investigations performed on the site revealed the presence of a layer of coal tar at depth beneath the Harbour Place property. Contaminated groundwater at the site is regulated by a NHDES Groundwater Management Permit, which encompasses only the Harbour Place

development property. The other site that may have the potential to influence the zone of construction is the former State Street Exxon, from which seven underground storage tanks were removed in 1986. The site was managed under a Groundwater Management Permit and the NHDES file was closed in 2009. Other sites in the vicinity, including the former Dow's Gulf Station on State Street, are considered to have little or no influence on conditions at the project site, due to their distance from the site.

The historic industrial uses in the vicinity of the site, its proximity to the former Portsmouth Gas Works plant, and the presence of other properties impacted primarily by releases of petroleum products in the site area indicate the potential for contamination of soil and groundwater at the project site. Therefore, further soil testing and groundwater sampling and analysis at the bridge site is underway to investigate contamination at the site.

Soil sampling was performed at six locations to investigate potential impacts by releases of petroleum, metals, or other hazardous materials. The results were compared with New Hampshire Soil Remediation Standards (Chapter Env-Or 600). Results from five of the six samples indicated that arsenic was the only parameter that was detected at concentrations equal to, or slightly greater than, New Hampshire Soil Remediation Standards. Additional testing of soils was performed, in consultation with NHDES, to determine if arsenic concentrations are consistent with background concentrations within soils in the area. Testing of groundwater was also performed to identify potential impacts by petroleum and hazardous materials, and implications for construction. The final environmental results report, included in Exhibit C, concluded that arsenic levels in soils and groundwater are consistent with background concentrations. NHDES, in correspondence dated April 3, 2008, concurred with this conclusion, but also requested additional groundwater sampling. Additional groundwater sampling will be performed, in consultation with NHDES.

Monitoring of site excavations for potential contamination at the Scott Avenue Bridge and the Kittery Approach Span piers would be performed during construction. A Soils and Materials Management Plan, to be implemented by the contractor, would be in place during construction to provide measures for appropriate management and disposal of materials encountered, including debris in fill and soils and groundwater impacted by residual contamination. If contaminated soil or groundwater were encountered, NHDES would be consulted, and contaminated materials would be disposed of in an appropriate manner in compliance with Federal and State regulations.

If contaminated groundwater is encountered and dewatering is required, provisions would be made to comply with applicable Federal and State standards. It is anticipated that these discharges would be treated to comply with applicable standards for discharge to the sanitary sewer system or applicable Federal and State standards for discharges to surface waters. If treatment to comply with these requirements is not possible, the discharges would be contained and transported off site (see additional discussion under "Wetlands/Water Quality/Surface Waters.")

Land Acquisition / Land Use / Tax Base / Business Impacts

The project would not involve any permanent land acquisitions or right-of-way acquisitions or easements. Therefore, there will be no long-term impacts on the local tax base. As discussed under *Recreation/Public Lands*, no permanent impacts on public parks or property would occur as a result of the project.

The project would require construction under the Scott Avenue Bridge in Portsmouth for a period of approximately 18 months. (Parking and transportation effects are discussed under *Transportation Patterns / Safety / Community Services*.) The construction site would adjoin the entrance to the Harbour Place public parking garage. Access to the garage and other adjoining properties would be maintained during construction.

The abandoned Pier II Restaurant is under construction for redevelopment as condominiums. The project, as designed, would be compatible with the proposed development, as it would not change the use or size of the existing bridge. Access to this property would be maintained during construction.

Removal of the weight restriction on the bridge would benefit local businesses that rely on commercial trucks delivering goods and services between downtown Portsmouth and Maine. The current three-ton weight restriction requires a more circuitous route for virtually all commercial vehicles.

The project adjoins the densely developed business district in Portsmouth and is an important link to businesses on Badger's Island and the Kittery mainland. The Memorial Bridge facility would be closed to motor vehicles for approximately 18 months for construction, which would have temporary impacts on downtown businesses in Portsmouth, Badger's Island, and Kittery. This would have an effect on interstate commuters, for instance Portsmouth residents who work at the Portsmouth Naval Shipyard in Kittery. These effects would be temporary and are not anticipated to extend beyond the duration of construction.

Local businesses in Kittery and Portsmouth were surveyed for the Memorial Bridge Rehabilitation Project to determine traffic maintenance plans during bridge construction and gauge likely business impacts (Exhibit B). Approximately 500 surveys were distributed to business owners and business property owners in Portsmouth and Kittery. Survey responses indicate a preference for a complete approximately five-month roadway closure to accommodate bridgework. This closure option was selected over the alternative of alternating one-way traffic for approximately six months following an approximately two-month complete bridge closure. Approximately 60% of respondents preferred the complete five-month roadway closure, with 40% preferring the alternating one-way traffic option. This reflects the preference of the majority of survey respondents for the shorter construction duration and less traffic congestion during construction. Subsequent to the business survey, the option of the shorter bridge closure became obsolete. The 18-month bridge closure is the shortest possible to accommodate dismantling of the existing bridges and construction of the replacement bridges.

Many survey respondents cited potential impacts to business from traffic detours and/or traffic congestion. However, traffic intercept surveys that were performed in August 2005 indicated that only 1% of drivers polled would cancel their trip if the bridge was closed (Exhibit B). Retail businesses and restaurants in Kittery/Badger's Island and Portsmouth businesses proximal to the bridge were more likely to report concerns regarding potential effects on business from traffic detours or traffic congestion. Business impacts from the roadway closure would be temporary, spanning approximately 18 months. For businesses proximal to bypass routes, there may be an increase in drive-by traffic and business during the roadway closure period. Historic buildings and structures that lie within the project area will also be monitored for vibration impacts throughout construction. There will also be a public outreach coordinator, who will work with local businesses to help address their concerns and help promote businesses in Portsmouth and Kittery during construction. (See Exhibit F, Section 106 Documentation, Memorandum of Agreement stipulations 10 and 13 for more information about these provisions.

Environmental Justice

Executive Order 12898 directs Federal agencies to avoid, minimize, or mitigate disproportionately high and adverse effects on minority and low-income populations. The census block groups adjoining the project site have a low percentage of minority populations. However, the Environmental Justice review for the proposed action shows that, based on 2000 Census data (most recent available), Portsmouth has a higher percentage of elderly and low-income populations than the statewide and countywide averages (Exhibit D). As such, additional outreach efforts would be made to incorporate input from these groups at all possible opportunities during the DB process. In Kittery, the proportion of low-income residents (3.85%) is lower than that for the state (10.92%) and county (8.15%) as a whole. The elderly population in Kittery is only slightly higher (15.3%) than the statewide (14.4%) and countywide average (13.64%). Therefore, the project would not have a disproportionate effect on minority or low-income populations and complies with Executive Order 12898.

Coastal Zone

The project is located within the coastal zones of Maine and New Hampshire. The Federal Coastal Zone Management Act requires Federal actions to be consistent with enforceable policies of coastal zone management programs enacted by the states. The enforceable policies of the Coastal Zone Management (CZM) Program in New Hampshire include protection of coastal resources, recreation and public access, managing coastal development, coastal dependent uses, preservation of historic and cultural resources, and marine and estuarine research and education. The enforceable policies in Maine consist of the suite of statutory requirements that have been enacted for environmental protection in Maine, including the Natural Resources Protection Act, Mandatory Shoreland Zoning Law, Site Location of Development Law, Erosion Control and Sedimentation Law, Storm Water Management Law, Land Use Regulation Law, and Maine Endangered Species Act. Given the minor level of impacts, this project appears to be consistent with the Maine and New Hampshire CZM plans.

Because the project as currently proposed would require a permit from the U.S. Coast Guard, a Coastal Zone Consistency Certificate is required. Applications would be prepared and submitted to the New Hampshire and Maine CZM programs during the design-build process.

Wetlands / Water Quality / Surface Waters

The project is located on the Piscataqua River, four miles upstream from the outlet into the ocean at Portsmouth Harbor and six miles downstream of Little Bay. The drainage area for the river encompasses 1,495 square miles and includes the Salmon Falls River (which forms the boundary between Maine and New Hampshire upstream of the project), the Kennebunk River, Hampton Harbor, Great Bay, Bellamy River, Cocheco River, Oyster River, and York River. The tidal range on the river varies from 6.4 feet upstream at Dover Point to 8.7 feet at Kittery Point north of Portsmouth Harbor. The Piscataqua River, an estuarine river, is the third fastest navigable river in the world, due to the presence of a large waterbody (Great Bay) upstream.

The lower Piscataqua River bottom is primarily a hard substrate, consisting largely of rock ledge, gravel, and cobble. Little sedimentation occurs due to the high tidal currents in the lower estuary. This river is approximately 1,200 feet across at the bridge site, where it is adjoined by the seawall in Portsmouth and rocky/riprapped shoreline in Maine.

The Piscataqua River within the project site in both New Hampshire and Maine is classified according to the *Classification of Wetlands and Deepwater Habitats of the United States* (U.S. Fish and Wildlife Service Manual FWS-OBS-79/31) as estuarine subtidal unconsolidated bottom (E1UBL). This waterway is classified as Class B in New Hampshire, suitable for fishing, swimming, and other recreational purposes. In Maine, the Piscataqua River is classified as SC, suitable for recreation in and on the water and fishing.

The wetland resources adjoining the river at the project site are defined by tidal range, in accordance with the definition of coastal wetlands in both New Hampshire and Maine. In New Hampshire, tidal jurisdiction includes all submerged lands, salt marsh, sand dunes, and tidal flats. New Hampshire also regulates an upland tidal buffer zone that extends 100 feet from the highest observable tideline. The Portsmouth waterfront at the project site is characterized by a seawall that defines the limit of the highest observable tideline (Figure 17). In Kittery, the shoreline includes riprapped embankment on the northeast side of the bridge and riprapped/rocky shoreline on the northwest side of the bridge (Figure 18).

Figure 17 - View looking southwest of Portsmouth seawall and waterfront, adjoining Memorial Bridge and Scott Avenue Bridge

Figure 18 - Views of Badger's Island, Kittery shoreline northwest and northeast of Memorial Bridge approach span, at low tide

The project would involve alteration of the bottom of the Piscataqua River for the removal and replacement of two piers of the Memorial Bridge, and the removal of nine piers for the Kittery Approach Spans, plus the Kittery bridge abutment on Badger's Island. The Kittery Approach Span piers would be replaced with one, two, or three piers, depending on the design chosen during the DB process. In addition, there would be repairs to the two center Memorial Bridge piers. A total of four dolphins would be installed in front of the two central Memorial Bridge piers, each of which would involve approximately 500 square feet of impact to the bed of the Piscataqua River.

In Portsmouth, the top of the seawall east of the bridge may be reinforced with riprap in the area of the proposed emergency generator. Efforts for replacement of the Scott Avenue Bridge would involve work extending within the 100-foot tidal buffer zone. This tidal buffer zone has been previously altered and includes paved roadways, parking, and the bridge abutment and piers.

Existing drainage patterns on the Memorial Bridge and Scott Avenue Bridge would largely be maintained. The proposed drainage design would improve stormwater treatment by installing a manufactured stormwater treatment unit on Daniel Street along the Portsmouth waterfront that would treat permanent roadway drainage prior to discharge into the Piscataqua River.

Implementation of this stormwater control would be in compliance with the National Pollutant Discharge Elimination System Permit (NPDES) Phase II Stormwater Program for Small Municipal Separate Storm Sewer Systems (MS4). Phase I of the MS4 Program, for which rulemaking was established in 1990, applied to operators of large MS4s (populations of 100,000 or greater). The Phase II rule, established in 1999 and implemented in 2003, extends the MS4 program requirements to "small MS4s," or urbanized areas that are defined by the U.S. Census Bureau and other U.S. EPA-designated areas. This Phase II program, which applies to the City of Portsmouth, requires operators to develop a Stormwater Management Program that uses Best Management Practices to reduce the discharge of pollutants to the maximum extent practicable.

Best management practices would be employed during construction to avoid impacts to the water quality of the Piscataqua River. Containment systems would be used on the Memorial Bridge during construction to prevent debris from entering the river and to avoid contamination of the river and air during blast cleaning and painting. A professionally prepared Stormwater Pollution Prevention Plan (SWPPP) would be prepared by the contractor prior to commencement of construction, specifying measures designed to protect the water quality of the Piscataqua River during construction.

The U.S. Army Corps of Engineers, Regulatory Division (New Hampshire Office), has indicated that the Piscataqua River is navigable, and bridges over navigable waters are under the jurisdiction of the U.S. Coast Guard (Exhibit A). A meeting with the U.S. Coast Guard Boston Office (USCG) was held on December 10, 2010. Because the project involves construction of a new bridge, it would require a Coast Guard bridge permit.

Because there are proposed impacts to tidal wetlands, the project requires a Major Impact wetland permit from the New Hampshire Department of Environmental Services (NHDES), and a Maine Natural Resources Protection Act Permit by Rule administered by the Maine Department of Environmental Protection. It is assumed that the work would be permitted under the State Programmatic General Permits from the U.S. Army Corps of Engineers in New Hampshire and Maine.

The project was reviewed at a Monthly Natural Resource Agency Meeting on October 20, 2010. The agencies represented, in addition to FHWA and NHDOT, included the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, NHDES, and the NH Coastal Program.

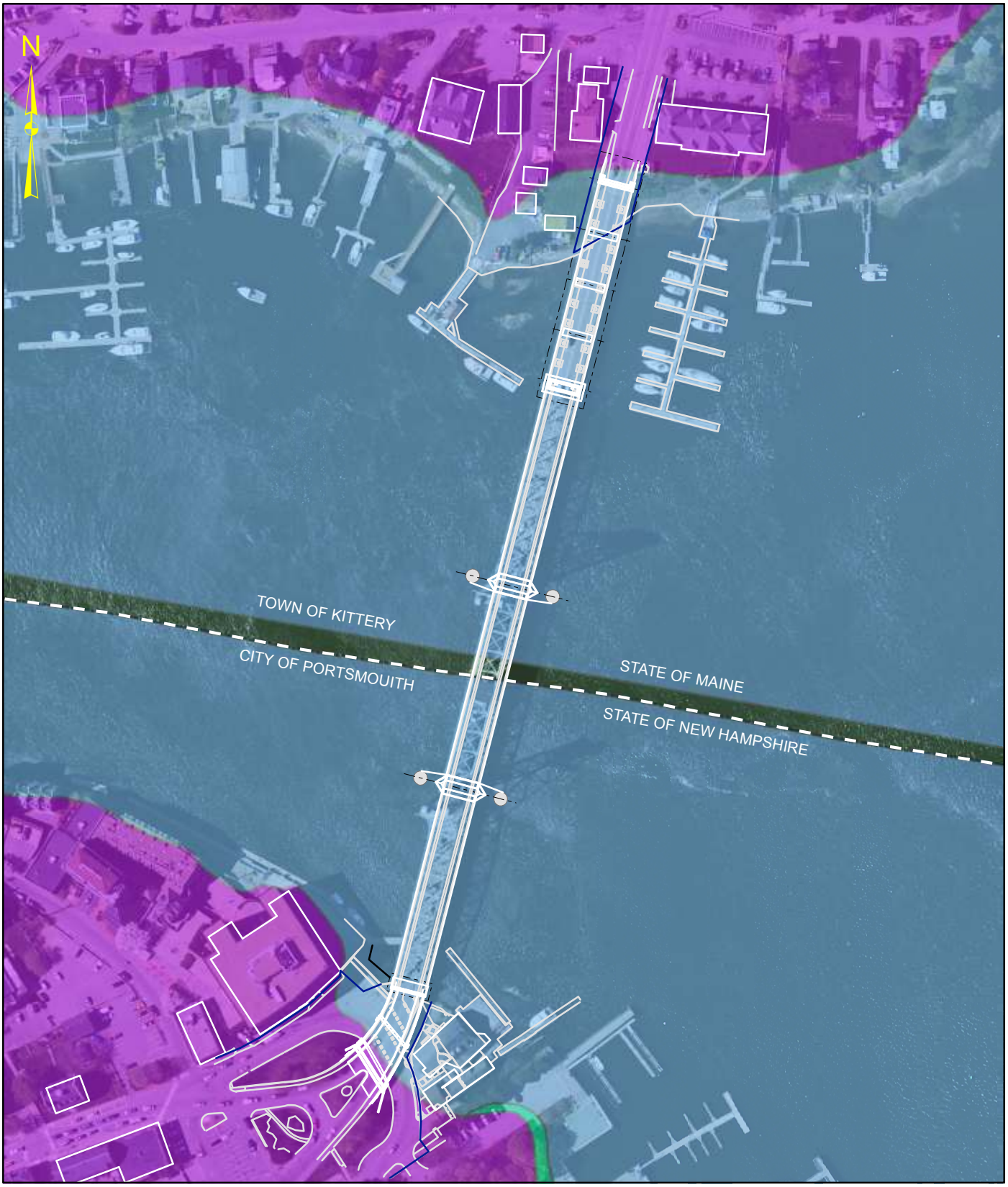
If dewatering were required during construction, provisions would be made for either discharge to the sanitary system or discharge to surface waters, provided that the water quality of the discharge complies with applicable provisions under the NPDES permit program. If applicable water quality standards for the discharge to comply with either the NPDES General Permit for Construction Dewatering Activity Discharges or the NPDES Remediation General Permit cannot be met through treatment, then the contractor would be required to direct discharges to holding tanks and transport them off-site.

Floodways and Floodplains

The 100-year flood elevation at the bridge site has been established within a Special Flood Hazard Area by the Federal Emergency Management Agency (FEMA) at 9 feet, as referenced to the National Geodetic Vertical Datum (NGVD) of 1929. The 100-year flood hazard area is shown extending landward to the northern edge of the Scott Avenue bridge abutment. According to the Portsmouth Department of Public Works, an instance of coastal flooding extending above the Portsmouth seawall has not occurred in recent history.

For the Scott Avenue Bridge replacement and abutment reconstruction, the contours of the existing surrounding areas would be maintained. The project would not change the elevations of land within the 100-year floodplain and would not involve placement of fill within the 100-year floodplain. Therefore, the project would not increase the elevation of the 100-year flood and would not affect the flood storage capacity of areas within the 100-year floodplain. Emergency management officials in New Hampshire and Maine were contacted on August 18, 2005, September 29, 2005, and March 11, 2011. The New Hampshire Office of Energy and Planning (NHOEP) responded that, although it appears that the proposed project is located within the special flood hazard area (Zone AE), it does not appear that the proposed project would impact the area. Other emergency management officials contacted did not comment on the project. In addition, NHOEP indicated that that if there is going to be a decrease in flood elevations after construction, then some coordination with FEMA may be necessary to change the maps.
The Flood Insurance Rate Map for Kittery identifies the Special Flood Hazard Area as Zone AE (Figure 19). The nine Kittery Approach span piers, (eighteen pier posts plus the shared Memorial Bridge abutment) would be removed and replaced with either one, two or three piers. It is assumed that the fewer piers would reduce obstructions in the waterway during flooding events and create a decrease in floodplain elevations. The installations of dolphins in the riverbed would constitute fill in the floodplain, however, it is assumed that the proposed Kittery Approach Spans piers and the dolphins would constitute a decrease in floodplain fill volume over the existing condition. Any additional necessary coordination regarding floodplain elevations would occur during the DB process.

In accordance with the National Flood Insurance Program (NFIP), all work should comply with the local floodplain ordinances in Kittery, ME and Portsmouth, NH.



Miles
0 0.025 0.05 0.1

Legend

FEMA FLOOD ZONE

- 0.2 PCT ANNUAL CHANCE FLOOD HAZARD
- AE - BASE FLOODPLAIN WHERE FLODDPLAIN ELEVATIONS ARE PROVIDED
- X - AREAS OF MODERATE FLOOD HAZARD BETWEEN THE 100 AND 500 YEAR FLOOD ZONES

New Hampshire DOT

U.S. Department of Transportation Federal Highway Administration

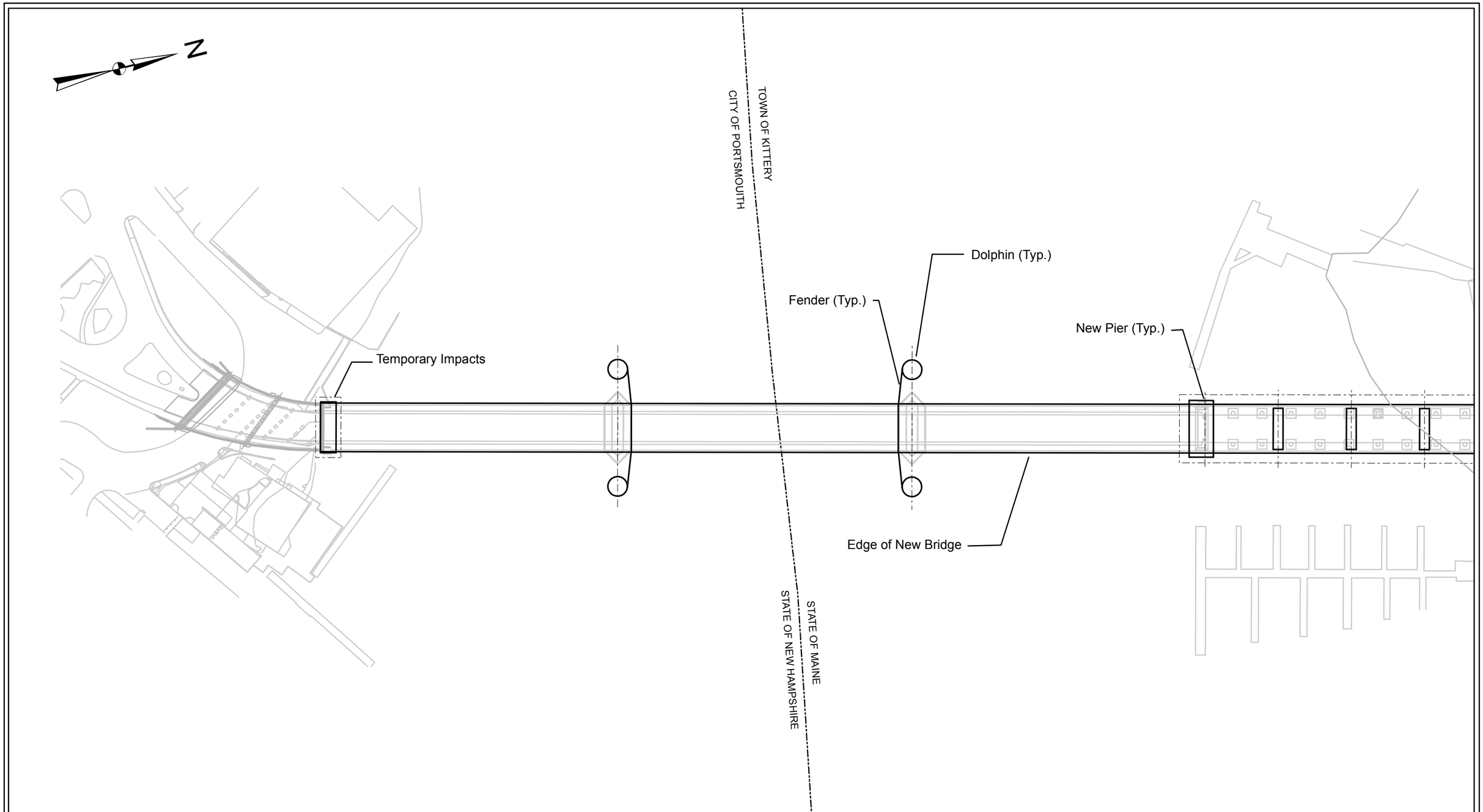
NEW HAMPSHIRE DOT
PORTSMOUTH, NH

MEMORIAL BRIDGE (U.S. ROUTE 1) REPLACEMENT

FEMA FLOOD ZONES

SCALE :	DATE :	FIGURE :
1:2,400	MARCH 2011	19

McFarland Johnson



0 100 200 400 Feet

Note:Proposed design and impacts are schematic only, and are provided for illustrating the scale of impacts that are expected to occur. More precise impact information will be available at later stages of the Design Build process.

NEW HAMPSHIRE DOT
PORTSMOUTH, NH

MEMORIAL BRIDGE (U.S. ROUTE 1) REPLACEMENT

PROPOSED RIVERBED IMPACTS SCHEMATIC

APPROXIMATE SCALE :	DATE :	FIGURE :
1:1,139	MARCH 2011	20

U.S. Department of Transportation Federal Highway Administration

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Path

Wildlife Habitat / Fisheries / Endangered Species / Natural Communities

The terrestrial wildlife habitat in the vicinity of the bridge site is constrained by the extent of urbanized development in downtown Portsmouth and on Badger's Island. Vegetation is restricted primarily to grassed or landscaped areas within parks or residential yards.

The Piscataqua River accommodates both resident and transient species that migrate to and from Great Bay. According to the New Hampshire Fish and Game Department (NHFG), resident species in this section of the river would generally be sessile invertebrates (that are attached to the river bottom), as river currents are high, and finfish, which are few and primarily seasonal. Literature on fisheries surveys and files at the NHFG were reviewed regarding commercial and recreational species that pass through the river as adults, juveniles, and larval stages. Studies performed for the upstream Newington Power Generation Station identified three indigenous anadromous species that migrate upriver to spawn: rainbow smelt, alewife, and blueback herring. Species that are important recreational fisheries in the Piscataqua River upstream of the project site include striped bass, eels, tomcod, shad, smelt, and flounder. Other species of finfish found in the upstream segments of the river include Atlantic silverside, mummichog and striped killifish, sticklebacks, Atlantic tomcod, and grubby. In a meeting on October 6, 2005, the NHFG indicated that they introduced Coho salmon and Atlantic salmon in the past, but these stocking programs have since been abandoned, since upstream dams impede fish passage. At present, no resident salmon populations were reported to naturally occur in the river.

Four commercially important species of shellfish that are commonly found in the Piscataqua River and upstream estuaries (Little Bay and Great Bay) are the lobster, rock crab, oyster, and the soft-shelled clam. However, the lower Piscataqua River has been closed to shellfishing, due to bacterial contamination and proximity to pollution sources.

Endangered Species

Section 7 of the Endangered Species Act, 16 U.S.C. Section 1536(a)(2), requires all federal agencies to consult with the US National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) for marine and anadromous species, or the United States Fish and Wildlife Services (FWS) for fresh-water and wildlife. FWS and the NOAA Protected Resources Division were consulted for this project. NOAA responded that Atlantic sturgeon, which is a candidate species, is known to be present, and that shortnose sturgeon, which is federally endangered, is assumed to be present in the Piscataqua River. Because they are anadromous, both of these are under the jurisdiction of NOAA. If such species may be present, the local government must conduct a Biological Assessment (BA) for the purpose of analyzing the potential effects of the project on listed species and critical habitat in order to establish and justify an "effect determination." A Biological Assessment was prepared for these species which recommended that if construction date restrictions and measures to contain turbidity were employed (as outlined below under "Essential Fish Habitat") that the project may affect, but would be unlikely to adversely affect, the Atlantic and short-nosed sturgeon. (Exhibit E). In a letter dated March 17, 2011, NOAA indicated that it concurs with the BA. Additional coordination will continue during the design-build and permitting phases of the project once the contractor's means and methods of construction are more fully developed, as needed.

Other than the two anadromous fish species, no Federally or State endangered or threatened species have been identified in the project area by these agencies, with the exception of the transient peregrine falcons.

The U.S. Fish and Wildlife Service (USFWS), New England Field Office, and the USFWS, Maine Office, indicated that no Federally listed species under their jurisdiction (fresh-water fish or wildlife) are known to occur in the project area and that further consultations under Section 7 of the U.S. Endangered Species Act with FWS are not required.

The New Hampshire Natural Heritage Bureau (NHNHB), the Maine Department of Inland Fisheries and Wildlife (MDIFW), and the Maine Natural Areas Program (MNAP) did not report any State-listed species in the project area. The consultation letters received from Federal and State resource agencies are included in Exhibit A.

The NHFG, reported that the peregrine falcon (*Falco peregrinus*), a Federal species of concern and State-endangered species in New Hampshire and Maine, had been observed using the Memorial Bridge as a hunting perch and nests at the nearby Portsmouth Naval Shipyard. In the spring of 2006, a peregrine falcon nest was established on the movable counterweight on the Memorial Bridge. Spring-time inspections of the counterweight on the Memorial Bridge were suspended to avoid disturbing the nest. The nest was subsequently abandoned during a rainstorm in mid-May and was not productive. The NHDOT has since established a more stable platform/nesting site atop the I-95 Bridge as an alternative site. In the spring of 2007, peregrine falcons were observed on the I-95 Bridge, although nesting was not confirmed, and the peregrine falcons have not been observed on, and did not return to nest on, the Memorial Bridge. Correspondence with NHFG dated January 28, 2011 has confirmed that although there are records of the peregrine falcons using the Memorial Bridge for perching, there have been no further efforts to nest on Memorial Bridge by peregrine falcons, and they had no additional concerns. If a pair were to be observed attempting to nest on the Memorial Bridge prior to construction, additional coordination would take place.

The MIDFW responded in an email dated 3/17/2011 that there are records of occurrences of Peregrine Falcon upstream at the I-95 bridge, and downstream at the Portsmouth Naval Shipyard on Seavey Island, and requested that further coordination with MIDFW prior to construction.

Essential Fish Habitat

The National Marine Fisheries Service (NMFS) was consulted regarding Essential Fish Habitat (EFH), protected under the Magnuson-Stevens Fisheries Conservation and Management Act. The NMFS initial assessment indicates that the work borders on, or may include, areas identified as EFH for the life history stages of several species managed by the New England and Mid Atlantic Fishery Management Councils and NMFS. These include:

- the eggs, larvae, juveniles, and adults of Atlantic cod, red and white hake, winter and windowpane flounder, and sea scallops;

- the juveniles and adults of Atlantic salmon, whiting and bluefish;
- the eggs and larvae of haddock;
- the larvae and adults of yellowtail flounder;
- the larvae, juveniles, and adults of Atlantic herring;
- adult American plaice; and
- the eggs, larvae, and juveniles of Atlantic mackerel.

The NMFS noted in particular that winter flounder are known to utilize sand and mud habitats within the Piscataqua River for spawning and, once present on the substrate, could be directly impacted by elevated suspended sediments and turbidity during pier removal and replacement. Winter flounder eggs are demersal (sink to the riverbed), adhesive, and stick together in clusters and, because eggs, larvae, and young-of-year are non-dispersive, spawning areas and nursery areas tend to be close together.

The NMFS also indicated that this area is also known to support a number of NMFS's trust resources, such as soft-shelled clams, blue mussels, American lobster, Atlantic silverside, striped bass, alewife, blueback herring, rainbow smelt, Atlantic and shortnose sturgeon, as well as important salt marsh and eelgrass habitats. According to eelgrass survey maps provided by Dr. Fred Short of the University of New Hampshire, there are no identified eelgrass beds within the footprint or in close proximity of the Memorial Bridge.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) requires that a Federal agency that funds, authorizes or undertakes an action that may adversely affect EFH must consult with NMFS. Because the area of the Memorial Bridge has been identified as Essential Fish Habitat for 17 Federally managed species, the NMFS recommends, and FHWA concurs that:

1. To protect managed species such as winter flounder, no in-water work should be conducted between March 16 and November 14 of any year.

2. Any in-water, silt producing work conducted between March 16 and November 14 should occur within coffer dams or similar silt-containment structures, provided these structures are installed during the recommended work window.

NMFS further requests additional consultation and coordination with FHWA and NHDOT during the Design Build process as construction details are identified.

An Essential Fish Habitat Assessment is included in Exhibit E.

Aesthetics

Views from the Bridge

The Memorial Bridge affords waterfront views of the scenic coastlines of New Hampshire and Maine. The Portsmouth historic waterfront is characterized by densely developed, multi-story urban development that extends to the edge of the waterfront (defined by the seawall). The

east side of the bridge site includes open landscaped areas within Prescott Park. The Kittery shoreline of Badger's Island is less densely developed, characterized by residences and smaller retail or commercial uses. The shoreline on the west side of the bridge in Maine includes a lobstering operation and commercial fishing docks, and the east side includes a large recreational marina and condominium development. The bridge affords views of the heavily trafficked areas of the Piscataqua River, including large navigational vessels, cargo ships, tugboats, and smaller craft, such as sailboats, and kayaks. The views of the surrounding landscapes will not change as a result of the proposed improvements.

Views of the Bridge

The Memorial Bridge is a historic structure that is a focal point for the historic waterfront fringing on the downtown core of Portsmouth and Badger's Island (see Cultural Resources). Design of the bridge would be determined during the DB process, however, designs for all bridge spans of the historic Memorial Bridge would be reviewed under the *Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*[1], Standards 9 and 10. These standards (written for buildings, but applicable to bridges or other structures as well) provide that new construction of historic structures shall be compatible with the massing, size, scale, and architectural features of the historic structures. The standards also provide that if the structure were removed in the future, the essential form and integrity of the adjoining historic properties (in this case, the Portsmouth Downtown District) and its environment would be unimpaired. The 25% design to-date for the replacement bridge consists of a truss structure similar to the existing bridge, and is compliant with Standards 9 and 10.

The view under the Scott Avenue Bridge would improve, with the removal of four sets of piers that now bisect and closely adjoin the roadway and block views of and from the waterfront area under the bridge (Figure 15). The area under the bridge would appear more open, with shoulders and possibly sidewalks on both sides of the roadway. Views of the bridge from the John Paul Jones Park in Kittery will be affected during construction, and have been determined to cause a temporary adverse effect under Section 106 of the National Historic Preservation Act (see following section).

Cultural Resources

In accordance with the National Historic Preservation Act (NHPA) of 1966 and the Advisory Council on Historic Preservation regulations for Protection of Historic Resources, (36 CFR 800), this project was reviewed with the New Hampshire Division of Historical Resources (NHDHR), the Maine Historic Preservation Commission (Maine HPC), and the Federal Highway Administration (FHWA) to identify structures or properties on or eligible for listing in the National Register of Historic Places. The Portsmouth Historical Society also participated in

[1] "Secretary of the Interior's Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings", U.S. Dept of the Interior, National Park Service, Washington D.C., 1990.

regularly scheduled cultural resource meetings as a consulting party to the Section 106 process. Consultation meetings to determine the project's effects and to develop appropriate mitigation measures with the New Hampshire State Historic Preservation Officer, (NHSHPO), the Maine State Historic Preservation Officer (MESHPO), New Hampshire and Maine FHWA, and consulting parties were held on June 3, 2010, June 24, 2010, November 18, 2010, December 17, 2010, January 20, 2011, February 17, 2011, March 3, 2011, and March 9, 2011.

As a result of the consultations with the FHWA and SHPOs in both NH and Maine and the historical investigations performed for the project, the following historical resources were identified within the project area.

Description of Historic Resources

Memorial Bridge Historic District

The Memorial Bridge Historic District has been determined to be eligible for listing in the National Register (Figure 12). This district was determined to include the Memorial Bridge itself (lift span and flanking spans), the Scott Avenue Bridge, Memorial Park in Portsmouth, and the Maine approach span (Kittery Approach Spans) to Memorial Bridge. The district also includes elements that are outside of the immediate project area: the road connecting the Kittery Approach Spans to the Badger's Island Bridge, the Badger's Island Bridge, and John Paul Jones Memorial Park in Kittery.

Components of the Memorial Bridge Historic District, some of which are individually eligible for listing in the National Register that would be affected by the project are described below.

Memorial Bridge (Lift Span and Flanking Spans)
The historic Memorial Bridge (lift span / flanking spans) was determined eligible for listing in the National Register in 1988. The earlier determination of eligibility was confirmed by the FHWA in consultation with the NHSHPO on March 9, 2006.

The Memorial Bridge qualifies for listing in the National Register under the following evaluation criteria:

- **Criterion A** for its association with events that have made a significant contribution to the broad patterns of our history;

- **Criterion C** for its embodiment of distinctive characteristics of a type, period, or method of construction, or its representation of the work of a master, or its possession of high artistic values, or its representation of a significant and distinguishable entity whose components may lack individual distinction.

Under National Register Criterion A (Transportation), the Memorial Bridge was the first modern, free, operable bridge linking New Hampshire and Maine along the great coastal highway, US Route 1. The Memorial Bridge is also significant under Criterion A for its role in the history of transportation both locally and on a regional level. The bridge is significant in the development of the City of Portsmouth, and its construction represented the culmination of a long and

difficult campaign on the part of the citizens of Portsmouth to link Kittery (and Portsmouth Naval Shipyard) with the town via a free bridge. The bridge may also have significance for its role in local maritime history. Finally, the design intent of the original project was to create a memorial to World War I veterans. The bridge links memorial parks in both Maine and New Hampshire and has ties to commemorative structures throughout the country.

Under National Register Criterion C, the Memorial Bridge was distinctive in the area of engineering in the era in which it was built. It was designed by J.A.L. Waddell (1854-1938), one of the world's preeminent bridge designers, the developer of vertical lift bridges in the United States, and the holder of patents on most aspects of the operation of these bridges. Memorial Bridge was the first major vertical lift bridge in the eastern United States. At its dedication in 1923, it had the longest lift span in the country (297 feet), making it the direct prototype for later vertical lift bridges with clear spans of over 300 feet. Its lift towers, extending 210 feet above mean high water, were the highest in the nation, and its 135-foot vertical clearance was one of the highest. Today, the Memorial Bridge is one of the oldest operational lift bridges in the United States and the older of New Hampshire's two vertical lift bridges. It retains historical integrity and its original main structure, with alterations limited largely to decks, railings, and mechanical systems.

Scott Avenue Bridge

The historic Scott Avenue Bridge (or Portsmouth approach span) was built in 1923 from designs by Portsmouth City Engineer W.A. McFarland. The Scott Avenue Bridge is eligible for listing in the National Register under Criterion C for significance in the area of engineering. As the approach span to Memorial Bridge, it is a component part of an important engineering achievement, the central portion of which was designed by eminent engineer, J.A.L. Waddell. It is one of the very few access spans in the state. Compared to other bridges, it the single longest concrete slab bridge built before 1925 extant in the state today. It is also the longest extant non-arched concrete bridge constructed in New Hampshire before 1935. It is the earliest identified concrete continuous slab bridge in New Hampshire, and it appears to be the longest continuous span concrete bridge built before 1935 in the state. Of the over 300 pre-1930 concrete bridges in New Hampshire, it is the only five-span concrete bridge. It is also unique in its skewed (and variable width) design.

The bridge has undergone periodic maintenance and had its cantilevered concrete sidewalks replaced and its surfaces coated with Gunite in 1977. Yet the bridge retains its structural system of support on piles and subterranean concrete footings, and its pier and slab reinforcement of square and deformed round bars as designed for the stresses engendered by continuous construction. The bridge retains integrity relative to its structural system, which is the paramount element of its significance. Despite the alterations that have occurred through maintenance over time, the structure retains a typical level of physical integrity when compared to other examples of concrete bridge construction from its era. Because it was part of the open plaza-type design of the bridge approach, the boundary is defined as beginning at the abutment of Memorial Bridge, then extending west/southwest to include the closed U-shaped area defined by Daniel Street, State Street (and the area under the approach where they meet), and Wright Avenue.

Memorial Park

In April of 2004, Memorial Park was determined to be eligible for listing in the National Register as a component of the eligible Scott Avenue Bridge property and is significant as a memorial to the World War I veterans (Figure 6). Memorial Park was created in 1922-23 as part of the original design of the Scott Avenue Bridge (the Portsmouth approach to the Memorial Bridge). Memorial Park was an integral part of a converging two-street bridge approach as a component of the Scott Avenue Bridge. In 1983, parking was added along Wright Avenue, which substantially reduced the size of the original park.

Kittery Approach Spans

The historic Kittery Approach Spans extend between the Memorial Bridge and Badger's Island. On the Maine Historic Bridge Inventory Form #25-46, Memorial Bridge was found to be eligible for listing in the National Register of Historic Places under Criterion C for its engineering significance as a vertical lift bridge designed by J.A.L. Waddell. However, this inventory form does not separate the Kittery Approach Spans from the lift span.

The Kittery Approach Spans contribute to the district as a component of the original construction of the Memorial Bridge. Because the Maine approach was not evaluated independently, no determination was made as to their integrity, but the inventory form notes, "the Maine-side girder approach spans are supported on 2-column concrete bents with built-up steel caps. Several of the original concrete bent columns were replaced with sonotube-formed concrete columns ca. 1984."

Badger's Island Bridge

The Badger's Island Bridge is outside of the project area, but is a component of the Memorial Bridge Historic District. On historic bridge survey form #20-31, the State of Maine found the Badger's Island Bridge to be eligible for the National Register under Criterion C as a significant example of a continuous design bridge. However, because the current bridge was reconstructed in 1938 to replace the original 1922 bascule bridge, and was therefore not a part of the Memorial Bridge construction project, its significance does not relate directly to the Memorial Bridge and the Memorial Bridge Historic District.

John Paul Jones Memorial Park

The John Paul Jones Memorial Park is located outside of the project area, but is located within the Memorial Bridge Historic District. The John Paul Jones Memorial Park was listed in the National Register of Historic Places in October of 1977. The nomination states: "Originally dedicated on November 11 (Armistice Day), 1924, as a memorial to Maine's sailors and soldiers who served in World War I, the John Paul Jones Memorial Park is a two-acre trapezoidal green space that was named in 1927 by the State Legislature in memory of the commander of the first American warship. The park is the site of a striking granite and bronze war monument designed by sculptor Bashka Paeff. The installation of this original memorial has been followed by the erection of three smaller monuments in 1931, 1963 (a relocated monument), and 1984."

The park meets Criterion A for its association with the State of Maine's effort to honor its war veterans, and Criterion C for its significance in art and landscape architecture. Criterion F also applies by virtue of the park's commemorative purpose.

Portsmouth National Register Historic District

The Portsmouth National Register-Eligible Historic District, as shown in Figure 12, includes areas of downtown Portsmouth and portions of the Memorial Bridge District. The Portsmouth Historic District was determined to be eligible for listing in the National Register of Historic Places by consensus determination. The city center of Portsmouth is most probably eligible for listing in the National Register under three criteria (Criteria A, C, and D). The limits of the National Register-Eligible historic district encompass the entire downtown, including Memorial Park, Scott Avenue Bridge and Memorial Bridge, the business district, and much of the surrounding residential areas, including the areas around the Memorial Bridge. The Portsmouth National Register-Eligible district contains four National Historic Landmarks: the MacPhaedris-Warner House, the Moffatt-Ladd House, the Wentworth-Gardner House, and the Governor John Langdon Mansion. The local historic district, as defined in the City of Portsmouth's Historic District Zone, surrounds the downtown, extending north to Deer Street and includes the length of Middle Street and the south end below the South Mill Pond. Boundaries for an inclusive National Register district, defined according to the current standards, would probably cover an even larger area including residential neighborhoods of the west end and possibly extending north of the North Mill Pond.

Description of Archaeological Resources

The Scott Avenue Bridge and the Memorial Bridge on the Portsmouth side are established on the old shoreline of the Piscataqua River, where wharves, warehouses, and docks stood from Portsmouth's earliest settlement through the 19th century. A dense urban neighborhood occupied the area adjacent to the wharves between Daniel and State Streets in the 18th and 19th centuries. During the 1920s bridge construction, the area was largely cleared of standing structures, and a considerable amount of fill was placed to raise the grade for the Scott Avenue Bridge approach.

A Phase IA Archaeological Assessment was performed that included a literature search and documented the historical 18th and 19th century wharf and residential development at the project site. The Phase IA investigation concluded that the discovery of intact Native American cultural material within the project area is a possibility, but only along sections of original and intact shorelines. Archaeological remnants of 18th and 19th century occupation (i.e., residential and commercial blocks) may survive beneath the deep fill prism that supports the Memorial Park and the Scott Avenue Bridge approach.

A Phase IB archaeological investigation was performed by excavating a trench within the southern triangle of Memorial Park, which was the only area accessible for testing. Testing in this area extended to a depth of 4 feet and encountered the remnants of demolition debris (including fragments of brick and ceramic) at the bottom of the excavation. It is assumed that fill on the northern triangle equal or exceed 4 feet and that deeply buried, unsampled cultural deposits may exist beneath this layer of fill.

A Phase IB supplemental investigation involved archaeological monitoring during geotechnical investigations undertaken in the vicinity of the Scott Avenue Bridge. Brick fragments were recovered in the samples from test borings that were interpreted as demolition rubble, since the neighborhood was razed prior to the 1921 construction of the bridge. Testing revealed that

the depth of the demolition layer is 5 feet or more below ground surface under the bridge near the shoreline and 14 feet to 26 feet below the surface on the Scott Avenue Bridge ramp.

The shoreline area contains less fill above subsoil, but cultural materials – in this case brick fragments and wood (possibly from former wharf structures) – are still relatively deep, and below the water table. Wood fragments appeared in the samples from 9 feet to 11 feet along the shoreline that may be representative of a wharf, building or simply natural wood in the demolition layer. Brick was found between 5 feet to 11 feet below ground surface, while the water table was only 5 feet below ground surface. The boring proximal to the shoreline near the bridge abutment revealed no intact buried surface horizons (only fill was found overlying subsoil and bedrock), nor was there any evidence of Native American shell middens. Additional testing would likely only confirm the presence of disturbed deposits and would not provide significant archaeological information.

The nature of the geotechnical boring process does not provide enough information to make more than general interpretations of archaeological deposits. Testing did not indicate exactly how thick the deposit is, or where its upper and lower limits are. The presence of a buried surface horizon is further complicated by the fact that the neighborhood may have been built upon fill, considering the presence of wharves known to have occupied the waterfront area.

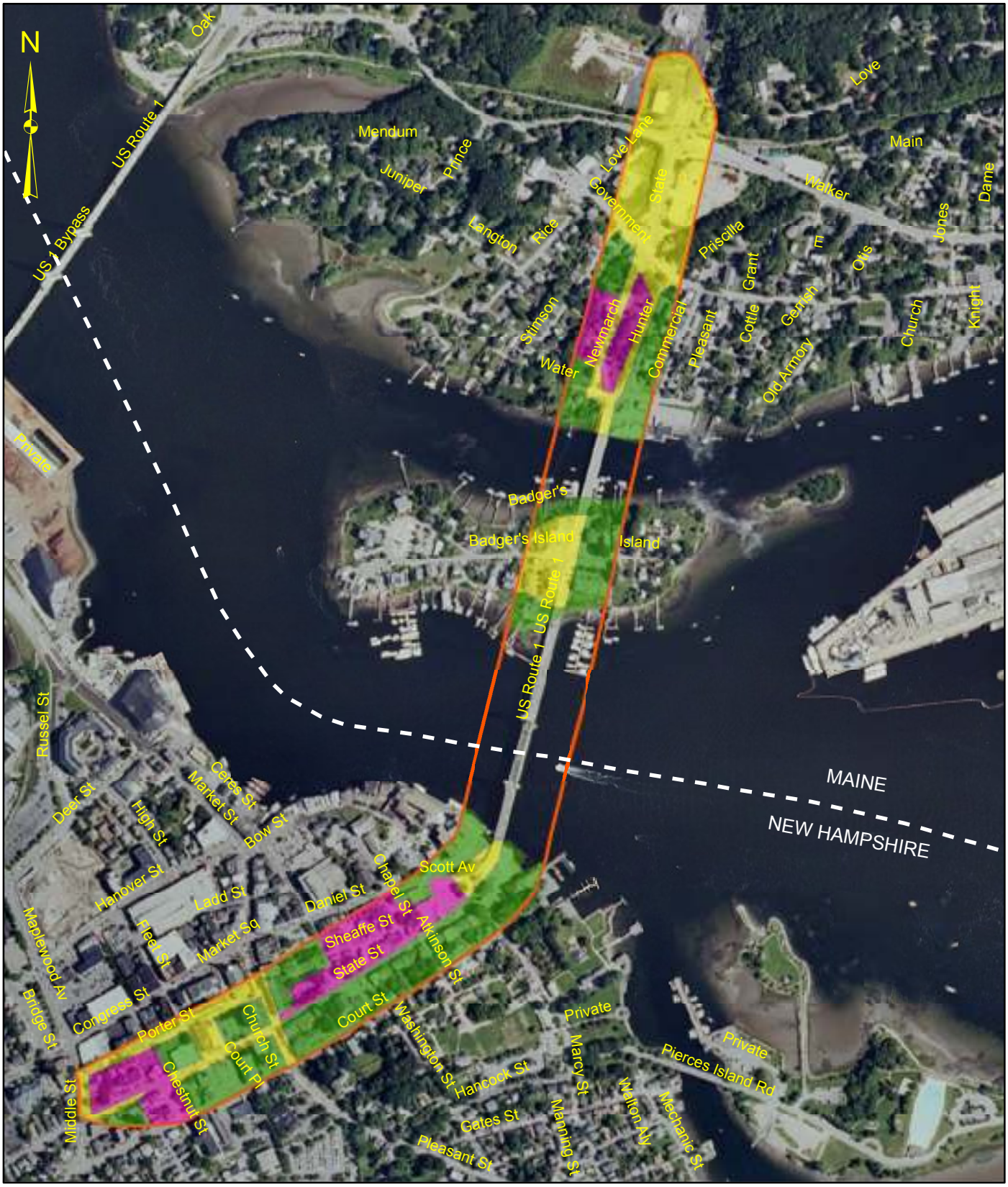
Subsequent to these archaeological investigations, an Archaeological Summary Report prepared for the Connections Study in 2009 determined that there were areas of low, moderate and high archaeological sensitivity within the project area (Figure 21). The study recommended that an intensive archaeological investigation be undertaken in areas of high or moderate sensitivity in Maine (known as a "Phase 1 Reconnaissance Survey" in Maine).

Effects on Historic Resources

The effects of this project on historic resources were determined by NHDHR, MHPC, FHWA, NHDOT, and MaineDOT based on the Section 106 review process established by the NHPA of 1966 and outlined at 36 CFR 800.9. The project effects are outlined in a Memorandum of "Adverse Effect" (Exhibit F), executed on March 3, 2011, and summarized below.

Memorial Bridge Historic District

The project would have an adverse effect on the setting of the National Register-qualifying characteristics and features of the District, and an adverse effect on the integrity of design, setting, materials, workmanship, feeling, and association of the Memorial Bridge Historic District, since the bridge is a key character-defining element of public vantage points at the river and riverfront. Those components of the district that are individually eligible for the National Register and effects on each element are described below.



Archaeological Sensitivity

- High
- Moderate
- Low
- Limits of Archaeological Investigation

Adapted from "ME-NH Connections Study Summary Report on Phase 0 (ME) / Phase IA (NH) Archaeological Sensitivity Assessment"

NEW HAMPSHIRE DOT
PORTSMOUTH, NH

MEMORIAL BRIDGE (U.S. ROUTE 1) REPLACEMENT

ARCHAEOLOGICAL SENSITIVITY

SCALE :	DATE :	FIGURE :
1:8,000	MARCH 2011	21

McFarland Johnson

Path

Memorial Bridge (Lift Span and Flanking Spans)
The proposed removal and replacement of the Memorial Bridge (three spans) would have an adverse effect on the location and setting of the National Register-qualifying characteristics and features of the bridge. This effect on the bridge stems from the loss of integrity of the original materials and components, the removal of mechanical systems, the addition of substitute materials that do not visually replicate historic features and materials, and the changes on the operating system.

Scott Avenue Bridge
The removal and replacement of the Scott Avenue Bridge was determined to have an adverse effect on the location and setting of the National Register-qualifying characteristics and features of the bridge, because it would be demolished and replaced.

Memorial Park
Excavation for the Scott Avenue Bridge would temporarily disturb a portion of the northern triangle of the park, and the entire park would be temporarily disturbed during construction staging. The project was determined to have an adverse effect on the park.

Kittery Approach Spans
The project would involve removal and replacement of the Kittery Approach Spans. The Approach Spans, as noted earlier, were never separated from the Memorial Bridge in the Maine Historic Bridge Inventory form nominating the Memorial Bridge for the National Register. Therefore, although there is no separate Adverse Effect finding for the Kittery Approach Spans, there would be an adverse effect on this component of the Memorial Bridge facility.

Badger's Island Bridge:
There would be no work on the Badger's Island Bridge, and no effects will occur to this historic structure. The proposed work would be contained entirely within the existing paved right-of-way and would not affect the historic qualities of the bridge.

John Paul Jones Memorial Park:
Construction would result in a temporary adverse effect on the John Paul Jones Park due to the visual impacts associated with the removal of the existing historic Memorial Bridge.

Portsmouth Historic District
The proposed replacement of the Memorial Bridge facility would have an adverse effect on the district from the perspective of the integrity of design, setting, materials, workmanship, feeling, and association.

Effects on Archaeological Resources

Pre-construction archaeological investigations, beyond the Phase IB investigations in Memorial Park and monitoring of geotechnical borings that were performed, are not proposed. The Scott Avenue Bridge abutment consists of up to 28 feet of fill, the bottom of which appears to relate to demolition. Archaeological testing within and below the demolition area is impractical and would probably only confirm the presence of a demolition layer. Given the depth of the demolition layer, the effort it would take to conduct archaeological testing to confirm the level of

disturbance, and the absence of any indication of intact surface horizons above the subsoil, it is not considered prudent or feasible to conduct additional archaeological investigation in this location during the pre-construction phase.

All necessary phases of archaeology would be completed. During construction, subsurface excavations reaching depths below existing fill would be monitored for the presence of archaeological features and artifacts. Excavations that are proposed within the northern triangle of the Memorial Park that exceed 4 feet would require archaeological monitoring during construction. Archaeological monitoring would also be performed for excavations performed along the waterfront below Scott Avenue and for areas assessed at moderate archaeological potential that will be disturbed by the Kittery Approach Spans replacement.

Mitigation Measures

Mitigation measures are detailed in a Memorandum of Agreement (MOA) that has been signed by the Maine and New Hampshire FHWA Administrators, the MESHPO, the NHSHPO, and the Maine and New Hampshire Commissioners of the respective Departments of Transportation. (Exhibit F.) Briefly, mitigation would include measures to ensure that the bridge design is historically appropriate, that public outreach and education efforts would be implemented, that archaeological protocols would be followed, and that economic impacts to the Portsmouth Historic District would be abated. The existing memorial plaques on each end of the Memorial Bridge would be conserved and reinstalled on the replacement bridge. The agreement includes measures to limit impacts from vibration to historic resources.

Utilities

The aerial and underground utilities identified in the project area include:

- Public Service of New Hampshire (aerial electric)
- Northern Utilities (underground gas)
- Verizon (aerial telephone)
- Comcast (aerial cable)
- BayRing Communications (aerial telephone)
- Portsmouth Department of Public Works (underground water and sewer)
- Kittery Sewer Department (underground sewer)

The design-build contractor would coordinate with the appropriate utility companies to minimize or avoid disruptions in service.

Construction Impacts

Construction would involve the following roadway closures or navigational outages and would be reviewed in more detail as the project design advances:

- A complete roadway closure on the Memorial Bridge would occur over a period of approximately 18 months for bridgework, which is anticipated to be scheduled to start in mid-

February or early March and to extend into the summer (mid-July to early August). During the roadway closure, motor vehicle traffic would be detoured via I-95 and the US Route 1 Bypass.

- Two navigational closures of three to five days duration are anticipated at the beginning and end of this closure to accommodate the float-in and float-out of the lift span. Navigational outages would be closely coordinated with the U.S. Coast Guard to provide advanced notice to mariners. Any temporary reduction in the vertical clearance of the Memorial Bridge would be coordinated with the U.S. Coast Guard. Coordination would also be performed with local harbormasters, the New Hampshire Port Authority, and local businesses.

- A shuttle service would be operated to accommodate pedestrians and cyclists during the roadway closure.

- Daniel Street under the Scott Avenue Bridge would be completely closed for through traffic during the 18-month roadway closure. Access to Prescott Park and private properties would be maintained. There would be a temporary displacement of six municipal parking spaces along the Portsmouth waterfront and four spaces along the south side of Memorial Park. The truck loading zone in front of Harbour Place would also be temporarily affected.

Temporary impacts for reconstruction of the Scott Avenue Bridge abutment would be anticipated to affect a portion of the northern triangle of Memorial Park. The park would also be temporarily disturbed by construction staging. The park would be restored after the approximately 18-month construction period, in consultation with the City of Portsmouth.

The local streets in downtown Portsmouth and Kittery would remain open during construction. Traffic on Daniel and State Streets would experience some delay during the demolition and reconstruction of the Scott Avenue Bridge. Access would be maintained, but alternating one-way traffic may be used during construction activities. The existing turn-around between Dutton Avenue and Scott Avenue on Wright Avenue would remain open, as would the access to the municipal parking along Wright Avenue.

In order to limit the duration of roadway closures, all construction (other than the lift span replacement) would be performed from 7 a.m. to 7 p.m. Monday through Saturday. During the float-in and float-out for the lift span replacement, work would be scheduled to be performed around the clock to minimize navigational outages.

Temporary increases in noise and dust emissions may occur during construction, from construction equipment operations. All standard measures would be employed to minimize construction noise and dust levels to the extent practicable. Precautions would be taken to minimize inconveniences, particularly for abutting properties.

The project would involve both temporary and permanent impacts to the Piscataqua River bed for the construction of the Memorial Bridge and the replacement of the Kittery Approach Span piers. All appropriate Best Management Practices would be employed and all wetland permit conditions would be followed to minimize impacts to aquatic resources. Measures would include enclosures and containment systems on the Memorial Bridge to prevent debris from entering the Piscataqua

River during construction. Erosion and sedimentation controls would be installed prior to the Scott Avenue Bridge replacement to protect the water quality of the Piscataqua River. A Soils and Materials Management Plan, to be implemented by the contractor, would be in place in the event that contaminated materials are encountered during construction, and proper disposition of any contaminated soils or groundwater would be implemented during construction.

If dewatering were required during construction, provisions would be made for either discharge to the sanitary system or discharge to surface waters, provided that the water quality of the discharge complies with applicable provisions under the NPDES General Permit for Construction Dewatering Activity Discharges or the NPDES Remediation General Permit, or other permit programs, as applicable. If applicable standards for the water quality of the discharge could be met through treatment, then the discharges would be directed to holding tanks and transported off-site.

Archaeological monitoring would be performed during excavation for the Scott Avenue Bridge and drainage and utility work in this area.

Coordination and Public Participation

Meetings were held periodically with various Federal, State, and local agencies, as well as the general public throughout the course of the memorial Bridge Rehabilitation Project, the Connections Study and the Memorial Bridge Replacement Project. Meetings were held on the following dates:

Date	Topic
April 2, 2009	Municipal Meeting: Portsmouth
April 2, 2009	Municipal Meeting: Kittery
April 20, 2009	Save Our Bridges Meeting
April 27, 2009	Maine – NH Connections Study Kickoff Public Meetings /
May 4, 2009	Portsmouth Naval Shipyard Meeting
May 22, 2009	Maine – NH Connections Study Steering Committee Meeting
June 16, 2009	Navigation meeting
June 25, 2009	Maine – NH Connections Study Stakeholder Meeting
August 20, 2009	Maine – NH Connections Study Meeting: Public Informational Meeting
September 11, 2009	Maine – NH Connections Study Stakeholder Meeting
September 24, 2009	Maine – NH Connections Study: Public Informational Meeting
November 6, 2009	Maine – NH Connections Study Steering Committee Meeting
December 16, 2009	Maine – NH Connections Study Meeting: Public Informational Meeting
February 5, 2010	U.S. Coast Guard Meeting
February 25, 2010	Maine – NH Connections Study Meeting: Public Informational Meeting
March 29, 2010	Maine – NH Connections Study Stakeholder Meeting
April 27, 2010	Maine – NH Connections Study Steering Committee Meeting
May 6, 2010	Maine – NH Connections Study Meeting: Public Informational Meeting
June 3, 2010	Cultural Resources Agencies Effects Meeting
June 16, 2010	Maine – NH Connections Study Stakeholder Meeting
June 23, 2010	Maine – NH Connections Study Meeting: Public Informational Meeting

Date	Topic
June 24, 2010	Cultural Resources Agencies Effects Meeting
July 1, 2010	U.S. Coast Guard Meeting
October 20, 2010	Natural Resources Agencies Meeting
November 18, 2010	Cultural Resources Agencies Effects Meeting
December 10, 2010	U.S. Coast Guard Meeting
December 17, 2010	Cultural Resources Agencies Effects Meeting
January 20, 2011	Cultural Resources Agencies Effects Meeting
February 17, 2011	Cultural Resources Agencies Effects Meeting
March 3, 2011	Cultural Resources Agencies Effects Meeting
March 9, 2011	Cultural Resources Agencies Effects Meeting
March 14, 2011	Essential Fish Habitat/ Endangered Species Meeting

Letters were sent to various Federal, State, and local agencies, as well as the general public, asking for input on this project. Correspondence related to the Memorial Bridge Rehabilitation Project is included in this list.

Agency/Organization	Date Received
National Marine Fisheries Service, Protected Resources	March 15, 2011
FHWA Essential Fish Habitat Response	March 16, 2011
National Marine Fisheries Service, Habitat Conservation	March 14, 2011
FHWA Endangered Species Response	March 16, 2011
USFWS NH	January 3, 2011
USFWS Maine	September 9, 2005
NHFG Marine Fisheries	August 25, 2005
NHNHB	November 12, 2010
NH Fish and Game Department email	January 28, 2011
NH Audubon email	January 25, 2011
MDIFW email	March 17, 2011
Maine Department of Inland Fisheries and Wildlife	Sept. 13, 2005
Maine Natural Areas Program	February 14, 2011
NH Office of Energy and Planning, National Flood Insurance Program	March 11, 2011
NH Department of Resources and Economic Development	April 18, 2007
NHDOT Email re 6(f)	April 24, 2007
Maine Department of Conservation (6(f))	August 22, 2005
NH Office of Energy and Planning, Conservation Land Stewardship Program	August 29, 2005
NH Office of Energy and Planning, Scenic and Cultural Byways Program	August 29, 2005
Portsmouth Deputy City Manager (Memorial Park)	March 9, 2006
City of Portsmouth Public Works Director	March 15, 2011
Town of Kittery Recreation Director	August 23, 2005

Summary of Environmental Commitments

The following environmental commitments have been made for this project:

- The design for the bridge replacement will follow *the Secretary of the Interior's Standards for Rehabilitation and Guidelines for the Rehabilitation of Historic Buildings*, Standards 9 and 10, as determined by FHWA in consultation with NHSHPO and MESHPO. There will be continued consultation among these agencies, focusing on the design's conformance with Standards 9 and 10.
  (Exhibit F, Section 106 Documentation)

- The design of the Scott Avenue Bridge will improve safety and accessibility for pedestrians and bicycles by adding two 4-foot shoulders and a sidewalk on the bridge and removing four sets of piers under the bridge. **(Page 29)**

- On the Memorial Bridge, the project will incorporate solid decking on the roadway to accommodate cyclists and will provide upgraded sidewalks and bridge railings. The wood planking on the Memorial Bridge sidewalks will be replaced with a surface that will be more slip resistant when wet. The open steel grating on sidewalks on top of the Scott Avenue Bridge will be replaced by solid surfaces. The drainage grates on the Memorial Bridge will be perpendicular to the direction of travel to safely accommodate bicycle access. Consideration will be given to incorporating signage to promote safe dual use of the US Route 1 Bridge by motor vehicles and bicycles. **(Page 29)**

- During the approximately eighteen-month bridge closure, construction signing will be placed to advise motorists of the changed conditions. There will be detour signs placed directing those wanting to cross the river to use I-95. These signs will also explain that access has been maintained to downtown Portsmouth or Kittery. **(Page 30)**

- During those times when the bridge is closed to pedestrians and bicyclists, a shuttle service will be employed to transport them across the river between Kittery, ME and Portsmouth, NH. **(Page 30)**

- Navigational closures during construction may be required to accommodate the float-out and float-in of the lift span. Coordination will be performed with the U.S. Coast Guard to provide advance notice to mariners of changes in operation of the Memorial Bridge throughout the construction period. **(Page 31)**

- The proposed construction will include an emergency generator to be installed under the Scott Avenue Bridge. Preventative maintenance will require that the generator be run for a half hour once per week. This generator will be housed in an enclosure to improve security and provide soundproofing, and test runs will be scheduled during daytime hours. **(Page 20) (Design)**

- Access to all properties will be maintained during construction,. and the existing traffic patterns and circulation in this area will largely be maintained. **(Page 29-30)**

- The memorial plaque in Memorial Park will be temporarily relocated during construction. The park will be restored to pre-construction conditions upon completion of construction. Coordination has been performed with the City of Portsmouth regarding plans for the park, and this coordination will continue regarding plans for construction and restoration within the park and for the plaque. **(Page 33)**

- All appropriate Best Management Practices will be employed during construction. This is especially important for work that involves alteration of the Piscataqua River riverbed or shoreline. This work would include repairs to Memorial Bridge piers, removal and replacement of Kittery Approach Span piers, replacement of Memorial Bridge abutment, installation of dolphins near Memorial Bridge piers, or other work. Work will follow all conditions of permits to be obtained for work in aquatic resources and any other state or federal jurisdictional areas. **(Page 41-42) (Design / Environment / Construction)**

- To protect species managed fish species such as winter flounder, no in-water work will be conducted between March 16 and November 14 of any year. Any in-water, silt producing work conducted between March 16 and November 14 should occur within coffer dams or similar silt-containment structures, provided these structures are installed during the recommended work window. (**Page 46**)

- NHDOT will convene a meeting with the US Fish and Wildlife Service, National Marine Fisheries Service, NH Fish and Game Department, and Maine Fish and Wildlife, and the DB team as soon after selection as is reasonable to discuss timing restrictions and fisheries concerns. (**Page 46**)

- In accordance with the conservation recommendations of the National Marine Fisheries Service, any modification to the construction timeframe that may require work within Piscataqua River outside the work window of November 15 to March 15 will require that consultation recommence with NMFS to determine appropriate actions. **(Page 46)**

- Existing drainage patterns on the Memorial Bridge and Scott Avenue Bridge will largely be maintained. However, the proposed drainage design will be improved by incorporating a manufactured stormwater treatment unit to be installed along Daniel Street along the Portsmouth waterfront that will treat permanent roadway drainage prior to discharge into the Piscataqua River. **(Page 41) (Design / Environment / Construction)**

- Best Management Practices will be employed during construction to avoid impacts to the water quality of the Piscataqua River. Containment systems will be used on the Memorial Bridge during construction to prevent debris from entering the river during demolition and to avoid contamination of the river and air. A professionally prepared Stormwater Pollution Prevention Plan (SWPPP) will be prepared by the contractor prior to commencement of construction, specifying measures designed to protect the water quality of the Piscataqua River during construction. **(Page 41) (Design / Environment / Construction)**

- If dewatering is required during construction for the replacement of the Scott Avenue bridge abutment or the Kittery Approach Span piers that in uplands,, provisions will be made for either discharge to the sanitary system or discharge to surface waters, provided that the water quality of the discharge complies with applicable provisions under the National Pollutant Discharge Elimination System (NPDES) permit program. If applicable water quality standards for the discharge to comply with either the NPDES General Permit for Construction Dewatering Activity Discharges or the NPDES Remediation General Permit cannot be met through treatment, then the contractor will be required to direct discharges to holding tanks and transport them off-site. **(Page 41-42) (Drainage / Environment / Construction)**

- A Soils and Materials Management Plan, to be implemented by the contractor, will be in place during construction to provide measures for appropriate management and disposal of materials encountered, including debris in fill and soils and groundwater impacted by residual contamination. If contaminated soil or groundwater is encountered, NHDES will be consulted, and contaminated materials will be disposed of in an appropriate manner in compliance with Federal and State regulations. **(Page 57) (Design / Environment/ Construction)**

- All standard measures will be employed to minimize construction noise and dust levels to the extent practicable. **(Page 36) (Design / Environment / Construction)**

- All stipulations of the Memorandum of Agreement submitted to the Advisory Council on Historic Preservation and signed by the NHSHPO, Maine SHPO, Maine and NH FHWA, and Maine and NH DOT on March 15, 2011 (**Exhibit F**) will be followed. (**Design / Environment / Construction)**

Exhibit A

Consultation Letters

- NOAA, Protected Resources
- FHWA Essential Fish Habitat Response
- NOAA, Habitat Conservation
- FHWA Endangered Species Response
    - Biological Assessment
    - Eelgrass Map
- NOAA Concurrence Letter
- USFWS NH
- USFWS Maine
- NHFG Marine Fisheries
- NHNHB
- NH Fish and Game Department email
- NH Audubon email
- MDIFW email
- Maine Department of Inland Fisheries and Wildlife
- Maine Natural Areas Program
- NH Office of Energy and Planning, National Flood Insurance Program
- NH Department of Resources and Economic Development
- NHDOT Email re 6(f)
- Maine Department of Conservation (6(f))
- NH Office of Energy and Planning, Conservation Land Stewardship Program
- NH Office of Energy and Planning, Scenic and Cultural Byways Program
- Portsmouth Deputy City Manager (Memorial Park)
- City of Portsmouth Public Works Director
- Town of Kittery Recreation Director

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

MAR 14 2011

Mr. Jamison S. Sikora
NH Division Environmental Programs Manager
Federal Highway Administration
19 Chenell Drive, Suite One
Concord, NH 03301

Re: Portsmouth Memorial Bridge (Route 1) Replacement, Federal No. A000(911), State No. 13678F

Dear Mr. Sikora:

This letter is in response to your request for an expedited Essential Fish Habitat (EFH) consultation with NOAA's National Marine Fisheries Service (NMFS) for the Memorial Bridge replacement project over the Piscataqua River. According to the correspondence you have provided, the New Hampshire Department of Transportation (NHDOT) has been awarded a Federal TIGER II grant for a design-build process for complete bridge replacement. Because of the requirements to obligate these funds within a short time frame, the Federal Highway Administration (FHWA) requests an expedited review of the proposed project by Thursday, March 17, 2011.

An EFH consultation was completed in 2007 for the rehabilitation of the Memorial Bridge. However, at that time the project was limited to portions of the bridge above the water and no in-water work was proposed. Since that time the bridge structure has deteriorated to the point where it can no longer viably be rehabilitated and a complete replacement is now proposed. The proposed activities include repair of the piers supporting the Memorial Bridge, removal of the piers supporting the Kittery Approach Spans, and the construction of new piers to support new Kittery Approach Spans. According to your correspondence, the proposed work now involves work within the intertidal and subtidal zones. However, because this project will follow a design-build process, specific information associated with the impacts from the pier replacement is not known at this time.

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) and the Fish and Wildlife Coordination Act (FWCA) require federal agencies to consult with one another on projects such as this. Insofar as a project involves EFH, as this project does, this process is guided by the requirements of our EFH regulation at 50 CFR 600.905, which mandates the preparation of EFH assessments and generally outlines each agency's obligations in this consultation procedure. An EFH Assessment should include at a minimum the following information: 1) a description of the proposed action; 2) an

analysis of reasonably foreseeable impacts including secondary and cumulative effects on EFH, federally-managed species and major prey species; 3) the action agencies views regarding the effects on EFH; and 4) proposed mitigation, as appropriate. Other information that should be contained in the EFH assessment, as appropriate, includes: the results of on-site inspections to evaluate the habitat and site-specific effects; the views of recognized experts on the habitat or the species that may be affected; a review of pertinent literature and related information; and an analysis of alternatives to the action that could avoid or minimize the adverse effects on EFH. The NMFS has received the EFH worksheet prepared by the NHDOT for the proposed project. However, because this project will follow a design-build process, details of the in-water work are unknown at this time and were not provided in the assessment.

The proposed work site includes areas identified as EFH for the life history stages of several species managed by the New England and Mid Atlantic Fishery Management Councils and NMFS. These include the eggs, larvae, juveniles, and adults of Atlantic cod, pollock, red and white hake, winter and windowpane flounder, and Atlantic sea scallop; the juveniles and adults of Atlantic salmon, whiting and bluefish; the eggs and larvae of haddock; the larvae and adults of yellowtail flounder; the larvae, juveniles, and adults of Atlantic herring; adult American plaice; and the eggs, larvae, and juveniles of Atlantic mackerel. In particular, winter flounder are known to utilize sand and mud habitats within the Piscataqua River for spawning and, once present on the substrate, could be directly impacted by elevated suspended sediments and turbidity during pier removal and replacement (Berry et al. 2004; Johnson et al. 2008). Winter flounder eggs are demersal, adhesive, and stick together in clusters (Pereira et al. 1999) and, because eggs, larvae, and young-of-year are non-dispersive, spawning areas and nursery areas tend to be close together (Pearcy 1962; Crawford and Carey 1985). In addition, this area is known to support a number of NOAA trust resources such as soft-shelled clams, blue mussels, American lobster, Atlantic silverside, striped bass, alewife, blueback herring, rainbow smelt, Atlantic and shortnose sturgeon, as well as important salt marsh and eelgrass habitats. According to eelgrass survey maps provided by Dr. Fred Short of the University of New Hampshire, there are no identified eelgrass beds within the footprint or in close proximity of the Memorial Bridge.

Essential Fish Habitat

Section 305(b)(2) of the MSA requires all federal agencies to consult with NMFS on any action authorized, funded, or undertaken by that agency that may adversely affect EFH. The area of the Memorial Bridge on the Piscataqua River has been identified as EFH under the MSA for 17 federally-managed species. NMFS recommends pursuant to Section 305(b)(4)(A) of the MSA that the FHWA adopt the following EFH conservation recommendations:

1. To protect managed species such as winter flounder, no in-water work should be conducted between March 16 and November 14 of any year.

2. Any in-water, silt producing work conducted between March 16 and November 14 should occur within coffer dams or similar silt-containment structures, provided these structures are installed during the recommended work window.

Please note that Section 305(b)(4)(B) of the MSA requires the FHWA to provide NMFS with a detailed written response to these EFH conservation recommendations, including a description of measures adopted by the FHWA for avoiding, mitigating, or offsetting the impact of the project on EFH. In the case of a response that is inconsistent with NMFS' recommendations, Section 305(b)(4)(B) of the MSA also indicates that the FHWA must explain its reasons for not following the recommendations. Included in such reasoning would be the scientific justification for any disagreements with NMFS over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects pursuant to 50 CFR 600.920(k).

Please also note that a distinct and further EFH consultation must be reinitiated pursuant to 50 CFR 600.920(l) if new information becomes available or the project is revised in such as manner that affects the basis for the above EFH conservation recommendations. In this regard, we understand that because the proposed project will follow a design-build process, the details of the in-water work (e.g., the number and locations of the proposed replacement piers, construction methods such as the use of blasting to install replacement piers) are unknown at this time and were not provided in the assessment. Therefore, NMFS requests that coordination with FHWA and NHDOT continue during the design phase and as construction details are identified. At that time, should details of the project's scope and construction methods result in new or increased impacts to NOAA trust resources beyond those identified in the EFH worksheet provided by NHDOT, reinitiation of the EFH consultation and modification to our EFH conservation recommendations may be necessary.

Fish and Wildlife Coordination Act

As discussed above, the Piscataqua River supports a number NOAA trust resources, such as soft-shelled clams, blue mussels, American lobster, Atlantic silverside, striped bass, alewife, blueback herring, American eel, rainbow smelt, Atlantic and shortnose sturgeon, and salt marsh and eelgrass habitats. To protect spawning migrations of anadromous alewife and blueback herring, no in-water work should be conducted between March 16 and November 14 of any year. Any in-water, silt producing work conducted between March 16 and November 14 should occur within coffer dams or similar silt-containment structures, provided these structures are installed within the recommended work window. Recommendations for the protection of shortnose sturgeon and Atlantic sturgeon will be provided separately under Section 7 of the Endangered Species Act (ESA).

Conclusions

In summary, NMFS recommends that no in-water work should be conducted between March 16 and November 14 of any year. Any in-water, silt producing work conducted between March 16 and November 14 should occur within coffer dams or similar silt-containment structures. In addition, NMFS requests that coordination with FHWA and

NHDOT continue during the design phase and as construction details are identified. We look forward to your response to our EFH conservation recommendations as well as our other recommendations on this project. Related correspondence on EFH and FWCA should be addressed to the attention of Michael Johnson at the letterhead address above, or by phone at (978) 281-9130. We note that discussions regarding consultation under Section 7 of the ESA are ongoing between our agencies. Information regarding listed species will be provided for the NEPA process and Section 7 consultation must be completed prior to the final agency action. More information concerning species listed under the ESA and section 7 consultations can be directed to David Bean at (978) 281-8483.

Sincerely,

Peter D. Colosi, Jr.
Assistant Regional Administrator
for Habitat Conservation Division

cc:
NERO: Pat Kurkul
NERO: Dan Morris
PRD: Mary Colligan/David Bean
ACOE: Richard Roach
EPA: Mark Kern
USFWS: Clayton Hawkes/Maria Tur
NHDES: Dori Wiggins
NHF&G: Cheri Patterson
NHDOT: Kevin Nyhan

References

Berry WJ, Hinchey EK, Rubinstein NI, Klein-MacPhee G. 2004. Winter flounder, *Pseudopleuronectes americanus*, hatching success as a function of burial depth in the laboratory. Ninth flatfish biology conference- poster presentation; 2004 Dec 1-2; Westbrook, CT. Woods Hole (MA): Northeast Fisheries Science Center Reference Document 04-13.

Crawford RE, Carey and CG. 1985. Retention of winter flounder larvae within a Rhode Island salt pond. Estuaries 8:217-227.

Johnson MR, Boelke C, Chiarella LA, Colosi PD, Greene K, Lellis-Dibble K, Ludeman H, Ludwig M, McDermott S, Ortiz J, Rusanowsky D, Scott M, Smith J. 2008. Impacts to marine fisheries habitat from nonfishing activities in the northeastern United States. NOAA Technical Memorandum NMFS-NE-209. Woods Hole, MA. 328 p.

Pearcy WG. 1962. Ecology of an estuarine population of winter flounder, *Pseudopleurontectes americanus* (Waldbaum). Part I-IV. Bull. Bingham Oceanogr. Collect. 18(1): 5-78.

Pereira JJ, Goldberg R, Ziskowski JJ, Berrien PL, Morse WW, Johnson DL. 1999. Essential Fish habitat source document: winter flounder, *Pseudopleuronectes americanus*, life history and characteristics. NOAA Technical Memorandum NMFS-NE-138. Northeast Fisheries Science Center, Woods Hole, MA.

U.S. Department of Transportation
Federal Highway Administration

New Hampshire Division

19 Chenell Drive, Suite One
Concord, NH 03301

March 16, 2011

In Reply Refer To:
HEC-NH

Mr. Peter D. Colosi, Jr.
Assistant Regional Administrator for Habitat Conservation Division
National Oceanic and Atmospheric Administration
National Marine Fisheries Service – Northeast Region
55 Great Republic Drive
Gloucester, MA 01930-2276

Attn: Mr. Michael R. Johnson

Subject: Portsmouth, NH – Kittery, ME, Memorial Bridge Project, X-A000 (911), 13678F

Dear Mr. Colosi;

This letter is in response to your March 14, 2011 letter regarding conservation recommendations relative to Essential Fish Habitat (EFH) associated with the subject project, pursuant to Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA). Please find below a detailed written response to the EFH conservation recommendations in your March 14, 2011 letter:

1. To protect managed species such as winter flounder, no in-water work should be conducted between March 16 and November 14 of any year.

   The design-build contract for this project will include a prohibition of in-water work between March 16 and November 14 of any year. If during the design phase of the project it becomes necessary for in-stream work to be conducted during the exclusion timeframe, consultation will recommence to determine appropriate actions and mitigation, if necessary.

2. Any in-water, silt producing work conducted between March 16 and November 14 should occur within coffer dams or similar silt-containment structures, provided these structures are installed during the recommended work window.

   The design-build contract for this project will include the requirement that work within the Piscataqua River be conducted within cofferdams or other silt containment structures. These containment structures will be installed during the recommended work window.

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If new information becomes available or the project is revised in such a manner that affects the basis for the above EFH conservation recommendations, a distinct and further EFH consultation will be reinitiated pursuant to 50 CFR 600.920(l).

Coordination among the National Marine Fisheries Service, FHWA and NHDOT will continue during the design phase and as construction details are identified. Should you have any questions or require additional information please contact me at Jamie.Sikora@dot.gov or (603) 228-3057 X 107.

Sincerely,

Jamison S. Sikora
Environmental Programs Manager

Cc: Kevin Nyhan, NHDOT Environment (electronic copy)
Mark Hasselmann, FHWA ME Division (electronic copy)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

MAR 15 2011

Vicki Chase
McFarland-Johnson, Inc.
53 Regional Drive
Concord, New Hampshire 03301

Re: Memorial Bridge - Route 1 Portsmouth, New Hampshire and Kittery, Maine

Dear Ms. Chase,

This is in response to your letter dated March 11, 2011, requesting information on the presence of any threatened and/or endangered species listed under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS) within the vicinity of the Route 1 Memorial Bridge located in Portsmouth, New Hampshire and Kittery, Maine. The New Hampshire Department of Transportation, in cooperation with the Federal Highway Administration (FHWA) and the Maine Department of Transportation, is proposing to reconstruct the Memorial Bridge, which carries US Route 1 over the Piscataqua River.

Species Listed Under the Endangered Species Act (ESA)

The Protected Resources Division has the responsibility of overseeing programs for species under NMFS jurisdiction that are listed as threatened or endangered. Several species of listed marine mammals and sea turtles are known to be seasonally present off the coast of the New Hampshire and Maine: however, these species are not known to occur in the project area.

Federally endangered shortnose sturgeon *(Acipenser brevirostrurn)* occur along the U.S. Atlantic coast. Several large river systems in the vicinity of the Piscataqua River support shortnose sturgeon populations (e.g., Merrimack, Kennebec and Androscoggin Rivers). It is thought that historically shortnose sturgeon were once abundant in the Piscataqua River, though there are few records of sturgeon captures, none of which distinguish between Atlantic and shortnose sturgeon. There was one reported capture of a shortnose sturgeon in the Piscataqua River in 1971 (Dadswell et al. 1984). During 1988 and 1989 the New Hampshire Fish and Game Department surveyed suspected shortnose spawning and feeding areas, though no sturgeon were encountered. Most recently in 2007, a sturgeon was found dead on the Kittery, Maine side of the river, although it was not determined whether this individual was an Atlantic or shortnose (C. Patterson, pers. comm. 2008, cited in Draft Shortnose Sturgeon Status Review Report). With few records and no current directed studies underway in this river, it is unclear whether a shortnose sturgeon population currently exists in the Piscataqua River. However, current telemetry data does indicate that there is a potential for migrating individuals to be present.

It is clear from recent telemetry data that shortnose sturgeon tagged in the Merrimack, Kennebec, and Penobscot rivers undertake significant coastal migrations. Telemetry data also indicates that shortnose sturgeon utilize smaller coastal river systems during these migrations. For example, a fish tagged in the Merrimack River was recently documented in the Saco River and individuals tagged in the Kennebec River have been detected in the Merrimack River and vice versa. Further, fish moving between the Penobscot and Kennebec rivers have been documented utilizing a number of small coastal rivers in between these two larger systems i.e., Darmariscotta, St. George, Medomak, and Passagasawakeag. There is no information on telemetry tagged shortnose sturgeon within the Piscataqua River given that there are no receivers in the River. However, migrating shortnose sturgeon may potentially be utilizing the Piscataqua River during interbasin movements. As such, it is reasonable to expect listed shortnose sturgeon to be present in the lower portion of the Piscataqua River where the proposed action is anticipated to occur based on; (1) telemetry information which demonstrates interbasin movements of the species and utilization of smaller coastal river systems during migration; (2) the proximity of the Piscataqua River to other river systems where shortnose sturgeon are known to occur, and; (3) historical information on sturgeon presence in the Piscataqua.

As ESA-listed shortnose sturgeon are likely to be present in the action area of this project, a consultation pursuant to section 7 of the ESA, may be necessary. In addition, under the provisions of 50 CFR §402.10, federal agencies shall confer with NMFS on any action which is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat. The lead Federal agency for the proposed action, or the designated non-Federal representative, is responsible for determining whether the proposed action is likely to affect listed species or species proposed for listing. The lead Federal agency should submit their determination of effects, along with justification for the determination and a request for concurrence, to the attention of the Section 7 Coordinator, NMFS, Northeast Regional Office, Protected Resources Division, 55 Great Republic Drive, Gloucester, MA 01930. After reviewing this information, NMFS would then be able to conduct a consultation under section 7 of the ESA. As more information becomes available in regard to construction activities and proposed project timelines and milestones are further developed, the FHWA should contact NMFS to discuss whether a section 7 consultation is needed and if so, what information needs to be provided to NMFS.

Technical Assistance for Candidate Species

On October 6, 2010, NMFS proposed to list four distinct population segments (DPS) of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus)* as endangered and one DPS, the Gulf of Maine (GOM) DPS, as threatened (75 FR 61872; 75 FR 61890). The GOM DPS of Atlantic sturgeon includes all anadromous Atlantic sturgeon whose range occurs in watersheds from the Maine/Canadian border and extending southward to include all associated watersheds draining into the Gulf of Maine as far south as Chatham, MA. Within this range, Atlantic sturgeon have been documented in the Penobscot, Kennebec, Androscoggin, Sheepscot, Saco, Piscataqua, and Merrimack rivers. The marine range, including coastal bays and estuaries, of all Atlantic sturgeon extends from the Bay of Fundy, Canada to the Saint Johns River, FL. Therefore, the proposed action by the applicant falls within the geographic range of each of the five DPSs of Atlantic sturgeon that are proposed to be listed as threatened or endangered.

Should you have any questions regarding the section 7 consultation process or the species discussed in this letter, please contact David Bean at our Maine Field Station at (207)866-4172.

Sincerely,

Mary. A. Colligan
Assistant Regional Administrator
National Marine Fisheries Service
Northeast Regional Office

U.S. Department of Transportation
Federal Highway Administration

New Hampshire Division

19 Chenell Drive, Suite One
Concord, NH 03301

March 15, 2011

In Reply Refer To:
HEC-NH

Mary A. Colligan
Assistant Regional Administrator, Protected Resources
National Marine Fisheries Service
Northeast Regional Office
55 Great Republic Drive
Gloucester, Massachusetts 01930-2298

Attn: David Bean

RE: Memorial Bridge Replacement Project over Piscataqua River between Kittery, ME and Portsmouth, NH (Portsmouth, NH – Kittery, ME, A000(911), 13678F)

Dear Ms. Colligan:

The Federal Highway Administration is seeking informal consultation under Section 7 of the Endangered Species Act regarding the referenced project based upon the species list provided by your letter of March 15, 2011. Attached is a Biological Assessment for the project regarding potential effects on the shortnose sturgeon (*Acipenser brevirostrum*) and Atlantic sturgeon (Acipenser oxyrinchus oxyrinchus). No other federally listed species are known to occur in the action area. Based upon the best available scientific and commercial information, FHWA has determined the project as proposed may affect, is likely to not adversely affect, the endangered shortnose sturgeon or the candidate species Atlantic sturgeon. The FHWA requests your concurrence of our determination.

The NH Department of Transportation (NHDOT) and ME Department of Transportation (Maine DOT) are seeking a TIGER II grant in the amount of $20M for the replacement of the Memorial Bridge (Encl.).

This letter follows our conference call with the National Marine Fisheries Service (NMFS) on Monday, March 14, 2011. At that time, it was generally understood the time constraints on the project and that through the design-build process (outlined in the enclosures), opportunities exist for continued consultation as the project proceeds. The NMFS is familiar with the project area due to the prior Memorial Bridge Rehabilitation project, which was ultimately found to not be a viable alternative following additional structural inspections and environmental studies. The rehabilitation project did not involve in-stream work. However, this bridge replacement project involves work within the water of the Piscataqua River associated with construction of the bridge piers.

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If you need further information or have any questions please contact me at 603-228-3057 ext 107 or Jamie.Sikora@dot.gov.

Sincerely,

Jamison S. Sikora
Environmental Programs Manager

Enclosures: Biological Assessment
Location maps and photograph of existing bridge
25% design plan sheet
eelgrass habitat

Cc: Kevin Nyhan, NHDOT Environment (electronic copy)
Charlie Hood, NHDOT (electronic copy)
Mark Hasselmann, FHWA ME Division (electronic copy)

Biological Assessment
Memorial Bridge Replacement Project over Piscataqua River between Kittery, ME and Portsmouth, NH
Portsmouth, NH – Kittery, ME, A000(911), 13678F

Affected Species

Our review of the project vicinity, and species list provided by the National Marine Fisheries Service (NMFS) on March 15, 2011, indicates that the federally listed endangered species, shortnose sturgeon (*Acipenser brevirostrum*), and candidate species Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*) may be present in the project area. The proposed action has the potential to cause a disruption of habitat and migration patterns as outlined below.

Status of Shortnose Sturgeon

The shortnose sturgeon was originally listed as endangered by the USFWS on March 11, 1967, under the Endangered Species Preservation Act. Shortnose sturgeon remained on the list of endangered species with enactment of the Endangered Species Act in 1973. The NMFS assumed jurisdiction for shortnose sturgeon in 1974. Although listed as endangered range wide, the NMFS recognizes 19 distinct population segments inhabiting 25 river systems ranging from the Saint John River in New Brunswick, Canada, to the St. John's River in Florida (NMFS, 1998).

Although once numerous, shortnose sturgeon numbers have declined drastically from pollution and over fishing to the point where the species is severely depleted in most of its former range. A Final Recovery Plan for the shortnose sturgeon was prepared by the NMFS in 1998 (NMFS, 1998). The plan indicates that dredging and bridge construction/removal projects may adversely affect the species. However, only hydraulic dredging methods and not mechanical dredging methods have been attributed to possible adverse effects to the species (PCC, 2000).

Status of Atlantic Sturgeon

On October 6,2010, NMFS proposed to list four distinct population segments (DPS) of Atlantic sturgeon *(Acipenser oxyrinchus oxyrinchus)* as endangered and one-DPS, the Gulf of Maine (GOM) DPS, as threatened (75 FR 61872; 75 FR 61890). The GOM DPS of Atlantic sturgeon includes all anadromous Atlantic sturgeon whose range occurs in watersheds from the Maine/Canadian border and extending southward to include all associated watersheds draining into the Gulf of Maine as far south as Chatham, MA. Within this range, Atlantic sturgeon have been documented in the Penobscot, Kennebec, Androscoggin, Sheepscot, Saco, Piscataqua, and Merrimack rivers. The marine range, including coastal bays and estuaries, of all Atlantic sturgeon extends from the Bay of Fundy, Canada to the Saint Johns River, FL (NMFS, 2010).

Project Setting/ Existing Conditions

The project is located on the Piscataqua River, four miles upstream from the outlet into the ocean at Portsmouth Harbor and six miles downstream of Little Bay. The drainage area for the river encompasses 1,495 square miles and includes the Salmon Falls River (which forms the boundary between Maine and New Hampshire upstream of the project), the Kennebunk River, Hampton Harbor, Great Bay, Bellamy River, Cocheco River, Oyster River, and York River. The tidal range on the river varies from 6.4 feet upstream at Dover Point to 8.7 feet at Kittery Point north

of Portsmouth Harbor. The Piscataqua River, an estuarine river, is the third fastest navigable river in the world, due to the presence of a large waterbody (Great Bay) upstream.

The lower Piscataqua River bottom is primarily a hard substrate, consisting largely of rock ledge, gravel, and cobble. Little sedimentation occurs due to the high tidal currents in the lower estuary. This river is approximately 1,200 feet across at the bridge site, where it is adjoined by the seawall in Portsmouth and rocky/riprapped shoreline in Maine.

The Piscataqua River within the project site in both New Hampshire and Maine is classified according to the *Classification of Wetlands and Deepwater Habitats of the United States* (U.S. Fish and Wildlife Service Manual FWS-OBS-79/31) as estuarine subtidal unconsolidated bottom (E1UBL). This waterway is classified as Class B in New Hampshire, suitable for fishing, swimming, and other recreational purposes. In Maine, the Piscataqua River is classified as SC, suitable for recreation in and on the water and fishing.

The wetland resources adjoining the river at the project site are defined by tidal range, in accordance with the definition of coastal wetlands in both New Hampshire and Maine. In New Hampshire, tidal jurisdiction includes all submerged lands, salt marsh, sand dunes, and tidal flats. The Portsmouth waterfront at the project site is characterized by a seawall that defines the limit of the highest observable tideline. In Kittery, the shoreline includes riprapped embankment on the northeast side of the bridge and riprapped/rocky shoreline on the northwest side of the bridge.

Aquatic habitats within the affected section of the Piscataqua River are limited to primarily unvegetated subtidal areas dominated by a hard substrate as described above. Submerged aquatic vegetation (SAV) is not present in this portion of the river based on our visual inspection of the river, and information from the University of New Hampshire.

Habitat Suitability

Shortnose sturgeon are found in rivers, estuaries, and the ocean, but are mainly confined to their natal rivers and estuaries (NMFS, 1998). The Woodrow Wilson Bridge Project (WWB), which was prepared by Potomac Crossing Consultants (PCC) in 2000, biological assessment assumed that a hypothetical Potomac River population would have life historic characteristics more like the north-central stocks than those of the southern rivers. The northern stocks of shortnose sturgeon appear to be freshwater amphidromous, i.e., adults spawn in freshwater, but regularly enter saltwater during their life (NMFS, 1998). Most immature shortnose sturgeon (less than 5 years) of the northern stocks appear to remain in freshwater or near the freshwater/saltwater interface (PCC, 2000). Shortnose sturgeon typically spawn in their natal rivers in the vicinity of the farthest upstream locations they can access (NMFS, 1998).

Atlantic sturgeon are "anadromous"; adults spawn in freshwater in the spring and early summer and migrate into "estuarine" and marine waters where they spend most of their lives. In some southern rivers a fall spawning migration may also occur. They spawn in moderately flowing water (46-76 cm/s) in deep parts of large rivers. Sturgeon eggs are highly adhesive and are deposited on bottom substrate, usually on hard surfaces (e.g., cobble). It is likely that cold, clean water is important for proper larval development. Once larvae begin migrating downstream they use benthic structure (especially gravel matrices) as refuges. Juveniles usually reside in estuarine waters for months to years (NMFS, 2010).

Subadults and adults live in coastal waters and estuaries when not spawning, generally in shallow (10-50 m depth) nearshore areas dominated by gravel and sand substrates. Long distance migrations away from spawning rivers are common (NMFS, 2010).

The habitat in the vicinity of the Memorial Bridge consists of a hard substrate with water depths ranging from about 1 foot along the shore of the river to about 45 feet in the channel. There are no submerged aquatic vegetation beds in the vicinity of the project site.

Early Life Cycle Stages

At hatching, shortnose sturgeon are ill equipped to survive as free-swimming fish in the open river. In the laboratory, 1 to 8-day old shortnose sturgeon were photonegative, actively sought cover under any available material, and swam along the bottom until cover was found (Richmond and Kynard 1995). Due to the nature of the currents and resulting substrate of this section of the Piscataqua River (hardened), it is not expected that appropriate early life cycle stage habitat exists at the site.

Atlantic sturgeon spawning occurs upriver in flowing water between the salt front and fall line of large rivers. Although the substrate exists for this life cycle stage of Atlantic sturgeon at the site, the Piscataqua River at this location is entirely salt water (NMFS, 2010).

Juveniles

Juveniles of shortnose sturgeon (3-10 year olds) occur in at the saltwater/freshwater interface in most rivers (Saint John River: Dadswell 1979; Pottle and Dadswell 1979; Hudson River: Dovel et al. 1992; Savannah River: Hall et al. 1991; and Altamaha River: Flournoy et al. 1992, Ogeechee River: Weber 1996). Juveniles move back and forth in the low salinity portion of the salt wedge during summer (Pottle and Dadswell 1979). Juveniles in the Savannah River use sand/mud substrate in 10-14 m depths (Hall et al. 1991); Saint John River juveniles use similar substrate in channels 10-20 m deep (Pottle and Dadswell 1979); and Hudson River juveniles have been collected over silt substrates in similar depths (Dovel et al. 1992; Haley et al. 1996). The appropriate type of substrate does not exist at the site based on this information (sand/mud). In addition, as this portion of the Piscataqua River is entirely salt water, it is not expected that habitat suitable for juveniles is available at the site.

Once larval Atlantic sturgeon begin migrating downstream they use benthic structure (especially gravel matrices) as refuges. Juveniles of Atlantic sturgeon usually reside in estuarine waters for months to years (NMFS, 2010). It appears that sites suitable for juvenile Atlantic sturgeon exist at the site. In addition, sites appear to exist upstream at and near the Great Bay estuary good for adult Atlantic sturgeon habitat

Adults

Adult sturgeon occurring in freshwater or freshwater/tidal reaches of rivers in summer and winter often occupy only a few short reaches of the total river length (Connecticut River: Buckley and Kynard 28 1985a; Savoy and Shake 1992; Savannah River: Hall et al. 1991; Altamaha River: Flouronoy et al. 1992; Delaware River: O'Herron et al. 1993; and Merrimack River: Kieffer and Kynard 1993). In the Connecticut and Merrimack Rivers, the "concentration areas" used by fish were reaches where natural or artificial features cause a decrease in river

flow, possibly creating suitable substrate conditions for freshwater mussels (Kieffer and Kynard 1993), a major prey item for adult sturgeon (Dadswell et al. 1984). The flow of water in this area is extremely strong, and features at the site do not decrease river flow. In addition, as this portion of the Piscataqua River is entirely salt water, it is not expected that habitat suitable for adults is available at the site.

Atlantic sturgeon spawning occurs upriver in flowing water between the salt front and fall line of large rivers. Although the substrate exists for this life cycle stage of Atlantic sturgeon at the site, the Piscataqua River at this location is entirely salt water. Subadults and adults live in coastal waters and estuaries when not spawning, generally in shallow (10-50 m depth) nearshore areas dominated by gravel and sand substrates. Long distance migrations away from spawning rivers are common (NMFS, 2010). It appears that sites suitable for adult Atlantic sturgeon exist at the site. In addition, sites appear to exist upstream at and near the Great Bay estuary good for adult Atlantic sturgeon habitat.

Proposed Action

The project will replace the Memorial Bridge (US Route 1) facility over the Piscataqua River, including its components: the Memorial Bridge lift span / flanking spans, the Kittery Approach Spans, and the Scott Avenue Bridge (Portsmouth approach) on the existing alignment. US Route 1 is a principal urban arterial, connecting Portsmouth's business district in New Hampshire with Badger's Island in the Town of Kittery, Maine.

Design and construction of this project will follow a design-build process. Design-Build (DB) is a method of project delivery in which the design and construction phases of a project are combined into one contract. This can provide substantial time savings compared with the more traditional Design-Bid-Build approach, where the design and construction services must be undertaken in sequence.

The project is proposed to be constructed within an 18-month construction window beginning in early 2012.

Proposed Bridge

Memorial Bridge Lift/Flanking Spans

The existing Memorial Bridge has three 300-ft spans that will be replaced with three 300-ft spans. The two existing concrete piers in the middle of the Piscataqua River will remain, with repairs made to their concrete surfaces and the potential replacement of the fendering system. While the replacement design will be determined during the DB process, the replacement bridge will be a three span bridge with a moveable center span that would accommodate at least as much horizontal and vertical clearances as the existing lift span. The roadway width will be increased from the existing 28 feet to 32 feet to accommodate one 11-foot travel lane and a 5-foot shoulder/bike lane in each direction. The roadway will have a solid surface as opposed to the open grate that currently exists on the lift span. Sidewalks will be provided on both sides of the bridge and will be 6 feet in width for the entire length of the bridge and will have a solid surface. The horizontal and vertical clearance for each of the three spans will not substantially change.

The existing north pier that is shared with the Kittery Approach Spans will also be replaced. These two piers would be completely removed and the new piers will likely be located in the same location, however, they would be wider to accommodate the wider Memorial Bridge.

Kittery Approach Spans

The proposed project includes the complete replacement of the Kittery Approach Spans, the northern approach component of the Memorial Bridge facility. While the replacement structure type will be determined during the DB process, the replacement bridge will likely be a multi-span structure, but with fewer than the existing ten spans because of design and maintenance considerations. The existing piers will be removed to several feet below the river substrate or to bedrock. The existing north pier of the Memorial Bridge is shared with the Kittery Approach Spans and will be replaced as discussed above. The north abutment will also be replaced near its existing location and will be 4 feet wider to accommodate a wider bridge. The roadway width will be increased from the existing 28 feet to 32 feet to accommodate one 11-foot travel lane and 5-foot shoulder/bike lane in each direction. Solid surface sidewalks will be provided on both sides of the bridge and will be 6 feet in width.

Construction

For the work in the Piscataqua River, cofferdams will be placed around the area where the work will be conducted (Kittery Approach Spans to the north and around the immediate flanking span piers being replaced) so that work could be completed in the dry. Cofferdams would likely consist of driven sheet piles anchored into bedrock. Once cofferdams are installed, within the agreed to timeframe of November 15th to March 15th, based on our March 15, 2011 conference call with NMFS, work would be performed in the dry with the discharge of sediment laden water to upland areas. It is acknowledged that installation and removal of cofferdams can cause temporary sedimentation increases, however the time of year restriction would limit any adverse effects on shortnose sturgeon.

Footings for new bridge piers for the bridge will be constructed of concrete as they are today. There would likely also be drilling for bridge pile shafts to be seated in bedrock or ledge. As such, there will be no blasting required for this project. There will be the need to control and dispose of the sediments that are excavated from the shaft. The material will be removed to an appropriate upland disposal site.

Removal of the existing concrete piers and footings would be limited to cutting them below the mud line, as requested by NMFS in our March 15, 2011 conference call. All material from the bridge demolition will be removed from the site.

The work site will be accessed via a barge. Additional details will be provided during the design-build process.

The area of work is relatively small and limited to new footings, piers and fendering system, and will not impact migration by affecting water flow.

The demolition of the existing truss spans of the bridge facility will be conducted by floating out the truss spans on barges to a suitable dry land location for dismantling. The Kittery Approach

Spans will be removed by mechanical methods to prevent construction debris from entering the Piscataqua River.

Predicted Effects/ Conclusions

It is the intent of this project to construct the proposed replacement bridges in a manner to minimize impacts to shortnose sturgeon and Atlantic sturgeon. New piers that are constructed will be constructed to minimize permanent impacts, as described below:

- The driving of sheet pile cofferdams will be conducted between November 15th and March 15th of any year. The noise generated during this activity is not expected to affect shortnose sturgeon or Atlantic sturgeon due to the window of in stream work and the expectation that shortnose sturgeon and Atlantic sturgeon are not present at these times. Once cofferdams are constructed, work within them can be performed in the dry throughout the year.

- Pier construction will not affect shortnose sturgeon or Atlantic sturgeon since this work will be conducted in the dry, behind fully effective cofferdams.

- The removal of existing piers will be conducted by saw cutting or similar methods.

Appropriate construction techniques, and mitigation measures will be implemented to minimize potential impacts during construction. These include:

- The existing truss spans of the bridge facility will be removed from the piers and floated on barges to a dry land location for dismantling.
- The Kittery Approach Spans will be demolished by mechanical methods.
- Sediment-laden water removed from cofferdam areas will be pumped to upland areas to minimize the potential for sedimentation increases during construction.
- The contractor selected for construction will be required to prepare a Stormwater Pollution Prevention Plan specific to this project. The plan will detail the types of sediment control devices and the timing of construction and dewatering, subject to the agreed upon time of year restriction of no instream work between March 16th and November 14th of any year.
- There will be no blasting for construction.
- Sediments removed from drill shafts and cofferdams will disposed of at an acceptable upland disposal site.

Given these commitments, it appears that the Memorial Bridge project "May Affect, But is Not Likely to Adversely Affect" the shortnose sturgeon and the Atlantic sturgeon.

We feel that the information contained herein is justification for requesting that the National Marine Fisheries Service concurs with this determination.

References

Buckley, J., and B. Kynard. 1985a. Yearly movements of shortnose sturgeon in the Connecticut River. Transactions of the American Fisheries Society 114:813-820.

CH2MHILL. 2006. *Biological Evaluation of Potential Impacts to Shortnose Sturgeon, 11th Street Bridge Project Washington, DC*. District of Columbia Department of Transportation. February 20, 2006.

Dadswell, M.J. 1979. Biology and population characteristics of the shortnose sturgeon, *Acipenser brevirostrum* LeSueur 1818 (Osteichthyes: Acipenseridae), in the Saint John River estuary, New Brunswick, Canada. Canadian Journal of Zoology 57:2186-2210.

Dadswell, M.J., B.D. Taubert, T.S. Squiers, D. Marchette, and J. Buckley. 1984. Synopsis of biological data on shortnose sturgeon, *Acipenser brevirostrum* LeSueur 1818. National Oceanic and Atmospheric Administration Technical Report NMFS 14, Washington, D.C..

Dovel, W.L., A.W. Pekovitch and T.J. Berggren. 1992. Biology of the shortnose sturgeon (*Acipenser brevirostrum* Lesueur, 1818) in the Hudson River estuary, New York. Pages 187-216 *in* C.L. Smith, editor, Estuarine Research in the 1980s. State University of New York Press, Albany, New York.

Flournoy, P.H., S.G. Rogers, and P.S. Crawford. 1992. Restoration of shortnose sturgeon in the Altamaha River, Georgia. Final Report to the U.S. Fish and Wildlife Service, Atlanta, Georgia.

Haley, N., J. Boreman, and M. Bain. 1996. Juvenile sturgeon habitat use in the Hudson River. Section VIII: 36 pages *in* J.R. Waldman, W.C. Nieder, E.A. Blair, editors, Final Reports of the Tibor T. Polgar Fellowship Program 1995, Hudson River Foundation, New York.

Hall, W.J., T.I.J. Smith, and S.D. Lamprecht. 1991. Movements and habitats of shortnose sturgeon *Acipenser brevirostrum* in the Savannah River. Copeia (3):695-702.

Kieffer, M., and B. Kynard. 1993. Annual movements of shortnose and Atlantic sturgeons in the Merrimack River, Massachusetts. Transactions of the American Fisheries Society 122:1088-1103.

Kynard, B. 1997. Life history, latitudinal patterns, and status of shortnose sturgeon. Environmental Biology of Fishes 48:319-334.

Kynard, B. in press. Twenty-two years of passing shortnose sturgeon in the Holyoke fish lifts: what has been learned? Proceedings of the International Conference on Fish Migration and Bypass Channels. Vienna, Austria.

National Marine Fisheries Service. 1993. Endangered Species Act Biological Opinion regarding continued operation of the Salem and Hope Creek Clear Generating Stations on the eastern shore of the Delaware River in New Jersey. Northeast Regional Office, Gloucester, Massachusetts. 109

National Marine Fisheries Service. 1996. Status review of shortnose sturgeon in the Androscoggin and Kennebec Rivers. Northeast Regional Office, Gloucester, Massachusetts.

National Marine Fisheries Service. 2010. Website: Species of Concern, NOAA National Marine Fisheries Service Atlantic Sturgeon *Acipenser oxyrinchus oxyrinchus* (http://www.nmfs.noaa.gov/pr/pdfs/species/atlanticsturgeon_detailed.pdf)

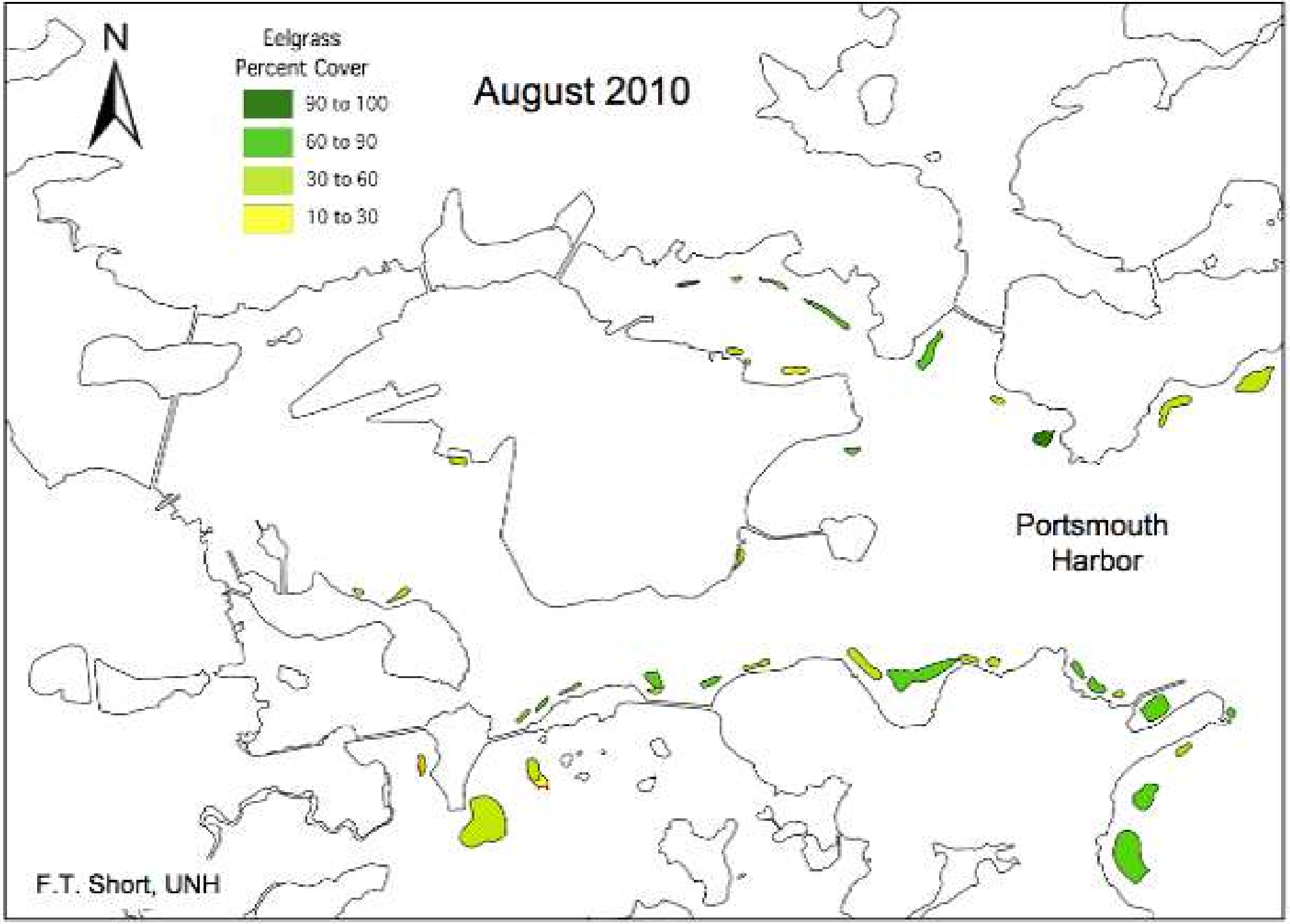
O'Herron, J.C., K.W. Able, and R.W. Hastings. 1993. Movements of shortnose sturgeon (*Acipenser brevirostrum*) in the Delaware River. Estuaries 16:235-240.

Potomac Crossing Consultants (PCC). 2000. *Shortnose Sturgeon Biological Assessment, Woodrow Wilson Bridge Project*. Prepared for the United States Federal Highway Administration. March.

Pottle, R., and M.J. Dadswell. 1979. Studies on larval and juvenile shortnose sturgeon (*Acipenser brevirostrum*). Report to the Northeast Utilities Service Company, Hartford, Connecticut
.
Richmond, A., and B. Kynard. 1995. Ontogenic behavior of shortnose sturgeon. Copeia 1995:172-182.

Savoy, T., and D. Shake. 1992. Sturgeon status in Connecticut waters. Final Report to the National Marine Fisheries Service, Gloucester, Massachusetts.

Weber, W. 1996. Population size and habitat use of shortnose sturgeon, *Acipenser brevirostrum*, in the Ogeechee River sytem, Georiga. Masters Thesis, University of Georgia, Athens, Georgia.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Eelgrass
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August 2010
Portsmouth
Harbor
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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

MAR 17 2011

Jamison Sikora
Environmental Program Manager
New Hampshire Division
Federal Highway Administration
19 Chenell Drive Suite 1
Concord, New Hampshire 03301

Re: Memorial Bridge - Route 1 Portsmouth, New Hampshire and Kittery, Maine

Dear Mr. Sikora,

This is in response to your letter dated March 16, 2011, requesting consultation pursuant to Section 7 of the ESA of 1973, as amended, with NOAA's National Marine Fisheries Service (NMFS) for the proposed Memorial Bridge replacement project over the Piscataqua River. According to the correspondence you have provided, the Federal Highway Administration (FHWA) is providing funds for this project to the New Hampshire Department of Transportation (NHDOT) through a Federal TIGER II grant for a design-build process for complete bridge replacement. Because of the requirements to obligate these funds within a short time frame, the FHWA requests an expedited review of the proposed project by Friday, March 18, 2011.

NHDOT, in cooperation with the FHWA and the Maine Department of Transportation (MDOT), is proposing to reconstruct the Memorial Bridge, which carries US Route 1 over the Piscataqua River. US Route 1 is a principal urban arterial, connecting Portsmouth's business district in New Hampshire with Badger's Island in the Town of Kittery, Maine. FHWA has made the preliminary determination that the proposed action may affect, but is not likely to adversely affect, any species listed under the jurisdiction of NMFS and has requested that NMFS concur with this determination.

Proposed Action

The project, as described, will replace the Memorial Bridge (US Route 1) over the Piscataqua River. This project includes replacement of multiple components; the Memorial Bridge lift span/flanking spans, the Kittery Approach Spans, and the Scott Avenue Bridge (Portsmouth approach) on the existing alignment. The area of in-water work is relatively small and limited to new footings, piers and fendering system, and should not substantially change water flow in the river. The work site will be accessed via a work barge. Appropriate construction techniques, and mitigation measures will be implemented to minimize potential impacts during construction.

Design and construction of this project will follow a design-build process. Design-Build (DB) is a method of project delivery in which the design and construction phases of a project are combined into one contract. The existing Memorial Bridge has three 300-ft spans that will be replaced with three 300-ft spans. The two existing concrete piers in the middle of the Piscataqua River will remain, with repairs made to their concrete surfaces and the potential replacement of the fendering system. While the replacement design will be determined during the DB process, the replacement bridge will be a three span bridge with a moveable center span that would accommodate at least as much horizontal and vertical clearances as the existing lift span. The roadway width will be increased from the existing 28 feet to 32 feet to accommodate one 11-foot travel lane and a 5-foot shoulder/bike lane in each direction. The roadway will have a solid surface and sidewalks will be provided on both sides of the bridge. The horizontal and vertical clearance for each of the three spans will not substantially change. The existing north pier that is shared with the Kittery Approach Spans will be replaced. These two piers would be completely removed and the new piers will likely be located in the same location; however, they would be wider to accommodate the wider Memorial Bridge.

Kittery Approach Spans

The proposed project includes the complete replacement of the Kittery Approach Spans, the northern approach component of the Memorial Bridge. While the replacement structure type will be determined during the DB process, the replacement bridge will likely be a multi-span structure, but with fewer than the existing ten piers because of design and maintenance considerations. The existing piers will be removed to several feet below the river substrate or to bedrock. The existing north pier of the Memorial Bridge is shared with the Kittery Approach Spans and will be replaced as discussed above. The north abutment will also be replaced near its existing location and will be 4 feet wider to accommodate a wider bridge. The roadway width will be increased from the existing 28 feet to 32 feet to accommodate one 11-foot travel lane and 5-foot shoulder/bike lane in each direction. Solid surface sidewalks will be provided on both sides of the bridge and will be 6 feet in width.

For the in-water work in the Piscataqua River, prior to any work on the bridge structure, cofferdams will be placed around the area where the work will be conducted (Kittery Approach Spans to the north and around the immediate flanking span piers being replaced) so that work could be completed in the dry. Cofferdams would likely consist of driven sheet piles anchored into bedrock. According to the Biological Assessment (BA) completed by the FHWA, all cofferdams will be constructed, installed and removed during the period of November 15th to March 15th in any year. Once cofferdams are installed, work would be performed in the dry with the discharge of sediment laden water to upland areas. This measure will significantly reduce the amount of sedimentation to the Piscataqua River.

Footings for new bridge piers supporting the bridge will be constructed of concrete. There would likely also be drilling for bridge pile shafts to be seated in bedrock or ledge. There will be the need to control and dispose of the sediments that are excavated from the shaft. The material will be removed to an appropriate upland disposal site.

Removal of the existing concrete piers and footings would be limited to cutting them below the mud line, as identified in the BA. As such, there will be no blasting required for this project. All material from the bridge demolition will be removed from the site.

The demolition of the existing truss spans of the bridge facility will be conducted by floating out the truss spans on barges to a suitable dry land location for dismantling. The Kittery Approach Spans will be removed by mechanical methods to prevent construction debris from entering the Piscataqua River.

NMFS ESA Listed Species in the Action Area

The action area is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50CFR§402.02). For this project, the action area includes the footprint of the existing bridge as well as the area encompassed by the cofferdams and the underwater area where effects of sheet pile installation for the cofferdams (i.e., increase in suspended sediment and noise) will be experienced. This area is expected to encompass all of the effects of the proposed construction project.

The federally endangered shortnose sturgeon (*Acipenser brevirostrum*) is believed to be present in the Piscataqua River. Shortnose sturgeon occur along the U.S. Atlantic coast with several large river systems in the vicinity of the Piscataqua River supporting reproducing shortnose sturgeon populations (e.g., Merrimack, Kennebec and Androscoggin Rivers). Historically, it is thought that shortnose sturgeon were once abundant in the Piscataqua River, though there are few records of sturgeon captures, none of which distinguish between Atlantic and shortnose sturgeon. There was one reported capture of a shortnose sturgeon in the Piscataqua River in 1971 (Dadswell et al. 1984). During 1988 and 1989, the New Hampshire Fish and Game Department surveyed suspected shortnose spawning and feeding areas, though no sturgeon were encountered. Most recently in 2007, a sturgeon was found dead on the Kittery, Maine side of the river, although it was not determined whether this individual was an Atlantic or shortnose (C. Patterson, pers. comm. 2008, cited in Draft Shortnose Sturgeon Status Review Report). With few records and no current directed studies underway in this river, it is unclear whether a shortnose sturgeon population currently exists in the Piscataqua River. However, as discussed below, current telemetry data does indicate that there is a potential for migrating individuals to be present.

It is clear from recent telemetry data that shortnose sturgeon tagged in the Merrimack, Kennebec, and Penobscot rivers undertake significant coastal migrations. Telemetry data also indicate that shortnose sturgeon utilize smaller coastal river systems during these migrations. For example, a fish tagged in the Merrimack River was recently documented in the Saco River, and individuals tagged in the Kennebec River have been detected in the Merrimack River and vice versa. Further, fish moving between the Penobscot and Kennebec rivers have been documented utilizing a number of smaller coastal rivers in between these two larger systems i.e., Damariscotta, St. George, Medomak, and Passagassawakeag. There is no information on telemetry tagged shortnose sturgeon within the Piscataqua River given that there are no receivers in the River. However, migrating shortnose sturgeon may potentially be utilizing the Piscataqua River during interbasin movements. As such, it is reasonable to expect listed shortnose sturgeon to be present in the lower portion of the Piscataqua River where the proposed action will occur

based on; (1) telemetry information which demonstrates interbasin movements of the species and utilization of smaller coastal river systems during migration; (2) the proximity of the Piscataqua River to other river systems where shortnose sturgeon are known to occur, and; (3) historical information on sturgeon presence in the Piscataqua. Based on the best available information, shortnose sturgeon are only likely to be present in the action area between mid April and mid October of any year.

Effects of the Action

As noted above, the proposed project involves the re-construction of a bridge over the Piscataqua River. In-water work will be limited to structural repairs to existing bridge piers and placement of new piers in close proximity to the existing piers. Work will be accomplished within sheet-pile cofferdams and from barges temporarily sited within the river. An in-water work window will prohibit the installation and removal of cofferdams between March 16 and November 14 of any year. Temporary effects from the project will likely be associated with water quality impacts and noise; however, BMPs will minimize the extent and duration of these impacts such that they are expected to be insignificant. No permanent impacts to water quality are expected as a result of the proposed project.

As noted above, shortnose sturgeon are only likely to occur in the action area between mid-April and mid-October; as such, shortnose sturgeon are not expected to be present in the action area when cofferdams are installed and removed (November 15-March 15 only). As no shortnose sturgeon are likely to be in the action area, no shortnose sturgeon will be exposed to increased levels of underwater noise resulting from the installation or removal of the steel sheet piles that will compose the cofferdam. Additionally, as any temporary increases in turbidity resulting from the installation or removal of cofferdams will be limited to the immediate area surrounding the sheet piles. Installing and removing sheet piles are expected to produce some sedimentation in the Piscataqua River. However, due to the large discharge of water in the river, NMFS anticipates that TSS levels will remain well below 50 mg/l. While there have been no directed studies on the effects of TSS on shortnose sturgeon, shortnose sturgeon juveniles and adults are often documented in turbid water and Dadswell (1984) reports that shortnose sturgeon are more active under lowered light conditions, such as those in turbid waters. As such, shortnose sturgeon are assumed to be at least as tolerant to suspended sediment as other estuarine fish. Additionally, shortnose sturgeon are not expected to be in the immediate vicinity due to the time of year restriction on conducting any in water work. Therefore, there would not be any disruption of essential behaviors such as migrating or foraging. As a result, any effects of increased suspended sediment or turbidity on shortnose sturgeon will be insignificant.
As such, the effects of cofferdam installation and removal on shortnose sturgeon are discountable.

During the time of year when shortnose sturgeon could be migrating through the action area, work will be ongoing from barges and within the cofferdams. However, as only an extremely small percentage of the river will be enclosed within cofferdams, there will be sufficient zone of passage for any shortnose sturgeon in the action area and any effect to migratory movements of shortnose sturgeon will be insignificant. Further, while the cofferdams will preclude the use of the enclosed area by foraging shortnose sturgeon, the extremely small area affected combined with the location within a migratory corridor where only opportunistic foraging is likely to occur,

makes any effects to the availability of prey for shortnose sturgeon insignificant. The presence of barges and work occurring on these barges will not affect shortnose sturgeon as it is not expected to cause any changes in their behavior or otherwise affect any individuals. As all of the other work on the bridge (i.e., replacement and/or repair of decking) will occur above the water line where shortnose sturgeon do not occur, there will be no effect to this species from this work.

Conclusions

Based on the determination that all effects, if adverse, will be insignificant or discountable, NMFS concurs with the FHWA's determination that the proposed project is not likely to adversely affect listed shortnose sturgeon. Additional details will be provided during the design-build process. As more information becomes available in regard to construction activities and proposed project timelines are further developed, the FHWA should contact NMFS to discuss anticipated project impacts and determine whether further consultation would be needed. Reinitiation of consultation is required and shall be requested by the Federal agency or by the NMFS, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (a) if new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered in the consultation; (b) If the identified action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in the consultation; or, (c) if a new species is listed or critical habitat designated that may be affected by the identified action.

Technical Assistance for the Proposed GOM DPS of Atlantic sturgeon

On October 6, 2010, NMFS proposed to list four distinct population segments (DPS) of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus)* as endangered and one DPS, the Gulf of Maine (GOM) DPS, as threatened (75 FR 61872; 75 FR 61890). The GOM DPS of Atlantic sturgeon includes the following: all anadromous Atlantic sturgeon whose range occurs in watersheds from the Maine/Canadian border and extending southward to include all associated watersheds draining into the Gulf of Maine as far south as Chatham, MA, as well as wherever these fish occur in coastal bays and estuaries and the marine environment. Within this range, Atlantic sturgeon have been documented in the following rivers: Penobscot, Kennebec, Androscoggin, Sheepscot, Saco, Piscataqua, and Merrimack. The marine range of Atlantic sturgeon from the GOM DPS extends from the Bay of Fundy, Canada to the Saint Johns River, FL. The GOM DPS also includes Atlantic sturgeon held in captivity (*e.g.,* hatcheries, scientific institutions) and which are identified as fish belonging to the GOM DPS based on genetics analyses, previously applied tags, previously applied marks, or documentation to verify that the fish originated from (hatched in) a river within the range of the GOM DPS, or is the progeny of any fish that that originated from a river within the range of the GOM DPS. The proposed action by the applicant falls within the geographic range of the GOM DPS of Atlantic sturgeon.

Under the provisions of 50 CFR §402.10, Federal agencies shall confer with NMFS on any action which is likely to jeopardize the continued existence of any proposed species or result in the destruction or adverse modification of proposed critical habitat. Similar to the discussion of effects to shortnose sturgeon above, if present in the action area, Atlantic sturgeon would be exposed to effects of the proposed project. However, the time of year restriction for in-water work makes interactions with any Atlantic sturgeon unlikely as this species is unlikely to occur in the action area during the November 15-March 15 period. Also, as any effects to the benthic

environment will be minor and temporary and there is not likely to be any change in species composition or substrate type in the action area, effects to Atlantic sturgeon resulting from effects of pier placement are also unlikely. Based on the best available information, effects to Atlantic sturgeon from the proposed action are unlikely. As such, a conference is not needed at this time for Atlantic sturgeon. Should project plans change, NMFS recommends that the FHWA discuss the potential need for conference with NMFS.

Should you have any questions about this correspondence please contact David Bean at our Maine Field Station at (207) 866-4172 or by e-mail (David.Bean@noaa.gov)

Sincerely,

Patricia A. Kurkul
Regional Administrator

EC: Murphy, Crocker, Bean – F/NER3
CC: Johnson – F/NER4
Hawkes – USFWS

File Code: Sec. 7 FHWA – NH/Maine Piscataqua River Memorial Bridge
PCTS: I/NER/2011/00923

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5087
http://www.fws.gov/newengland

January 3, 2011

To Whom It May Concern:

This project was reviewed for the presence of federally-listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

(http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm)

Based on the information currently available, no federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service (Service) are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under section 7 of the Endangered Species Act is not required.

This concludes the review of listed species and critical habitat in the project location(s) and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Mr. Anthony Tur of this office at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman
Supervisor
New England Field Office

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Maine Field Office
1168 Main Street
Old Town, ME 04468-2023
(207) 827-5938

HNTB
BOSTON
SEP 1 9 2005
RECEIVED

September 9, 2005

Addie Kim
HNTB Corporation
75 State St.
Boston, MA 02109

Dear Ms. Kim:

Thank you for your letter requesting information or recommendations from the U.S. Fish and Wildlife Service. This form provides the Service's response pursuant to Section 7 of the Endangered Species Act (ESA), as amended (16 U.S.C. 1531-1543), and the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667d).

Project Name/Location/County: NHDOT Portsmouth Memorial Bridge Rehabilitation

Date of Receipt of Incoming Letter: August 22, 2005 **Log Number:** 05-391

Based on the information currently available to us, no federally-listed species under the jurisdiction of the Service are known to occur in the project area, with the exception of occasional, transient bald eagles (*Haliaeetus leucocephalus*). Accordingly, no further action is required under Section 7 of the ESA, unless: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by the identified action.

The peregrine falcon, a Federal species of concern (which was formerly designated as a threatened species) nests at the nearby Portsmouth Naval Shipyard and has been observed using the bridge as a hunting perch. At this time, the peregrine falcon is afforded no protection under the Federal ESA. However, we strongly encourage you to consider this species in your project planning. The peregrine falcon is listed as endangered by Maine Inland Fisheries and Wildlife, and as such, is protected from taking. We encourage you to contact MDIFW's Regional Office (Scott Lindsay, Maine Inland Fisheries and Wildlife, RR 1, 358 Shaker Road, Gray, ME 04039 Phone: 207 657-2345) for more information.

A list of federally-listed species in Maine is enclosed for your information. Please contact the Maine Department of Inland Fisheries and Wildlife and Maine Natural Areas Program for an up to date account of state-listed species in the project area.

If you have any questions, please call me at (207) 827-5938.

Sincerely,

Mark A. McCollough,
Endangered Species Biologist

Enclosure

New Hampshire
Fish and Game Department

Region 3

225 Main Street, Durham, NH 03824-4732
(603) 868-1095
Headquarters: 11 Hazen Drive, Concord, NH 03301
(603) 271-3421

FAX (603) 868-3305
TDD Access: Relay NH 1-800-735-2964
Web site: www.wildlife.state.nh.us

Lee E. Perry
Executive Director

August 25, 2005

Ms. Addie Kim
HNTB Corp
75 State St.
Boston, MA 02109

Dear Ms. Kim,

Thank you for contacting us on this project. Certainly there is a lengthy list of species that are both resident and transient within the project area described in you August 18th communication. Since the Piscataqua River serves as the sole seaward conduit of transport to the complete Great Bay System we are of course very interested in the project. Resident populations in the project area would generally be those such as sessile invertebrates as the river currents there are quite high energy. Finfish residents are few and primarily of a seasonal nature (i.e. Cottids, Pholids, Labrids). More detailed lists of what may be present there as residents are available from numerous study reports that are in our library here in Durham.

Of greater concern to us than resident species in the project area are the many commercially and recreational species that pass through the river as adults, juveniles, and larval stages this list is lengthy and contains many that are of special concern to our agency. A review of some of the above mentioned study reports would be useful to you.

I see this contact as a first step towards developing for both of us a better understanding of the project and its potential environmental impact. I would suggest you schedule a meeting with us at our office during which we can share relevant information.

Sincerely,

John Nelson
Chief Marine Fisheries

Memo

NH Natural Heritage Bureau

To: Vicki Chase, McFarland Johnson, Inc.
10 Ferry Street, Unit 11, Suite 210
Concord, NH 03301-5022

From: Melissa Coppola, NH Natural Heritage Bureau
Date: 11/12/2010 (valid for one year from this date)
Re: Review by NH Natural Heritage Bureau
NHB File ID: NHB10-2778 Town: Portsmouth Location: Tax Maps: Map 105
Description: NHDOT proposes to replace the Memorial Bridge and the Scott Avenue Bridge in New Hampshire and Maine.
cc: Kim Tuttle

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

Comments:

Vertebrate species	State[1]	Federal	Notes
Peregrine Falcon (*Falco peregrinus anatum*)	T	M	Contact the NH Fish & Game Dept (see below).

[1]Codes: "E" = Endangered, "T" = Threatened, "--" = 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. For some purposes, including legal requirements for state wetland permits, the fact that no species of concern are known to be present is sufficient. However, 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

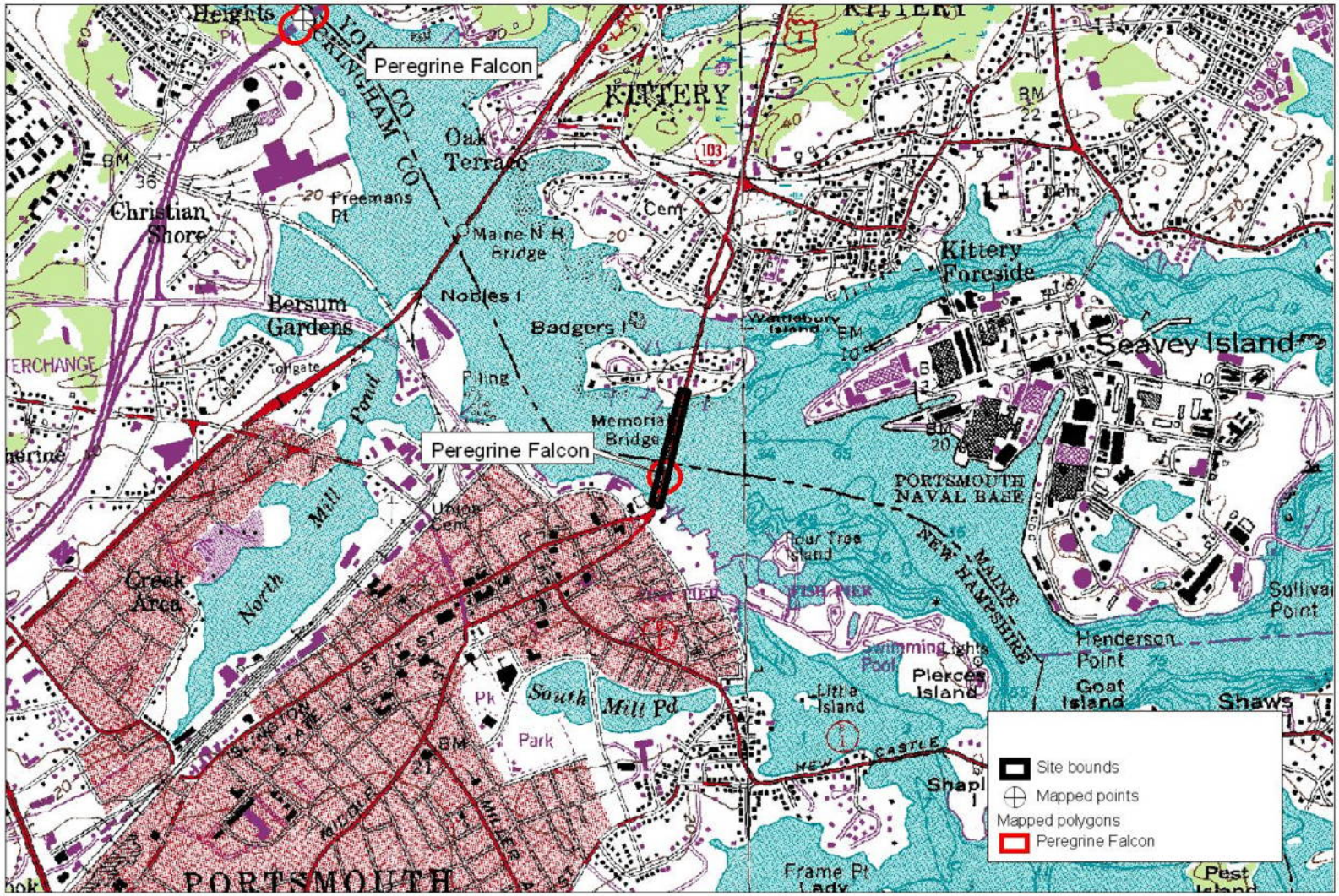
DRED/NHB
PO Box 1856
Concord NH 03302-1856

NHB10-2778

NH NATURAL HERITAGE BUREAU

Known locations of rare species and exemplary natural communities

Note: Mapped locations are not always exact. Occurrences that are not in the vicinity of the project are not shown.



*Historical record

0.25 0 0.25 0.5 0.75 1 Miles

1:18000

Valid for one year from this date: 12 Nov 2010

New Hampshire Natural Heritage Bureau - Animal Record

Peregrine Falcon (*Falco peregrinus anatum*)

Legal Status		**Conservation Status**	
Federal:	Monitored	Global:	Apparently secure but with cause for concern
State:	Listed Threatened	State:	Imperiled due to rarity or vulnerability

Description at this Location

Conservation Rank:	Poor quality, condition and/or lanscape context ('D' on a scale of A-D).
Comments on Rank:	Only 1 extant nesting site within EO.
Detailed Description:	2010: I-95, Nest 2: 3 chicks fledged.2009: I-95 Bridge: 3 chicks fledged.2008: I-95 Bridge: 1 chick fledged, not banded.2007: I-95 Bridge: 1 chick fledged, not banded.2006: Memorial Bridge: Nest failed after hatch.
General Area:	2007: I-95 Bridge: Used cavity in superstructure beam of bridge.2006: Memorial Bridge: Southwest tower of bridge
General Comments:	2007: I-95 Bridge: Adult male and female unbanded both legs.2006: Memorial Bridge: Formerly nested at Portsmouth Navel Shipyard in Maine. Both adults unbanded both legs. Collected 1 unhatched egg.
Management Comments:	2007: I-95 Bridge: Area normally restricted access, so no recreational closure signs necessary. Birds did not use nest tray/box placed below bridge deck in March 2007. Need to know future maintenance schedule.

Location

Survey Site Name: Portsmouth Harbor
Managed By:

County:	Rockingham	USGS quad(s):	Portsmouth (4307017)
Town(s):	Portsmouth	Lat, Long:	430533N, 0704600W
Size:	5.4 acres	Elevation:	

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

Directions: Memorial Bridge: Rte.1 north of Portsmouth near the border of NH and ME. I-95 Bridge: Nested in cavity of a superstructure beam on the Interstate 95 bridge just south of the border between NH and ME.

Dates documented

First reported:	2006	Last reported:	2010

Martin, Chris. 2007. Status of Breeding Peregrine Falcons in New Hampshire in 2007. Final report submitted to NH Fish and Game, October, 15, 2007.

The U.S. Fish & Wildlife Service has jurisdiction over Federally listed species. Please contact them at 70 Commercial Street, Suite 300, Concord NH 03301 or at (603) 223-2541.

Vicki Chase - RE: Memorial Bridge NHB 10-2778

From: "Tuttle, Kim" <Kim.Tuttle@wildlife.nh.gov>
To: Vicki Chase <vchase@mjinc.com>
Date: 1/28/2011 9:54 AM
Subject: RE: Memorial Bridge NHB 10-2778

Vicki,

The NHFG Nongame and Endangered Species Program concurs with Chris Martin's assessment. Impacts to peregrine falcon are unlikely as the peregrine falcons have not nested on the Memorial Bridge structure in the last several years. If for some reason, a pair is observed building a nest on the bridge, contact Mike Marchand, John Kanter (NHFG) or Chris Martin (NH Audubon) immediately and we will decide what has to happen (e.g. discourage nesting).

Regards,

Kim Tuttle
Wildlife Biologist
NH Fish and Game
Nongame and Endangered Species Program
603-271-6544

From: Vicki Chase [mailto:vchase@mjinc.com]
Sent: Friday, January 28, 2011 9:18 AM
To: Tuttle, Kim
Subject: RE: Memorial Bridge NHB 10-2778

Hi Kim,

I received the correspondence from Chris Martin about the peregrine falcons on the Memorial Bridge, as did you - please let me know how you would like to proceed.

Thanks,

Vicki

Vicki Chase
Environmental Analyst

McFarland-Johnson, Inc.
53 Regional Drive
Concord, NH 03301

Phone: 603-225-2978
Fax: 603-225-0095

www.mjinc.com

>>> "Tuttle, Kim" <Kim.Tuttle@wildlife.nh.gov> 1/25/2011 8:17 AM >>>
Vicki.

Any further details will help NHFG review for potential impacts to peregrine falcon. Is there a timeline for the construction? Will the new bridge be built alongside the old one and then removed or will the current structure be torn down and the new one built in its place?

Thanks,
Kim

Kim Tuttle
Wildlife Biologist
NH Fish and Game
Nongame and Endangered Species Program
603-271-6544

From: Vicki Chase [mailto:vchase@mjinc.com]
Sent: Monday, January 24, 2011 4:19 PM
To: Tuttle, Kim
Subject: Memorial Bridge NHB 10-2778

Hi Kim,

McFarland Johnson is providing environmental permitting services for the NHDOT for the proposed replacement of the Memorial Bridge connecting Portsmouth with Kittery, Maine. We recently submitted a rare species review request to the NH Natural Heritage Bureau, which responded that there is a record of a peregrine falcon previously nesting on the bridge superstructure. (NHB 10-2778)

The previous environmental study prepared for the bridge rehabilitation, approved in May, 2008, stated

"The USFWS, Maine Office, reported that the peregrine falcon (Falco peregrinus), a Federal species of concern and State-endangered species in New Hampshire and Maine, had been observed using the Memorial Bridge as a hunting perch and nests at the nearby Portsmouth Naval Shipyard. In the spring of 2006, a peregrine falcon nest was established on the movable counterweight on the Memorial Bridge. Spring-time inspections of the counterweight on the Memorial Bridge were suspended to avoid disturbing the nest. The nest was subsequently abandoned during a rainstorm in mid-May and was not productive. The NHDOT has since established a more stable platform/nesting site atop the I-95 Bridge as an alternative site. In the spring of 2007, peregrine falcons were observed on the I-95 Bridge, although nesting was not confirmed, and the peregrine falcons have not been observed on, and did not return to nest on, the Memorial Bridge.."

Because the project has changed and now involves removing and replacing the existing bridge, we request guidance or information about the known presence of peregrine falcons on the Memorial Bridge.

Thank you for your assistance in this matter.

Vicki Chase
Environmental Analyst

McFarland-Johnson, Inc.
53 Regional Drive
Concord, NH 03301

Phone: 603-225-2978
Fax: 603-225-0095

www.mjinc.com

From: Christian Martin <CMartin@NHAudubon.org>
To: Vicki Chase <vchase@mjinc.com>
CC: Tony Tur <anthony_tur@fws.gov>, Charlie Todd <charlie.todd@maine.gov>, K...
Date: 1/25/2011 2:41 PM
Subject: Re: FW: Memorial Bridge NHB 10-2778
Attachments: PEFA incubating eggs on Memorial Bridge 5-2-06 by NHDOT.JPG; I-95 PEFA chic ks 6-7-10 by Chris Martin.JPG; Mem Bridge 1-10-11 by Steve Bennett.bmp; PEF A on Memorial Bridge 2-6-10 by Steve Mirick.jpg

Vicki and others -

The information that you have presented below about peregrine falcons nesting at the Memorial Bridge and the Portsmouth Naval Shipyard is largely accurate, however it is dated. I can provided you with updated info covering 2007 thru 2010. Much of what I am about to tell you is information that has previously been provided to both the NH Natural Heritage Bureau and to the NH Fish & Game Nongame Wildlife Program. In New Hampshire, these two agencies remain the appropriate State-level contacts for this information. As this is a bi-state bridge, Maine's Department of Inland Fisheries and Wildlife should also be consulted.

In Spring of 2006, the Portsmouth Harbor peregrine falcon pair did attempt to nest on the Memorial Bridge (see attachment) but failed due primarily to excessive rainfall during incubation. From 2007-2010, the peregrine falcon pair has nested successfully 4 out of 4 years on the Interstate 95 Bridge upstream about one mile from the Memorial Bridge. The adults have raised 8 fledglings during that time: 1 in 2007, 1 in 2008, 3 in 2009, and 3 in 2010. In 2007-2009, they nested in three different locations in hollow beams in the superstructure of the bridge (in NH in 2007 and 2008, in Maine in 2009). In 2010 they nested on a gravel-filled tray (see attachment) placed on beams located under the road surface. Two such trays/boxes were installed under the bridge in March 2007 by US Fish & Wildlife Service and NH Department of Transportation staff.

These local peregrines continue to utilize both the Memorial and Sarah Long bridges as two of many available perching sites, but appear to have selected the I-95 Bridge as their primary nesting location. Perching on the Memorial Bridge is documented annually; in fact over the last several weeks birders have seen one or both members of the pair perching on the Memorial Bridge (see attachments) with regularity, as detailed below.

1/8/2011 1 Peregrine atop a tower of the Memorial Bridge checking out the peregrines at Prescott Park (Dave Tucker)
1/9/2011 2 Peregrines together on Memorial Bridge in Portsmouth (Steve Bennett)
1/11/2011 1 ad Peregrine sitting on Memorial Bridge (NH side) in Portsmouth (Steve Mirick)
1/22/2011 1 Peregrine on Memorial Bridge about 12:30pm (Phil and Julie Brown)

I hope this addresses some of your initial questions and concerns. Please continue to work through the NH Fish & Game Wildlife Nongame Program and Maine DIF&W regarding this matter; I will endeavor to assist as appropriate.

- Chris

From: Vicki Chase [mailto:vchase@mjinc.com]
Sent: Monday, January 24, 2011 4:19 PM
To: Tuttle, Kim
Subject: Memorial Bridge NHB 10-2778

Hi Kim,

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Portsmouth with Kittery, Maine. We recently submitted a rare species review request to the NH Natural Heritage Bureau, which responded that there is a record of a peregrine falcon previously nesting on the bridge superstructure. (NHB 10-2778)

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the Memorial Bridge as a hunting perch and nests at the nearby Portsmouth Naval Shipyard. In
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Memorial Bridge. Spring-time inspections of the counterweight on the Memorial Bridge were
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rainstorm in mid-May and was not productive. The NHDOT has since established a more stable
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falcons were observed on the I-95 Bridge, although nesting was not confirmed, and the peregrine
falcons have not been observed on, and did not return to nest on, the Memorial Bridge.."

Because the project has changed and now involves removing and replacing the existing bridge, we request guidance or information about the known presence of peregrine falcons on the Memorial Bridge.

Thank you for your assistance in this matter.

Vicki Chase
Environmental Analyst

McFarland-Johnson, Inc.
53 Regional Drive
Concord, NH 03301

Phone: 603-225-2978
Fax: 603-225-0095

www.mjinc.com

Chris Martin, Senior Biologist
Conservation Department, New Hampshire Audubon
84 Silk Farm Road, Concord, NH 03301

Office phone: 603/224-9909 x317; Fax: 603/226-0902;
E-mail: cmartin@nhaudubon.org; Web: www.nhaudubon.org

New Hampshire Audubon -- Protecting New Hampshire's natural environment for wildlife and for people.

Vicki Chase - RE: Memorial Bridge Portsmouth - Kittery

From: "Timpano, Steve" <Steve.Timpano@maine.gov>
To: Vicki Chase <vchase@mjinc.com>
Date: 3/17/2011 9:42 AM
Subject: RE: Memorial Bridge Portsmouth - Kittery
CC: "Lindsay, Scott" <Scott.Lindsay@maine.gov>, "Camuso, Judy" <Judy.Camuso@...

Vicki;

Confirming and updating MDIFW's 2005 finding of no known state-listed Endangered or Threatened wildlife species at the Memorial Bridge in Kittery. No records of occurrence at the specific bridge location as of the current date.

Note we do have records of occurrences of Peregrine Falcon upstream at the I-95 bridge, and downstream at the Portsmouth Naval Shipyard on Seavey Island. Breeding populations of Peregrine Falcon are State-listed as Endangered. If a bridge replacement project does go forward we request additional consultation with our department during project planning. There may be a need for specific nesting Peregrine surveys and considerations for seasonal scheduling of certain construction activities if birds are within the project area at that time.

Steve T.

STEVEN A. TIMPANO
ENVIRONMENTAL COORDINATOR
MAINE DEPARTMENT OF INLAND FISHERIES & WILDLIFE
41 SHS, 284 STATE STREET
AUGUSTA, ME 04333

TEL. (207) 287-5258
FAX (207) 287-6395
E-MAIL: STEVE.TIMPANO@MAINE.GOV

From: Vicki Chase [mailto:vchase@mjinc.com]
Sent: Tuesday, March 15, 2011 2:37 PM
To: Timpano, Steve
Subject: Memorial Bridge Portsmouth - Kittery

Good Afternoon Steve,

The New Hampshire Department of Transportation, in collaboration with the Federal Highway Administration and the Maine Department of Transportation, proposes to replace the Memorial Bridge connecting Portsmouth, New Hampshire to Kittery, Maine. The project is on an extremely aggressive schedule in order to secure a $20 million TIGER grant. We are aiming to complete a NEPA document by Thursday, March 17. To this end, we would like to confirm the finding of no known state listed wildlife species for the previous Memorial Bridge

STATE OF MAINE
DEPARTMENT OF CONSERVATION
93 STATE HOUSE STATION
AUGUSTA, MAINE
04333-0093

PAUL R. LEPAGE
GOVERNOR

WILLIAM H. BEARDSLEY
COMMISSIONER

RECEIVED
FEB 17 2011
McFarland Johnson
Concord, NH

17513.01

February 14, 2011

Vicki Chase
McFarland-Johnson, Inc.
53 Regional Drive
Concord, NH 03301-8500

Re: Rare and exemplary botanical features in proximity to: Memorial Bridge, Kittery, Maine.

Dear Ms. Chase:

I have searched the Natural Areas Program's Biological and Conservation Data System files in response to your request of February 7, 2011 for information on the presence of rare or unique botanical features documented from the vicinity of the project site in Kittery, Maine. Rare and unique botanical features include the habitat of rare, threatened, or endangered plant species and unique or exemplary natural communities. Our review involves examining maps, manual and computerized records, other sources of information such as scientific articles or published references, and the personal knowledge of staff or cooperating experts.

Our official response covers only botanical features. For authoritative information and official response for zoological features you must make a similar request to the Maine Department of Inland Fisheries and Wildlife, 284 State Street, Augusta, Maine 04333.

According to the information currently in our Biological and Conservation Data System files, there are no rare botanical features documented specifically within the project area. This lack of data may indicate minimal survey efforts rather than confirm the absence of rare botanical features. You may want to have the site inventoried by a qualified field biologist to ensure that no undocumented rare features are inadvertently harmed.

If a field survey of the project area is conducted, please refer to the enclosed supplemental information regarding rare and exemplary botanical features documented to occur in the vicinity of the project site. The list may include information on features that have been known to occur historically in the area as well as recently field-verified information. While historic records have not been documented in several years, they may persist in the area if suitable habitat exists. The enclosed list identifies features with potential to occur in the area, and it should be considered if you choose to conduct field surveys.

This finding is available and appropriate for preparation and review of environmental assessments, but it is not a substitute for on-site surveys. Comprehensive field surveys do not exist for all natural areas in Maine, and in the absence of a specific field investigation, the Maine Natural Areas Program cannot provide a definitive statement on the presence or absence of unusual natural features at this site.

MAINE NATURAL AREAS PROGRAM
MOLLY DOCHERTY, DIRECTOR

PHONE: (207) 287-8044
FAX: (207) 287-8040
TTY: (207) 287-2213

The Natural Areas Program is continuously working to achieve a more comprehensive database of exemplary natural features in Maine. We would appreciate the contribution of any information obtained should you decide to do field work. The Natural Areas Program welcomes coordination with individuals or organizations proposing environmental alteration, or conducting environmental assessments. If, however, data provided by the Natural Areas Program are to be published in any form, the Program should be informed at the outset and credited as the source.

The Natural Areas Program has instituted a fee structure of $75.00 an hour to recover the actual cost of processing your request for information. You will receive an invoice for $75.00 for our services.

Thank you for using the Natural Areas Program in the environmental review process. Please do not hesitate to contact me if you have further questions about the Natural Areas Program or about rare or unique botanical features on this site.

Sincerely,

Don Cameron
Ecologist
Maine Natural Areas Program
207-287-8041
don.s.cameron@maine.gov

Enclosures

Rare and Exemplary Botanical Features in the Project Vicinity

Documented within a four-mile radius of the Memorial Bridge, Kittery, Maine.

Feature Name	Global Rank	State Rank	State Status	EO Number	Last Seen	Habitat
Lindera benzoin	G5	S3	SC	22	1996-06-10	Forested wetland
Chamaecyparis thyoides	G4	S2	SC	13	1996-06-10	Forested wetland
Carex laxiculmis	G5	S2	E	4	1996-06-10	Hardwood to mixed forest (forest, upland)
Ilex laevigata	G5	S3	SC	25	1980	Forested wetland
LIndera benzoin	G5	S3	SC	19	2001-07-20	Forested wetland
Sassafras albidum	G5	S2	SC	11	1905-08-18	Old field / roadside (non-forested, wetland or upland)
Allium canadense	G5	S2	SC	9	1983	Hardwood to mixed forest (forest, upland)
Carya cordiformis	G5	S1	E	1	1995-02-02	Hardwood to mixed forest (forest, upland)
Spartina saltmarsh	G5	S3		7	2009-09-14	Tidal wetland (non-forested, wetland)
Lindera benzoin	G5	S3	SC	2	2006-08-03	Forested wetland
Agalinis maritima	G5	S3	SC	11	1982	Tidal wetland (non-forested, wetland)
Liatris scariosa var. novae-angliae	G5?T3	S1	T	7	1922	Dry barrens (partly forested, upland)
Sericocarpus asteroides	G5	S1	E	3	1891	Dry barrens (partly forested, upland)
Verbena urticifolia	G5	SH	PE	1	1905-08	Hardwood to mixed forest (forest, upland)
Prunus maritima	G4	S1	E	16	1941-09-05	Rocky coastal (non-forested, upland)
Ranunculus ambigens	G4	SH	PE	4	1907-07-08	Open water (non-forested, wetland)

Rare and Exemplary Botanical Features in the Project Vicinity

Documented within a four-mile radius of the Memorial Bridge, Kittery, Maine.

Feature Name	Global Rank	State Rank	State Status	EO Number	Last Seen	Habitat
Thalictrum thalictroides	G5	S1	E	2	2003-05-23	Hardwood to mixed forest (forest, upland)
Chimaphila maculata	G5	S2	E	21	2000	Conifer forest (forest, upland)
Platanthera flava var. herbiola	G4T4Q	S2	SC	25	1916-08-19	Non-tidal rivershore (non-forested, seasonally wet)
Rhynchospora macrostachya	G4	S1	E	1	1938-09-08	Open wetland, not coastal nor rivershore (non-forested, wetland)
Verbena urticifolia	G5	SH	PE	4	1887-08-25	Hardwood to mixed forest (forest, upland)
Polygonum tenue	G5	SH	PE	2	1896-08-26	Dry barrens (partly forested, upland)
Triosteum aurantiacum	G5	S1	E	6	1961-07-25	Hardwood to mixed forest (forest, upland)
Bidens hyperborea	G4	S3	SC	10	1936-07	Tidal wetland (non-forested, wetland)
Chimaphila maculata	G5	S2	E	25	2005-04-10	Conifer forest (forest, upland)
Carex atherodes	G5	S1	E	3	2008-06	Coastal non-tidal wetland (non-forested, wetland)

STATE RARITY RANKS

S1	Critically imperiled in Maine because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extirpation from the State of Maine.
S2	Imperiled in Maine because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
S3	Rare in Maine (20-100 occurrences).
S4	Apparently secure in Maine.
S5	Demonstrably secure in Maine.
SU	Under consideration for assigning rarity status; more information needed on threats or distribution.
SNR	Not yet ranked.
SNA	Rank not applicable.
S#?	Current occurrence data suggests assigned rank, but lack of survey effort along with amount of potential habitat create uncertainty (e.g. S3?).

Note: **State Rarity Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines State Rarity Ranks for animals.

GLOBAL RARITY RANKS

G1	Critically imperiled globally because of extreme rarity (five or fewer occurrences or very few remaining individuals or acres) or because some aspect of its biology makes it especially vulnerable to extinction.
G2	Globally imperiled because of rarity (6-20 occurrences or few remaining individuals or acres) or because of other factors making it vulnerable to further decline.
G3	Globally rare (20-100 occurrences).
G4	Apparently secure globally.
G5	Demonstrably secure globally.
GNR	Not yet ranked.

Note: **Global Ranks** are determined by NatureServe.

STATE LEGAL STATUS

Note: State legal status is according to 5 M.R.S.A. § 13076-13079, which mandates the Department of Conservation to produce and biennially update the official list of Maine's **Endangered** and **Threatened** plants. The list is derived by a technical advisory committee of botanists who use data in the Natural Areas Program's database to recommend status changes to the Department of Conservation.

E	ENDANGERED; Rare and in danger of being lost from the state in the foreseeable future; or federally listed as Endangered.
T	THREATENED; Rare and, with further decline, could become endangered; or federally listed as Threatened.

NON-LEGAL STATUS

SC	SPECIAL CONCERN; Rare in Maine, based on available information, but not sufficiently rare to be considered Threatened or Endangered.
PE	Potentially Extirpated; Species has not been documented in Maine in past 20 years or loss of last known occurrence has been documented.

Visit our website for more information on rare, threatened, and endangered species!
http://www.maine.gov/doc/nrimc/mnap

ELEMENT OCCURRENCE RANKS - EO RANKS

Element Occurrence ranks are used to describe the quality of a rare plant population or natural community based on three factors:

- Size: Size of community or population relative to other known examples in Maine. Community or population's viability, capability to maintain itself.
- Condition: For communities, condition includes presence of representative species, maturity of species, and evidence of human-caused disturbance. For plants, factors include species vigor and evidence of human-caused disturbance.
- Landscape context: Land uses and/or condition of natural communities surrounding the observed area. Ability of the observed community or population to be protected from effects of adjacent land uses.

These three factors are combined into an overall ranking of the feature of **A**, **B**, **C**, or **D**, where **A** indicates an **excellent** example of the community or population and **D** indicates a **poor** example of the community or population. A rank of **E** indicates that the community or population is **extant** but there is not enough data to assign a quality rank. The Maine Natural Areas Program tracks all occurrences of rare (S1-S3) plants and natural communities as well as A and B ranked common (S4-S5) natural communities.

Note: **Element Occurrence Ranks** are determined by the Maine Natural Areas Program for rare plants and rare and exemplary natural communities and ecosystems. The Maine Department of Inland Fisheries and Wildlife determines Element Occurrence ranks for animals.

Visit our website for more information on rare, threatened, and endangered species!
http://www.maine.gov/doc/nrimc/mnap

JOHN H. LYNCH
GOVERNOR

STATE OF NEW HAMPSHIRE
OFFICE OF ENERGY AND PLANNING
57 Regional Drive, Suite 3
Concord, NH 03301-8519
Telephone: (603) 271-2155
Fax: (603) 271-2615

www.nh.gov/oep

HNTB
BOSTON
SEP 01 2005
RECEIVED

August 25, 2005

Ms. Addie Kim
HNTB Corporation
75 State Street
Boston, MA 02109

RE: NHDOT Portsmouth Memorial Bridge (Route 1) Rehabilitation
Portsmouth, NH – Kittery, ME
Project No. BHF-X-T-0101-1 (015), 13678

Dear Ms. Kim,

I am writing in response to your letter of August 18, 2005 regarding the above referenced project.

I have attached a copy of the Flood Insurance Rate Map for the project area. Although it appears that the proposed project is located within the special flood hazard area (Zone AE), the proposed project does not sound as if it will impact this area.

OEP is not authorized by the Federal Emergency Management Agency (FEMA) to make final determinations on the impacts of floodplain development. HNTB should use its best judgment in determining if further study is necessary. If HNTB feels that the proposed construction will have a negligible effect on flooding dynamics then additional coordination with FEMA is likely not necessary.

It is advisable to check with the City of Portsmouth to assure that this proposed project does not conflict with their floodplain development ordinance.

If you need further assistance please contact me at 271-2155 or jennifer.delong@nh.gov.

Sincerely,

Jennifer DeLong
Water Resources Planner

Enclosure

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

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

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0259E

FIRM

FLOOD INSURANCE RATE MAP

ROCKINGHAM COUNTY, NEW HAMPSHIRE

(ALL JURISDICTIONS)

PANEL 259 OF 681

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
PORTSMOUTH, CITY OF	330139	0259	E

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

MAP NUMBER
33015C0259E

EFFECTIVE DATE
MAY 17, 2005

Federal Emergency Management Agency

TOWN OF SOUTH ELIOT
CITY OF PORTSMOUTH
RIVER
MAINE
NEW HAMPSHIRE
MEMORIAL BRIDGE
ZONE AE
(EL 9)
ZONE X
OC0290
OC0413
SOUTH MILL POND
MARKET ST
GREEN ST
WBEX RD
HIGH ST
HANOVER ST
LADD ST
FLEET ST
MAPLEWOOD AVE
BRIDGE ST
TANNER ST
PARKER ST
PEARL ST
ROCK ST
CONGRESS ST
MIDDLE ST
PORTER ST
COURT ST
ISLINGTON ST
STATE ST
CHATHAM ST
SUMMER ST
AUSTIN ST
COFFINS CT
US 1 MIDDLE ST
MERRIMAC ST
PARROT AVE
ROCKLAND ST
KENT ST
JUNKINS AVE
BLOSSOM ST
HUMPHREYS CT
SHERBURNE
SOUTH ST
PENHALLOW ST
CHURCH ST
PLEASANT ST
RICHMOND ST
DANIEL ST
SHEAFE ST
ATKINSON ST
CHAPEL ST
BOW ST
MARCY ST
HOWARD ST
GARDNER ST
HUNKING ST
1

LEGEND

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

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

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

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

OTHER FLOOD AREAS

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

OTHER AREAS

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

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

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

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

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

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

513 — Base Flood Elevation line and value; elevation in feet*

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

*Referenced to the National Geodetic Vertical Datum of 1929

A — A Cross section line

STATE OF NEW HAMPSHIRE
DEPARTMENT of RESOURCES and ECONOMIC DEVELOPMENT
DIVISION of PARKS and RECREATION
172 Pembroke Road P.O. Box 1856 Concord, New Hampshire 03302-1856

GEORGE M. BALD
Commissioner

ALLISON MCLEAN
Director

(603)271-3556
FAX: (603)271-3553
WEB: www.nhstateparks.org
E-MAIL: nhparks@dred.state.nh.us

April 18, 2007

Addie Kim
Senior Environmental Planner
HNTB Corporation
75 State Street
Boston MA 02109

Re: **NH DOT Portsmouth Memorial Bridge (Route 1) Rehabilitation, Project Number: BHF-X-T-0101-1(015), 13678**

Dear Ms. Kim:

This letter is in response to your request for information regarding any Land and Water Conservation Fund (LWCF) properties that may be impacted by the above referenced project. Upon review of our files, I have found several properties that were funded with Land and Water Conservation Fund grant monies in the City of Portsmouth.

I have included a list of the 6(f) properties for you to review. Please contact me should you have any questions or concerns. It is important to keep this office updated of any progressions that may happen with this project.

Sincerely,

Dee Dee Hanson for
Shari Colby

Shari A. Colby
Community Outreach Specialist

HNTB
BOSTON
APR 24 2007
RECEIVED

ProjID	Municipality	ProjName
3300057	Portsmouth	JFK HANDBALL COURTS
3300155	Portsmouth	HAVEN SCHOOL NEIGHBORHOOD PARK
3300173	Portsmouth	PRESCOTT PARK AND FOUR TREE ISLAND
3300182	Portsmouth	JONES AVENUE RECREATION AREA
3300224	Portsmouth	PORTSMOUTH TWO MINI PARKS
3300251	Portsmouth	MC DONOUGH STREET NEIGHBORHOOD PARK
3300271	Portsmouth	SOUTH PLAYGROUND ("LEARY FIELD")
3300272	Portsmouth	CLOUGH MULTIPURPOSE FIELD
3300280	Portsmouth	PIERCE ISLAND SWIMMING POOL (WITHDRAWN)
3300288	Portsmouth	WENTWORTH GROVE OPEN SPACE
3300308	Portsmouth	ATLANTIC HEIGHTS PARK
3300315	Portsmouth	LEARY FIELD
3300365	Portsmouth	PORTSMOUTH SHELTERED POOL
3300377P	Portsmouth	PORTSMOUTH PARKS
3300377Q	Portsmouth	PORTSMOUTH GREENBELT (DRAKE)
3300391	Portsmouth	STONE FARM ADDITION (ALENSKIS)
3300410	Portsmouth	LITTLE HARBOR TRUST
3300412	Portsmouth	PINE STREET PARK - PORTSMOUTH
3300457	Portsmouth	PRESCOTT PARK IMPROVEMENTS
3300467	Portsmouth	PIERCE ISLAND POOL RENOVATION
3300538	Portsmouth	PORTSMOUTH MULTIPURPOSE FIELD
3300588	Portsmouth	PIERCE ISLAND PLAYGROUND
3300602	Portsmouth	PIERCE ISLAND BRIDGE
3300648	Portsmouth	PORTSMOUTH CANOE-KAYAK TRAIL STAGE I

Addie Kim

From: Kevin Nyhan [KNyhan@dot.state.nh.us]
Sent: Tuesday, April 24, 2007 7:36 AM
To: Addie Kim
Cc: Robert Landry; Charles Hood; Joyce McKay; Gail Wolek (E-mail)
Subject: Portsmouth-Kittery, 13678 (Historic Sign and Section 6(f) properties)

Hi Addie,

I coordinated with Gail Wolek and Dee Dee Hanson at DRED regarding the use of 6(f) funds in Prescott Park and the location of the interpretive sign memorializing the bridge. DRED felt that the sign would not be a section 6(f) use of property requiring special conditions. Dee Dee would like to have the specifications for the sign, and the eventual language, etc. for her 6(f) file for Prescott Park, but I can provide that to her as we get all that information. For now, I will send her the spec.

If the situation changes, I will further coordinate with DRED regarding 6(f). Dee Dee also said that the funds used for "Portsmouth Parks" was used at Prescott Park and there was no indication that Memorial Park received Section 6(f) funds.

I would include a summary of the coordination and the outcome in the Draft Categorical Exclusion/ Draft Section 4 (f) Evaluation.

Thanks and if you have questions do not hesitate to contact me.

Kevin Nyhan

Addie Kim

From: Newell, Bud [Bud.Newell@maine.gov]
Sent: Monday, August 22, 2005 10:42 AM
To: Addie Kim
Subject: NHDOT Portsmouth Memorial Bridge Rehab

Hi Addie,

I received your letter of August 18, 2005 requesting 6(f) information on John Paul Jones Park in Kittery for the above project. My records show there are no LWCF funds associated with this property/facility. Let me know if you need any additional information.

Bud Newell
Me. Dept. of
Conservation

Addie Kim

From: Walker, Steve [Steve.Walker@nh.gov]
Sent: Monday, August 29, 2005 12:44 PM
To: Addie Kim
Subject: BHF-X-T-0101-1(015), 13678

There are no CLS interests in your project area. Contact me if you have any further questions. Thanks, Steve

Addie Kim

From: Barleon, Carol [Carol.Barleon@nh.gov]
Sent: Monday, August 29, 2005 10:42 AM
To: Addie Kim
Subject: Portsmouth Memorial Bridge

Addie,

Thank you for contacting me about the Bridge project.

This is not part of our Scenic Byway network in New Hampshire and I have no comment in that regard.

I am interested in the recreational aspects the bridge provides, however. I am on the Bike / Ped Advisory Committee in NH and am aware of the project from that perspective. We have had quite a bit of input into the project via NHDOT.

Do you have a contact for the Ease Coast Greenway? If not, I can get that for you.

Regards,

Carol Barleon

Addie Kim

From: Cindy Hayden [CINDY@ch.cityofportsmouth.com]
Sent: Thursday, March 09, 2006 10:04 AM
To: Addie Kim
Cc: John Bohenko; Steve Parkinson
Subject: Environmental Review, Memorial Bridge

TO: Addie Kim, Sr. Environ. Planner, HNTB Corporation (consulting engineering firm for NHDOT Memorial Bridge Project)

Dear Addie,

I am responding to your question as to whether the City's "officials with jurisdiction" consider Memorial Park to be a "significant" recreational resource. My understanding is that "recreational significance" essentially means that in comparing the availability and function of the recreational resources at that location to the recreational objectives of the community, this area plays an important role in meeting those objectives.

I understand that the park is going to be fully restored and that bridge rehab work will only result in temporary impact and, further, that this will be considered a "programmatic 4(f)" anyway; your question relates to whether this is also a "programmatic 4(f)".

I have spoken with Portsmouth City Manager John Bohenko and we believe as follows:

Memorial Park is not used for any type of active recreation nor is it used very much for passive recreation because it is currently rather isolated in terms of access by the surrounding road configuration. The City's recently adopted citywide Master Plan does not highlight this park and certainly it is not a significant recreational resource within the context of the immediately adjacent and extensively used Prescott Park.

I hope this is what you need. Please let me know if you need any further information.

Cindy Hayden
Deputy City Manager
1 Junkins Avenue
Portsmouth, NH 03801
603-610-7218

Vicki Chase - FW: PK 13678F

From: Kevin Nyhan <KNyhan@dot.state.nh.us>
To: <vchase@mjinc.com>
Date: 3/15/2011 12:05 PM
Subject: FW: PK 13678F

Kevin T. Nyhan
Senior Environmental Manager
NHDOT Bureau of Environment
John O. Morton Building, Room 160
7 Hazen Drive, PO Box 483
Concord, NH 03302-0483
Tel. 603.271.1553
Fax. 603.271.7199

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

"We are defined not only by what we create but by what we refuse to destroy."

~ Appalachian South Folklife Center

-----Original Message-----
From: Robert Landry
Sent: Tuesday, March 15, 2011 12:04 PM
To: Kevin Nyhan
Cc: Keith Cota; Jamie Sikora (E-mail); Charles Hood
Subject: FW: PK 13678F

as requested

Bob Landry, Chief of Consultant Section, Bureau of Bridge Design
New Hampshire Department of Transportation
603.271.3921 or RLandry@dot.state.nh.us

-----Original Message-----
From: Steve Parkinson [mailto:sparkinson@cityofportsmouth.com]
Sent: Tuesday, March 15, 2011 11:56 AM
To: Robert Landry
Subject: RE: PK 13678F

Bob,
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~

Memorial Park in its current state is not a significant recreational resource of the City of Portsmouth. Once the Memorial Bridge project is complete, however, the restored park area will be rededicated as Memorial Park with the City planning to install, within the park area, a tribute to Martin Luther King Jr. There are no definite plans for the tribute, at this time, but the details will be better defined as the Memorial Bridge Project progresses. Again, Memorial Park is not a significant recreational resource at this time, but once restored, will be a very important historic asset of the City of Portsmouth. If you have any questions or need additional information please do not hesitate to contact me.

Steven F. Parkinson, P.E.
Portsmouth Public Works Director

From: Robert Landry [mailto:RLandry@dot.state.nh.us]
Sent: Tuesday, March 15, 2011 7:02 AM
To: Steve Parkinson
Cc: Keith Cota; Kevin Nyhan
Subject: PK 13678F

How is this coming along?

Steve, can you please reconfirm by Tuesday, March 15th that Memorial Park is not a significant recreational resource? We need this to obligate the TIGER II funds.

thank you

Bob Landry, Chief of Consultant Section, Bureau of Bridge Design
New Hampshire Department of Transportation
603.271.3921 or RLandry@dot.state.nh.us

Construction Scheduling

The construction will involve either a partial closure option or a reduced partial closure with alternating one-way traffic. Local and regional traffic analysis will consider these options. The options are summarized in the table below:

Partial Closure ☆	Reduced Partial Closure with Alternating One-way Traffic
24-month duration	24-month duration
5-month complete roadway closure	2-month complete roadway closure followed by 6 months alternating one-way traffic
2-month closure for pedestrians and cyclists	2-month closure for pedestrians and cyclists
2 to 3 day navigational closures during 5 month period	2 to 3 day vehicle and navigational closures during 6 month period
19-month normal two-way traffic	16-month normal two-way traffic
Traffic impacted March 1 to August 1	Traffic impacted March 1 to November 1
• Shorter total traffic impact (5 months) • Longer complete closure (5 months) • only ½ summer impacted • more cost effective	• Longer total traffic impact (8 months) • Shorter complete closure (2 months) • impact entire summer season • additional delays during one-way traffic

Assessment of Project Effects

The proposed project and potential impacts and mitigation measures will be presented in an Environmental Study Report prepared to support a Categorical Exclusion determination under the National Environmental Policy Act. The current study includes an evaluation of the potential effects of the project on:

- Vehicular traffic
- Pedestrians and cyclists
- Navigation
- Businesses
- Natural Environment
- Historic Resources
- Archaeological Resources

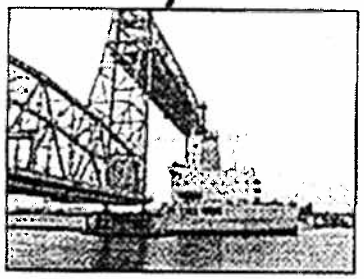
Public and Officials Outreach

Project outreach has included:

- Coordination with regulatory agencies, natural resources agencies, and State Historic Preservation Officer
- Meetings with US Coast Guard, Portsmouth Planning, Portsmouth DPW, resource agencies
- Intercept survey at bridge in August 2005
- Navigational surveys mailed November 2005
- Business surveys planned February 2006
- Public officials meetings
- Public informational meetings

Public Informational Meeting–January 17, 2006

Memorial Bridge Rehabilitation Project Portsmouth-NH, Kittery-ME



U.S. Route 1 over the Piscataqua River

Comments on the project can be forwarded to the following contacts:

Nancy J. Mayville, P.E.
Project Manager
New Hampshire Department of Transportation
7 Hazen Drive Concord, NH 03302
603.271.2107
nmayville@dot.state.nh.us

John F. Watters, P.E.
Project Manager
HNTB Corporation
75 State Street
Boston, MA 02109
617.542.6900
jwatters@hntb.com

HNTB

Addie Kim

From: Janice Grady [jgrady@kitteryrecreation.com]
Sent: Tuesday, August 23, 2005 3:04 PM
To: Addie Kim
Subject: memorial bridge project

Hi Addie, the Paul Jones Park is a state owned park not owned by the Town of Kittery so I do not know about the funds. There are not any festival or event planned for that area by this department. Thanks. Janice Grady

Janice Grady, Director
Kittery Recreation
P.O. Box 808
Kittery, ME 03904
207-439-3800
--
No virus found in this outgoing message.
Checked by AVG Anti-Virus.
Version: 7.0.338 / Virus Database: 267.10.14/79 - Release Date: 8/22/2005

Addie Kim

From: Michael Rogers [mikerkwd@comcast.net]

Sent: Tuesday, October 04, 2005 8:42 AM

To: Addie Kim

Subject: Memorial Bridge Rehabilitation

Dear Mr. Kim,
I am very happy to report that the Kittery Water District does not have any infrastructure located within the portion of the Memorial Bridge that is proposed for rehabilitation. Our water main actually stops 150 feet North of the Southern most approach bearing wall.
Should you have any questions, please feel free to call me.

Michael S. Rogers, Superintendent
Kittery Water District
17 State Road
Kittery, ME 03904
TEL 207-439-1128
FAX 207-439-8549
Email MikeRKWD@comcast.net

Exhibit B

Summary of Survey Results

- August 2005 Traffic Survey
- November 2005 Navigational Survey
- January 2006 Public Meeting Survey
- February 2006 Business Survey

Summary of Survey Results

Introduction

The Memorial Bridge Rehabilitation Project incorporated input from public officials, local residents, stakeholders, and the public in the development of design and construction staging plans for the project. In order to obtain input into the development of construction staging plans, four different surveys were performed over the course of preliminary design:

- an August 2005 traffic intercept surveyed 248 motorists and 103 pedestrians or cyclists,
- a November 2005 navigational survey was mailed to 24 users of the Piscataqua River,
- a survey was distributed at a January 2006 public meeting attended by over 100 individuals,
- a February 2006 business survey was distributed to 536 businesses and business property owners in Portsmouth and Kittery over an area covering more than 300 acres in size.

This memo summarizes the results of these surveys that were performed between August 2005 and February 2006 for the project.

One of the goals of the traffic intercept survey, public meeting survey, and business survey was to elicit responses on potential impacts and preferences for roadway closures during bridge construction. The surveys were accompanied by an explanation of the project and construction staging options. The surveys anticipated that the start of the roadway closure would begin in early March. Two different roadway closure scenarios were considered for the construction of the project:

- A **Complete Bridge Closure option** (spanning five months) that would allow the replacement of both the Memorial Bridge lift span and the Scott Avenue Bridge, and
- A **Partial closure option** (spanning a total of eight months) that would maintain alternating, one-way traffic over six months after an initial two-month complete closure.

Under the complete closure option, the closure would extend to early August, and under the partial closure option, the alternating one-way traffic operation would end by early November. The four surveys were performed between August 19, 2005, at the start of preliminary design, and February 2006. The two alternative options for the construction roadway closures were refined over the course of the project. At the beginning of preliminary design, a longer duration for construction was anticipated. At the time of the traffic intercept survey, the complete closure option was defined to last for 1 to 1 ½ years and the partial closure option was defined to last two to three years. The traffic intercept survey results reflect respondents' opinions for these longer durations. Moreover, at the time of these surveys, painting activities were not included as part of the project. Additional public outreach will be performed to assess preferences for construction staging and closures during painting activities.

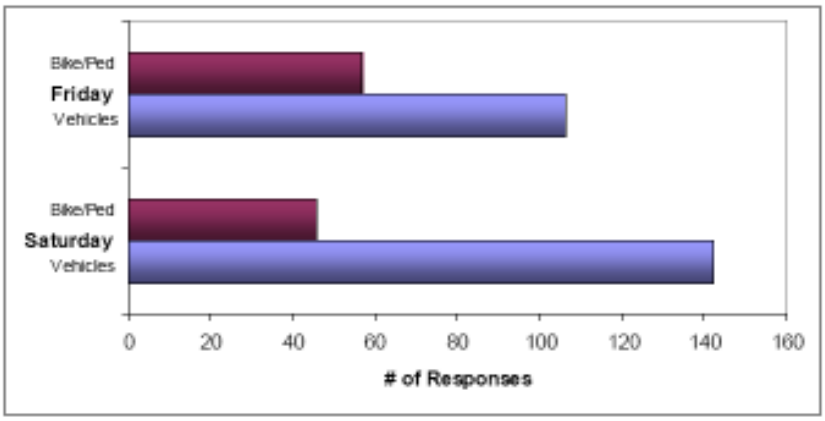
The navigational survey was designed to obtain input into navigational considerations for construction and to identify any preferences for the timing and duration of navigational outages.

The survey methods and results for each survey are presented below.

Traffic Intercept Survey

The traffic intercept survey involved a manual survey of 106 and 142 automotive vehicles, respectively, on August 19, 2005 (Friday) and August 20, 2005 (Saturday). Motorists were surveyed when their vehicles were stopped during bridge lifts between 2:30 p.m. and 5 p.m. on Friday and between 11:00 a.m. and 1:30 p.m. on Saturday. Between the bridge lifts, 57 and 46 non-motorized users (pedestrians/cyclists), respectively, were surveyed on these two days. The survey obtained information on these users' current travel patterns and their behaviors in the event of a roadway closure.

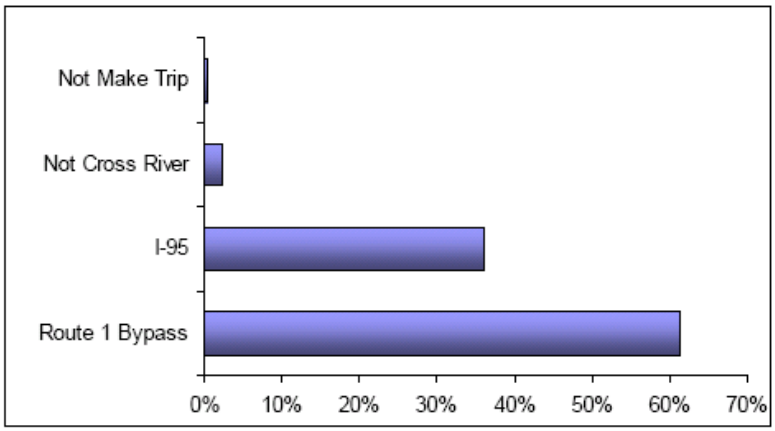
The following chart summarizes the breakdown for the times and modes surveyed for the traffic intercept survey.



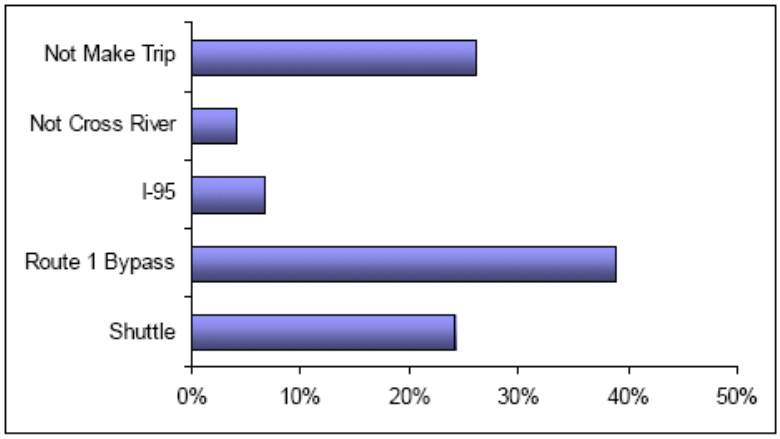
The traffic intercept survey obtained detailed information on trip origins and destinations. The trip purpose was reported as follows:

Weekday PM	% of Trips	Saturday Midday	% of Trips
Home Origin	34%	Home to Shopping	14%
Work to Home	18%	Shopping to Home	12%
Nonwork to Home	22%	Home to Nonshopping	35%
Work to Nonhome	10%	Nonshopping to Home	18%
Nonwork-Nonhome	17%	Nonshopping to Nonhome	21%

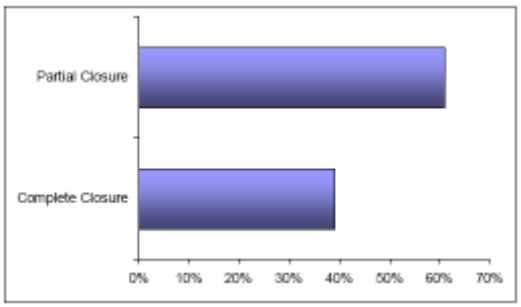
The motorists' responses to a complete closure indicated that the majority (61%) of drivers would prefer to use the Sarah Long Bridge (Route 1 Bypass), while 36% would divert to I-95. Only 1% reported that they would not make the trip with a complete roadway closure, and 2% indicated that they would not cross the river.



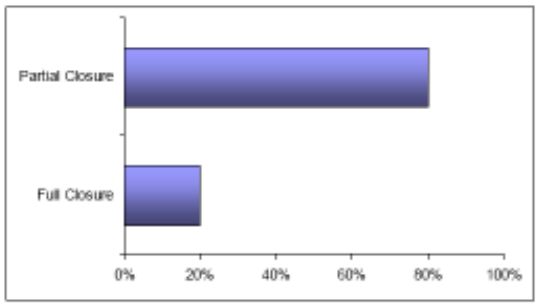
Under the complete closure option, a higher percentage of pedestrians and cyclists (30%) would either not make the trip at all (26%) or would not cross the river (4%). Almost half (46%) of the non-motorized users would use a vehicle to make the trip. Of these, most (39%) would use the Route 1 Bypass, with the remainder diverting to I-95. Twenty-four percent of non-motorized users indicated that they would use a shuttle if available.



The majority of drivers (61%) and pedestrians/cyclists (80%) preferred the partial closure option (2 to 3 years) over a complete roadway closure of 1 to 1 ½ years. However, as previously discussed, the durations presented for these closure options in the traffic intercept survey were considerably longer (by 1 to 2 years) than the construction options as currently defined. The complete closure is now anticipated to last for 5 months, compared to a total duration of 8 months (2 months complete closure and 6 months alternating one-way traffic) for the partial closure option. Therefore, these survey results may not reflect the true preferences for these construction options as currently defined.



Drivers' Preferences for Closure Options

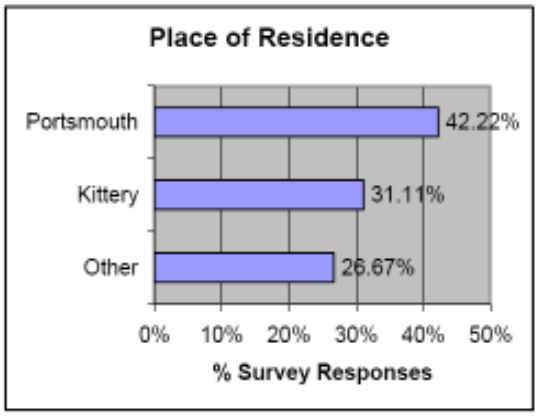


Non-motorized Users' Preferences for Closure

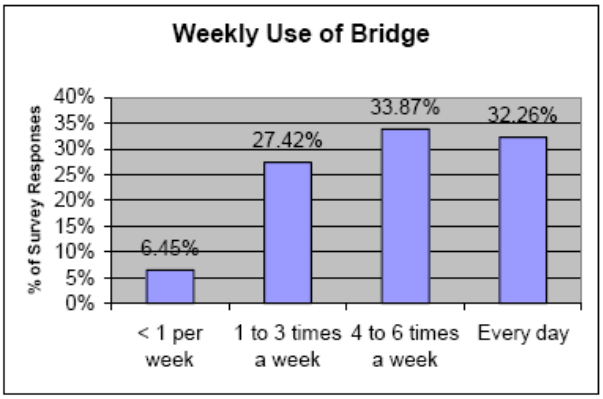
Public Meeting Survey

A survey was distributed at the January 17, 2006 public informational meeting that was held in Portsmouth, NH. The meeting was attended by over 100 individuals, including state legislators, municipal officials, local residents, and other groups that frequently use the bridge. At or after the meeting, 61 survey responses were received. The survey was intended to gauge use of the bridge, potential use of a shuttle service, and preferences for construction staging.

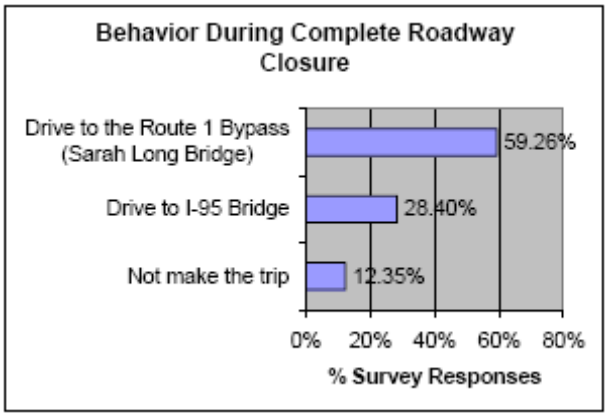
The majority of attendees (42%) at the public meeting were from Portsmouth, with 31% from Kittery. The remaining surveys received that identified their place of residence were from the following locations: Newington, Rochester, and North Hampton in New Hampshire and Eliot, York, South Berwick, and Moody in Maine.



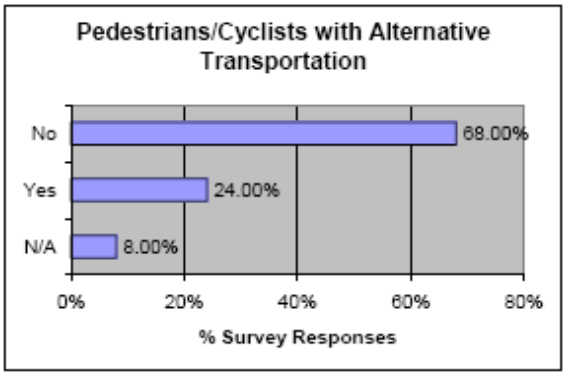
Of the public meeting respondents, 32% use the bridge every day, 34% reported using the bridge four to six times a week, and 27% reported using the bridge one to three times a week. Only 6% use the bridge less than 1 time per week.

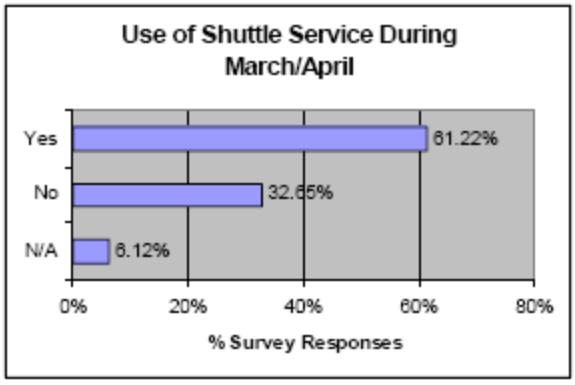


During a complete roadway closure, the majority of attendees (59%) would use the Sarah Long Bridge (Route 1 Bypass) and 28% would use I-95. Approximately 12% indicated that they would not make the trip at all, and this total included both those who drive and those who walk or cycle across the bridge.

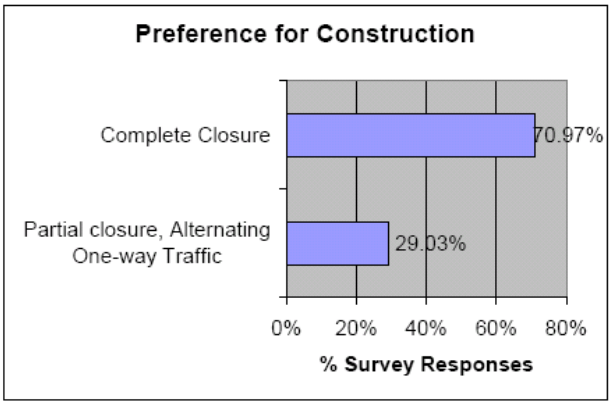


Of the pedestrians and cyclists that use the bridge, the majority (68%) reported not having alternative means of transportation, and the majority (61%) indicated that they would use a shuttle service if available in the event of a springtime roadway closure.





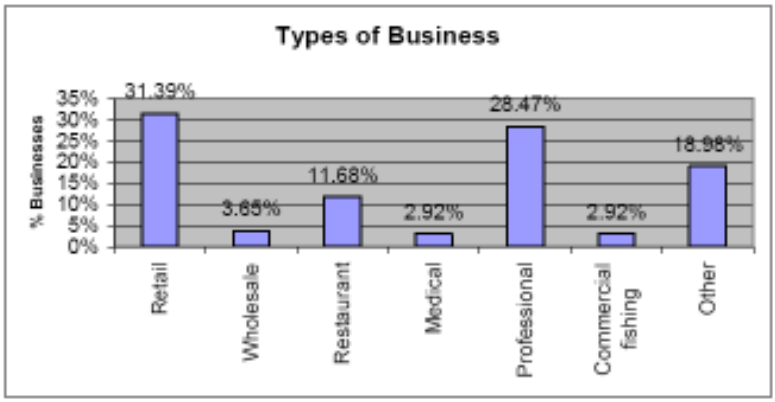
The majority of public meeting attendees surveyed (71%) indicated that they preferred the complete closure option over the partial closure option.



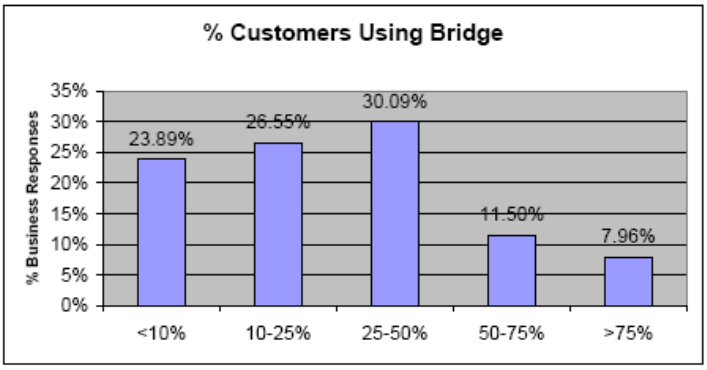
Business Survey

A business survey was distributed to 186 property owners of businesses and 350 businesses in Portsmouth and Kittery. Approximately 108 surveys were mailed to Portsmouth property owners on February 13, 2006, and approximately 78 surveys were mailed to Kittery property owners on February17, 2006. Surveys were hand-delivered on February 16, 2006 to businesses in Portsmouth and Kittery. The Portsmouth area surveyed extended west to Market Street/Pleasant Street, extended north along the Market Street/Ceres Street and Bow Street gateways to the city, extended south to Court Street, and east to Marcy Street. In Kittery, surveys were distributed to businesses in an area that included all of Badger's Island and extended north, almost 1 mile, along U.S. Route 1 to Page Street, south of the rotary with the Route 1 Bypass. The area surveyed included areas southeast of the Route 1 Bypass and encompassed businesses on Route 103 and the Kittery Foreside District. A total of 117 survey responses were received. The survey was performed to characterize existing use of the bridge by these businesses, their customers and employees, and to gauge their responses on anticipated impacts and preferences for construction.

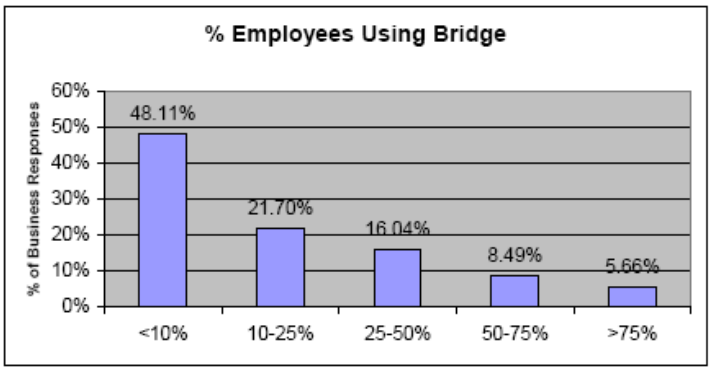
Of the responses received from the business survey, 62% were from Portsmouth and 38% were from Kittery. Most of the businesses surveyed (91%) were not closed for a portion of the year, and 75% were not seasonal businesses. The most important months for businesses were reported to extend from April-May-June to September-October-November-December. The types of businesses surveyed were as follows:



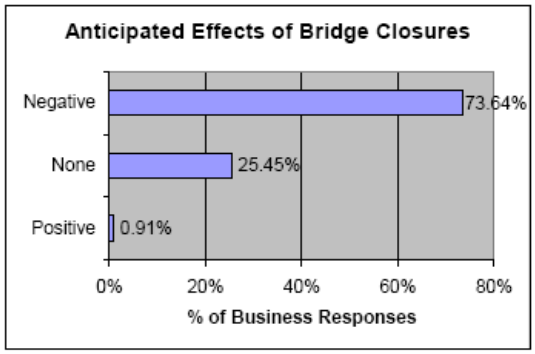
Most (74%) of those surveyed indicated that they used the bridge for business activities/travel, such as deliveries and visiting clients. Approximately 30% of businesses reported that between 25% and 50% of customers used the bridge, and nearly half indicated that less than 25% of customers used the bridge.

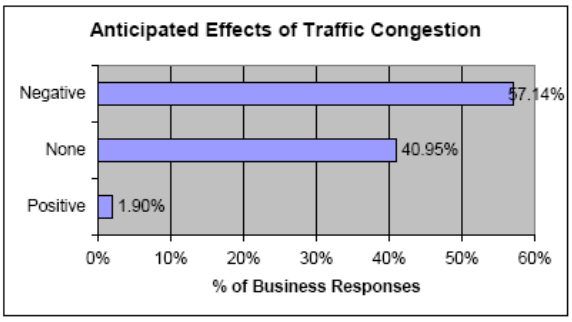


Almost half of the businesses surveyed (48%) reported that less than 10% of employees used the bridge to commute to work. Several of the comments received indicated that some of the workers that live in Kittery and walk to Portsmouth for work have no alternative means of transportation.

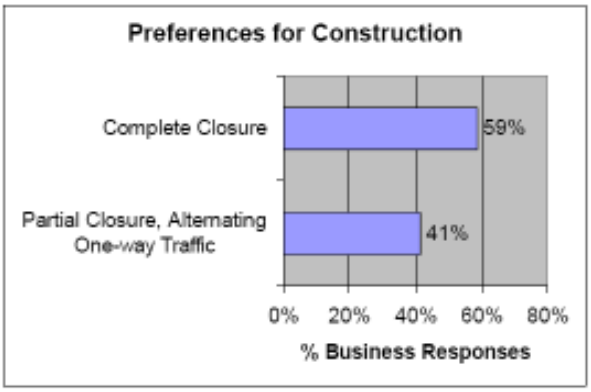


Those businesses that had experienced previous bridge closures (18%) reported a range of experiences. Three respondents reported no effect, and negative effects that ranged from inconvenience to workers to loss of business were reported in 17 responses. The majority of all of the businesses surveyed (74%) anticipated a negative effect on business due to bridge construction closures, and more than half (57%) anticipated negative effects from traffic congestion. The businesses were split (50:50) as to whether an increase in drive-by traffic was anticipated to have a beneficial effect on business.





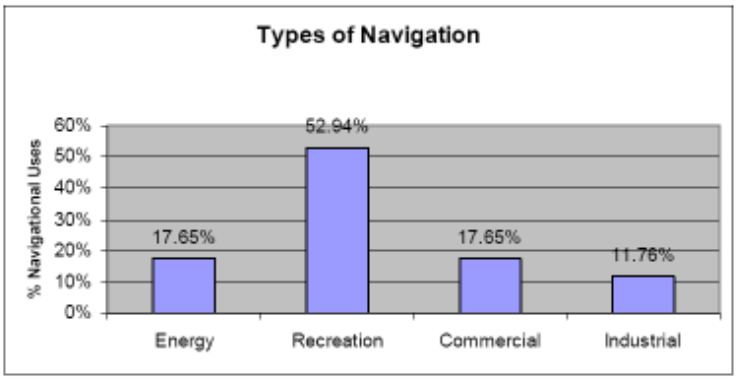
The majority of businesses surveyed (59%) preferred the complete closure option.



Navigational Survey

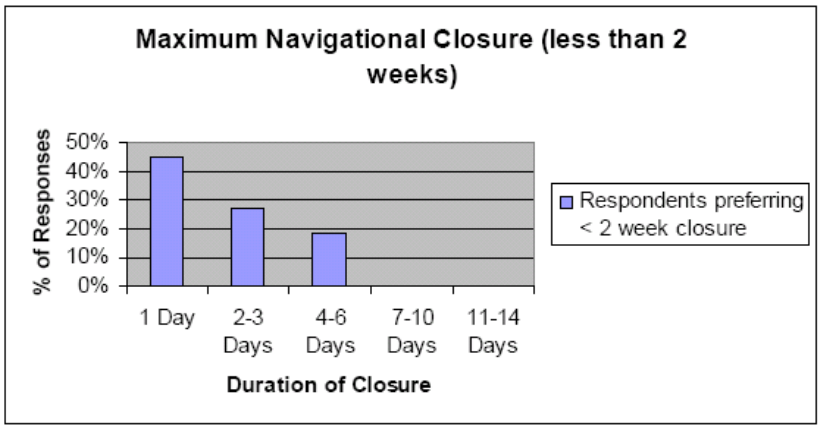
A navigational survey was mailed on November 1, 2005 to 24 navigational users. The survey was sent to industrial users, the New Hampshire Port Authority, towing companies and pilots, boatyards, marinas, a boat hauler, commercial fisheries, and tourism-related uses. Of the 24 surveys sent, 17 responses were received. The navigational survey obtained information on the sizes of the vessels; the number, frequency, and height of bridge lifts needed; anticipated effects of construction; and preferences for timing and duration of construction.

Eleven (65%) of the 17 survey responses on the navigational survey were from Portsmouth, three were from Newington, NH; two were from Eliot, ME; and one was from Dover, NH. Most (75%) of the businesses were not closed for a portion of the year, and 59% were seasonal businesses. The most important months were reported to extend from April-May-June to September-October-November-December. One of the energy companies indicated that the important months for fuel deliveries were September to May. The types of navigational users surveyed are summarized below.



Roughly half of the respondents had experienced previous bridge closures. Most of these respondents did not report a problem. The two exceptions were a commercial fishery and an energy company, which reported interruptions in shipments of freshly caught fish and fuel, respectively. Most respondents (79%) anticipated an impact to their business from a bridge closure.

Most of the respondents (65%) could not accommodate a navigational closure of two weeks or more, although 35% indicated that they could accommodate a navigational outage of more than two weeks. For those respondents that could not accommodate an outage of two-weeks duration, the chart below shows the maximum length of navigational closure that could be accommodated by these survey respondents. Of those respondents preferring a closure of less than two weeks, 45% reported that they could accommodate a one-day closure, 27% could accommodate a closure of two to three days, and 18% could accommodate a four- to five-day closure.



Conclusions

The survey results indicated that the majority of survey respondents from the public meeting (71%) and business surveys (59%) favored a complete construction closure option for the bridgework. Although most of those surveyed during the travel intercept survey favored the partial closure with alternating, one-way traffic, the questions posed at the time of the survey did not reflect the shorter construction durations currently anticipated for these closure options and may not be representative of motorists' and non-motorized users' opinions of the alternative construction closure options, as currently defined.

The navigational users generally favored a shorter construction outage, so navigational outages of three to five days duration are anticipated during the float-in and float-out of the lift span. Construction activities over this time period will be performed 24 hours a day to meet this construction schedule.

Exhibit C

Environmental Records Review and Sampling Results

- NHDES Determination
- Environmental Sampling Results Report
- Environmental Records Review

The State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES

Thomas S. Burack, Commissioner

HNTB
BOSTON
APR 14 2008
RECEIVED

April 3, 2008

James D. Fisher, P.E.
Associate Vice President
HNTB Corporation
75 State Street
Boston, MA 02109

SUBJECT: **Portsmouth -** Memorial Bridge, US Route 1 over Scott Avenue
DES Site # 199309077, Project RSN # 17609

Report on Environmental Sampling Results, prepared by Haley & Aldrich, dated March 10, 2008

Dear Mr. Fisher:

The Department of Environmental Services (the Department) has reviewed the Report on Environmental Sampling Results (the ESR) dated March 10, 2008 submitted on your behalf by Haley & Aldrich, Inc (H&A). The ESR describes investigations to characterize soil and groundwater to determine appropriate materials handling at the Memorial Bridge over Scott Avenue in Portsmouth. The Department has the following comments regarding the ESR:

1.0 Arsenic in Soil

Consistent levels of arsenic ranging from 5.3 to 14 milligrams per kilogram (mg/kg) were detected in soil samples collected from the site. These levels were consistent in samples collected from both soils interpreted to be fill material and native glacial till or glaciofluvial deposits on the boring logs. H&A collected samples from more near surface soils in areas near but outside the boundaries of the subject site. The levels off site were consistent with those on-site.

This fairly uniform distribution of arsenic in soil indicates the arsenic is likely due to naturally-occurring background levels in the minerals that make up the soils in both fill and native materials at the site and surrounding area. No localized areas of higher concentration were noted to indicate the arsenic was the result of a past release of hazardous material.

Boring logs indicate solid waste materials such as cinders and possible coal and coal ash in the fill material. This material can be re-used on site, and we would recommend that the coal ash and fill material be covered with soil and/or pavement to restrict potential direct contact. It cannot be re-used anywhere off-site as clean fill material. If this material is not landfilled, a plan for its reuse must be approved by the Department in advance of its removal from the site.

Please note that the average concentration of arsenic at the site as compared to the background concentration of metals in soil contained in the Contaminated Sites Risk Characterization and Management Policy (RCMP) is not pertinent to determining if

concentrations are attributable to background at a site. The background concentration referenced in the RCMP is the 95th percentile concentration of certain datasets of metals concentrations in soils collected from varying locations around New Hampshire. The number does not imply that the average naturally occurring levels of arsenic in soil at any location can be expected to be at or near 11 mg/L but that, given the data used in the calculation, there is an approximate 95% chance that background levels of arsenic at a site will be at or below 11 mg/L.

The more important determinant is the distribution of concentrations combined with any knowledge of a history of use or release of arsenic-containing hazardous material at the site. Analyzing the average concentration does not assist in identifying areas that may show comparatively high concentrations of arsenic in soil and indicate an area of release.

2.0 Arsenic in Groundwater

Arsenic was detected in groundwater collected from B6(OW) above the Ambient Groundwater Quality Standard (AGQS). Since the arsenic concentrations in soil appear to be background concentrations and occur in the native soils, the groundwater concentrations may be attributed to natural conditions. The available data suggests that the arsenic concentration in groundwater has not resulted from the release of hazardous material or regulated discharges. Therefore, the Department does not require any further monitoring or remediation of the arsenic in groundwater.

The concentrations of arsenic, however, do occur above the Department's risk-based standard for drinking water and we advise that any groundwater withdrawn from the site be disposed in an approved manner. Proposed discharge to the City of Portsmouth POTW, with City approval, or discharge to surface water under a Remediation General Permit would constitute approved disposal.

3.0 Polycyclic Aromatic Hydrocarbons in Groundwater

Polycyclic aromatic hydrocarbons (PAHs) were detected above standards in the two monitoring wells on site in unfiltered samples. Filtered samples showed no detected PAHs indicating that the PAHs detected in the unfiltered samples were attributable to entrained sediment in the samples and not dissolved concentrations in groundwater. The Department believes that the dissolved concentrations after the samples were filtered are more representative of groundwater,, therefore, no further monitoring or remediation of PAHs will be required.

4.0 Bis 2-ethylhexylphthalate in Groundwater

Bis 2-ethylhexylphthalate was detected in groundwater samples collected from both monitoring wells on site at concentrations above the AGQS for this compound. H&A attributes the concentrations to laboratory contamination, however, while the Department has observed that to be the case in some instances, no substantiating evidence is provided to support this theory. The Department requires additional sampling of semivolatiles from B1(OW) and B6(OW) to confirm or refute the presence of bis 2-ethylhexylphthalate in groundwater at the site. Please submit the results of additional sampling on or before July 31, 2008.

Should you have any questions regarding this letter, please write me at the address above or call me directly.

Sincerely,

E. Molly Stark
Waste Management Division
Tel: (603) 271-2890
Fax: (603) 271-2181
E-mail: Molly.Stark@des.nh.gov

cc: John Regan, Supervisor, HWRB
Karlee Kenison, HWRB
Eric Paddleford, NHDOT
Robert A. Mullin, Haley & Aldrich
Portsmouth Health Officer

Haley & Aldrich, Inc.
340 Granite Street
3rd Floor
Manchester, NH 03102-4004

Tel: 603.625.5353
Fax: 603.624.8307
HaleyAldrich.com

HALEY & ALDRICH

10 March 2008
File No. 28332-001

HNTB Corporation
75 State Street
Boston, Massachusetts 02109

Attention: **James D. Fisher, P.E.**
Associate Vice President

Subject: **Report on Environmental Sampling Results**
Memorial Bridge and US Route 1 Bridge over Scott Avenue
Bridge Nos. 247/084 and 246/083
Portsmouth, NH - Kittery, ME
BHF-X-001-1(15)

Dear Mr. Fisher:

This letter contains the results of Haley & Aldrich, Inc.'s (Haley & Aldrich's) soil and groundwater sampling program at the subject site (Figure 1). A copy of this letter is being provided to the New Hampshire Department of Environmental Services (NHDES) and the New Hampshire Department of Transportation (NHDOT). This letter is intended to provide the analytical results and recommendations for on-site management and off-site treatment/disposal of impacted soil and groundwater during construction. This work is being conducted in accordance with our contract dated 19 December 2006 and our additional scope of work dated 21 August 2007, which was approved by HNTB Corporation and NHDOT on 13 September 2007.

INTRODUCTION

The purpose of this investigation was to characterize the soil and groundwater at the subject site for management during construction. The scope of work included the following:

- **Plan, execute, and monitor a subsurface exploration program.**
- **Submit soil samples for analysis for parameters typically required by disposal facilities.**
- **Collect soil samples from nearby properties to evaluate whether concentrations of arsenic detected in soil samples at the subject site are representative of background conditions in the area of the Memorial Bridge in Portsmouth, New Hampshire.**
- **Submit groundwater samples for chemical analysis to evaluate groundwater quality.**
- **Review soil and groundwater analytical data with respect to regulatory standards and requirements of treatment/disposal facilities and the publicly owned treatment works (POTW) and prepare this letter report containing analytical results and recommendations**

for on-site management and off-site treatment/disposal of impacted soil and groundwater during construction.

SUBSURFACE EXPLORATIONS

A total of six test borings (B1 through B6) were conducted at the project site between 26 February and 13 March 2007. The test borings were drilled by New Hampshire Boring, Inc. of Londonderry, New Hampshire, and were observed by a Haley & Aldrich geologist. The test borings, located as shown on Figure 2, ranged in depth from 31.5 to 64 ft. The test boring logs are included in Appendix A.

Groundwater observation wells were installed in test borings B1 and B6 to permit observation of stabilized water levels and collection of groundwater samples. The observation well installation reports and groundwater monitoring reports are included in Appendix A.

SOIL SAMPLING AND ANALYSIS

Soil Sampling at the Project Site

Six soil samples for analysis for arsenic and other parameters were obtained in March 2007 from test borings drilled for the Memorial Bridge rehabilitation project. Analytical data for the soil samples are summarized in Table I. Test boring locations are shown on Figure 2. Arsenic was detected at concentrations equal to or greater than the Soil Remediation Standard of Env-Or 600 (Contaminated Site Management) in five of the six soil samples submitted for analysis. No other parameters (i.e., other RCRA 8 metals, polynuclear aromatic hydrocarbons (PAHs), volatile organic compounds (VOCs), and polychlorinated biphenyls (PCBs)) were detected at concentrations in excess of analytical detection limits or soil remediation standards. These results and the results of groundwater sampling and analysis were also summarized in Haley & Aldrich's letter *Notifications of Impacts to Groundwater and Soil*, which was submitted to NHDES on 31 October 2007.

Soil Sampling for Background Levels of Arsenic

The proposed scope of work for soil sampling was summarized in Haley & Aldrich's letter *Proposed Soil Sampling for Background Arsenic Concentrations*, which was submitted to NHDES on 31 October 2007. In an email dated 17 December 2007, NHDES suggested that Haley & Aldrich proceed with the work prior to NHDES review of the work plan due to the project schedule and NHDES backlog.

In order to assess background concentrations of arsenic in the site area, Haley & Aldrich collected twelve soil samples for analysis for arsenic from four publicly-owned properties in the general vicinity of the site, as shown on Figure 3. Three soil samples were collected from each of the four properties. The samples were obtained at depths of about 0.6 to 1.4 ft below ground surface such that the samples were representative of native soils or urban fill soils at each location. Analytical data for the soil samples are summarized in Table II. Arsenic was detected at concentrations equal to or greater than the Soil Remediation Standard of Env-Or 600 in seven of the twelve soil samples submitted for analysis.

Evaluations of Background Levels of Arsenic in Soil

Available data and published information regarding background concentrations of arsenic in soil in New Hampshire indicate that the detection of arsenic in soil samples from the Memorial Bridge site may be attributable to background. As shown in Table I, arsenic concentrations detected in the soil samples from the project site ranged from 5.3 mg/kg to 14 mg/kg. The arithmetic mean concentration for the samples is 10.9 mg/kg, which is generally consistent with both the Soil Remediation Standard and the background concentration of arsenic (11 mg/kg) listed in the NHDES Contaminated Sites Risk Characterization and Management Policy (RCMP). According to the Background Metals Concentration Study of New Hampshire Soils performed by Sanborn, Head & Associates for NHDES in 1998, the average concentration of arsenic in New Hampshire soils is 10.9 mg/kg, which is also equal to the mean concentration for the March 2007 soil samples obtained at the Memorial Bridge site.

In the recent testing at properties in the vicinity of the Memorial Bridge site, arsenic was detected at concentrations ranging from 6.8 to 17 mg/kg, with an arithmetic mean of 11.5 mg/kg. Therefore, in our opinion, arsenic levels at the Memorial Bridge project site appear consistent with, or slightly lower than background levels throughout Portsmouth. This opinion was submitted to NHDES on 7 February 2008 in Haley & Aldrich's letter *Soil Sampling Results for Background Arsenic Concentrations*.

Subject to NHDES approval, it appears that excess site soils from the bridge construction project would be suitable for reuse on-site (without an Activity and Use Restriction), and that the soil may also be suitable for reuse at other City owned or commercial properties within Portsmouth. Excess soil from the bridge project that cannot be reused as recommended should be transported to an appropriate receiving facility, such as a lined landfill. Additional testing of the soil may be necessary to verify that soil conditions are consistent with previous analytical results or to gain acceptance at a disposal facility.

GROUNDWATER SAMPLING AND ANALYSIS

Polynuclear aromatic hydrocarbons (PAHs), DEHP (bis(2-Ethylhexyl)phthalate), and arsenic were detected at concentrations in excess of Ambient Groundwater Quality Standards (AGQS) (Env-Or 603) in groundwater samples obtained from two monitoring wells (B1(OW) and B6(OW)) installed in borings conducted for the design of the proposed bridge.

Although the monitoring wells were developed and sampled using low-flow procedures, the detection of PAHs and arsenic at concentrations in excess of AGQS during the first round of sampling may have resulted from the presence of suspended solids in the groundwater samples. Relatively high concentrations of total suspended solids (TSS) appear to result from the nature of the formation and the low yield of water from the wells. Therefore, the following additional sampling and analyses were performed as follows on 2 November 2007 to evaluate the persistence of impacts by PAHs and arsenic in excess of AGQS:

- Further develop the wells (B1(OW) and B6(OW)) in advance of sampling;
- Collect additional samples for analysis, with continued use of low-flow procedures;
- Submit both filt**ered and unfiltered samples from the two monitoring wells for PAH analysis;**
- Submit one set of unfiltered samples from both wells for analysis for TSS; and
- Submit one filtered sample from the B6 (OW) monitoring well for analysis for arsenic.

Analytical results for groundwater samples are included in Table III. No dissolved PAHs (i.e., in filtered samples) were detected at concentrations greater than analytical detection limits; however, several PAHs were detected at concentrations greater than Ambient Groundwater Quality Standards (AGQS) in the unfiltered samples. The dissolved arsenic concentration detected in the 2 November 2008 groundwater sample from B6 (OW) (50 ug/L) was greater than AGQS.

We had tentatively planned for collection of a third set of groundwater samples, however because several parameters (in the total sample) still exceeded Ambient Groundwater Quality Standards (AGQS) in the second round of sampling, we did not recommend collecting an additional round of sampling at this time.

Although DEHP was detected at concentrations greater than AGQS, we expect that this may be related to lab or sample contamination; however further analysis should be conducted in conjunction with discharge of excavation dewatering effluent.

CONCLUSIONS AND RECOMMENDATIONS

Haley & Aldrich has the following conclusions and recommendations based on the data presented in this report:

- **In our opinion, arsenic levels in soil at the Memorial Bridge project site appear consistent with, or slightly lower than background levels throughout Portsmouth.**

- **Subject to NHDES approval, excess site soils are suitable for reuse on-site (without an Activity and Use Restriction).**

- **Subject to NHDES approval, excess site soils are also suitable for reuse at other City owned or commercial properties within Portsmouth.**

- **Excess soil from the bridge project that cannot be reused as recommended should be transported to an appropriate receiving facility, such as a lined landfill. Additional testing of the soil may be necessary to verify that soil conditions are consistent with previous analytical results or to gain acceptance at a disposal facility.**

- **Analytical results for groundwater samples indicate that dissolved concentrations of PAHs (exhibited by filtered groundwater samples) were below laboratory detection limits, which suggests that PAHs detected in groundwater samples in excess of AGQS may be attributable to suspended solids or colloidal materials. As indicated above, the detection of DEHP is believed to result from equipment or laboratory contamination.**

- **We recommend that groundwater recovered from dewatering of excavations during construction be discharged to the sewer for treatment by the City of Portsmouth POTW. Based on its review of groundwater data, the City of Portsmouth Department of Public Works (Water and Sewer) conditionally accepted the discharge in an electronic mail on 5 March 2008. We understand that the contractor engaged to construct the bridge will be ultimately responsible for the discharge, including permitting and permit compliance. Discharge to surface water in accordance with the National Pollutant Discharge**

Elimination System (NPDES) Remediation General Permit with approval by NHDES and EPA, is an alternate means of discharge available to the contractor.

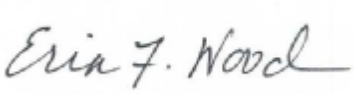
LIMITATIONS

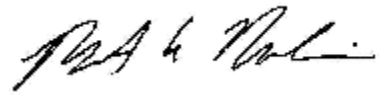
This report has been prepared for specific application to the proposed Memorial Bridge and US Route 1 Bridge over Scott Avenue in Portsmouth, New Hampshire. The conclusions and recommendations provided by Haley & Aldrich are based solely on the scope of the work conducted and the sources of information referenced in this report. Haley & Aldrich performed its work in accordance with generally accepted consulting engineering practices.

It is our understanding that this report is to be used and distributed exclusively for purposes connected with the pending construction of the Memorial Bridge and US Route 1 Bridge over Scott Avenue. The contents of this report may not be copied, provided, or otherwise relied upon in whole or in part by any party other than HNTB Corporation and New Hampshire Department of Transportation. We agree, however, that this report can be submitted to NHDES or other regulatory agencies.

We appreciate the opportunity to provide environmental services on this project. Please do not hesitate to call if you have any questions or comments.

Sincerely yours,
HALEY & ALDRICH, INC.





Erin F. Wood, P.E.
Senior Engineer

Robert A. Mullin, P.E.
Vice President

Enclosures:

- **Table I – Summary of Soil Analytical Data**
- **Table II – Summary of Background Soil Analytical Data**
- **Table III – Summary of Groundwater Analytical Data**
- **Figure 1 – Project Locus**
- **Figure 2 – Groundwater and Soil Sampling Location Plan**
- **Figure 3 – Background Soil Sampling Locations**
- **Appendix A – Test Boring Logs, Observation Well Installation Reports, and Groundwater Monitoring Reports**
- **Appendix B – Analytical Data Reports for Soil Samples**
- **Appendix C – Analytical Data Reports for Background Soil Samples**
- **Appendix D – Analytical Data Reports for Groundwater Samples**

c: **New Hampshire Department of Environmental Services; Attn: Karlee Kenison**
New Hampshire Department of Transportation; Attn: Erik Paddleford

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REFERENCES

1. Haley & Aldrich, Inc., "Report on Scott Avenue Bridge Geotechnical Investigation," dated 15 June 2007.

2. Haley & Aldrich, Inc., "Notification of Impacts to Groundwater and Soil," dated 31 October 2007.

3. Haley & Aldrich, Inc., "Proposed Soil Sampling for Background Arsenic Concentrations," dated 31 October 2007.

4. Haley & Aldrich, Inc., "Soil Sampling Results for Background Arsenic Concentrations," dated 7 February 2008.

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TABLE I
SUMMARY OF SOIL ANALYTICAL DATA (PROJECT SITE)
SCOTT AVENUE BRIDGE
PORTSMOUTH, NEW HAMPSHIRE

Detected Analytes	Soil Remediation Standard (mg/kg)	B1 19-21 19-21ft 3/5/2007 (mg/kg)	B2 29-31 29-31ft 3/7/2007 (mg/kg)	B3 9-11 9-11ft 2/26/2007 (mg/kg)	B3 14-16 14-16ft 2/26/2007 (mg/kg)	B4 19-21 19-21ft 2/28/2007 (mg/kg)	B5 9-11 9-11ft 3/8/2007 (mg/kg)	B5 15-17 15-17ft 3/8/2007 (mg/kg)	B6 5-7 5-7ft 3/12/2007 (mg/kg)
Volatile OrganicCompounds									
p-Isopropyltoluene	3400	<0.05	<0.05	<0.05	-	<0.05	**2.9**	-	<0.05
Polycyclic Aromatic Hydrocarbons									
Phenanthrene	960	<0.2	<0.2	<0.2	-	<0.2	**0.4**	-	<0.2
Fluoranthene	960	<0.2	<0.2	<0.2	-	<0.2	**0.7**	-	<0.2
Pyrene	720	<0.3	<0.2	<0.2	-	<0.2	**0.6**	-	<0.2
Benzo[a]anthracene	0.7	<0.2	<0.2	<0.2	-	<0.2	**0.5**	-	<0.2
Chrysene	44	<0.3	<0.2	<0.2	-	<0.2	**0.4**	-	<0.2
Benzo[b]fluoranthene	0.7	<0.4	<0.2	<0.2	-	<0.2	**0.6**	-	<0.2
Benzo[k]fluoranthene	4	<0.2	<0.2	<0.2	-	<0.2	**0.3**	-	<0.2
Benzo[a]pyrene	0.7	<0.4	<0.2	<0.2	-	<0.2	**0.6**	-	<0.2
Indeno[1,2,3-cd]pyrene	0.7	<0.5	<0.2	<0.2	-	<0.2	**0.2**	-	<0.2
TPH									
TPH (C9-C40)		<0.05	<0.05	<0.05	-	<0.05	**0.08**	-	<0.05
Polychlorinated Biphenyls (PCBs)									
PCB-1016	1	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	<0.1
Cyanide Total	100	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	<0.5
Flashpoint		>200 ^{o}F	>200 ^{o}F	-	>200 ^{o}F	>200 ^{o}F	-	>200 ^{o}F	>200 ^{o}F
Ignitability		Pass	Pass	-	Pass	Pass	-	Pass	Pass
Metals									
Arsenic	11	**12**	**11**	**14**	-	**11**	**5.3**	-	**12**
Barium	1000	**18**	**66**	**51**	-	**68**	**15**	-	**64**
Cadmium	33	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	<0.5
Chromium	130	**13**	**53**	**42**	-	**50**	**12**	-	**38**
Lead	400	**4.5**	**6.6**	**11**	-	**32**	**40**	-	**54**
Mercury	6	<0.1	<0.1	<0.1	-	<0.1	<0.1	-	**1**
Selenium	180	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	<0.5
Silver	89	<0.5	<0.5	<0.5	-	<0.5	<0.5	-	<0.5

Abbreviations:

mg/kg	Milligrams per kilogram - dry weight
ug/kg	Micrograms per kilogram - dry weight
na	Denotes analysis for the analyte was not conducted.
<50	Denotes the analyte was not detected above the reported sample quantitation limit in mg/kg dry weight.

General Notes:

1. **Shaded** indicates the result is equal to or exceeds the applicable soil remediation standards found in Env-Or 600.
2. **Bold** indicates concentration is above laboratory detection limit.

TABLE II
SUMMARY OF BACKGROUND SOIL ANALYTICAL DATA
SCOTT AVENUE BRIDGE
PORTSMOUTH, NEW HAMPSHIRE

Detected Analytes	Soil Remediation Standard (mg/kg)	S1A-HA1 1.0-1.2ft 1/17/2008 (mg/kg)	S1B-HA2 0.7-0.9ft 1/17/2008 (mg/kg)	S1C-HA3 0.6-0.8ft 1/17/2008 (mg/kg)	S2A-HA4 0.9-1.1ft 1/17/2008 (mg/kg)	S2B-HA5 0.8-1.0 ft 1/17/2008 (mg/kg)	S2C-HA6 0.7-0.9ft 1/17/2008 (mg/kg)	S3A-HA7 1.2-1.4ft 1/17/2008 (mg/kg)	S3B-HA8 0.7-0.9ft 1/17/2008 (mg/kg)
Metals									
Arsenic	11	**16**	**9.2**	**13**	**7.0**	**6.8**	**7.6**	**9.2**	**13**

Abbreviations:
mg/kg Milligrams per kilogram - dry weight

General Notes:
1. **Shaded** indicates the result is equal to or exceeds the applicable soil remediation standards found in Env-Or 600.
2. **Bold** indicates concentration is above laboratory detection limit.

TABLE II
SUMMARY OF BACKGROUND SOIL ANALYTICAL DATA
SCOTT AVENUE BRIDGE
PORTSMOUTH, NEW HAMPSHIRE

Detected Analytes	Soil Remediation Standard (mg/kg)	S3C-HA9 0.9-1.1ft 1/17/2008 (mg/kg)	S4A-HA10 0.8-1.0ft 1/17/2008 (mg/kg)	S4B-HA11 1.0-1.2ft 1/17/2008 (mg/kg)	S4C-HA12 0.8-1.0ft 1/17/2008 (mg/kg)
Metals					
Arsenic	11	**11**	**13**	**15**	**17**

Abbreviations:
mg/kg Milligrams per kilogram - dry weight

General Notes:
1. **Shaded** indicates the result is equal to or exceeds the applicable soil remediation standards found in Env-Or 600.
2. **Bold** indicates concentration is above laboratory detection limit.

TABLE III
SUMMARY OF GROUNDWATER ANALYTICAL DATA
SCOTT AVENUE BRIDGE
PORTSMOUTH, NEW HAMPSHIRE

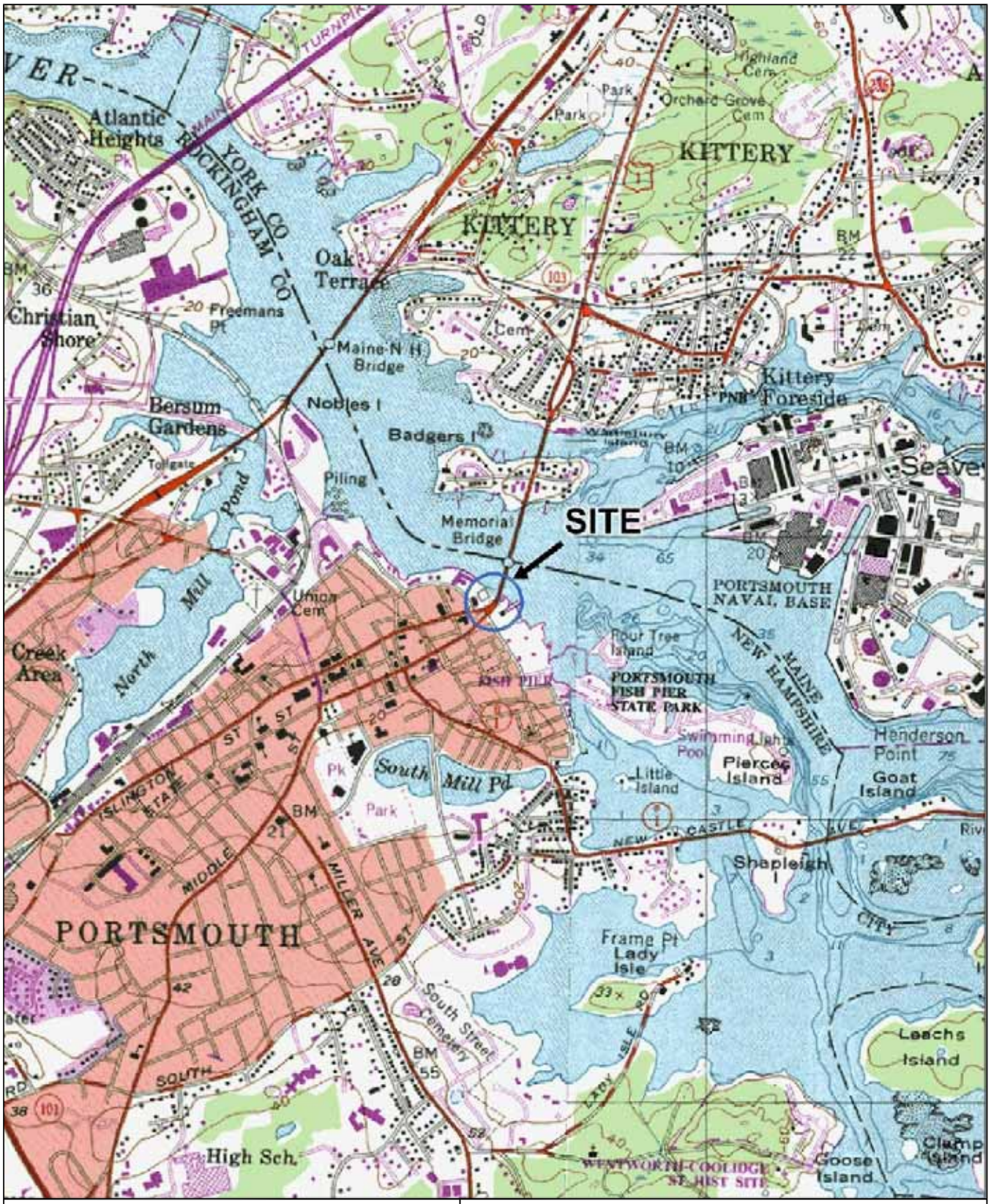
Detected Analytes	AGQS (ug/l)	B1 (OW) 3/28/2007 (ug/l)	B1 (OW) 11/2/2007 dissolved (ug/l)	B1 (OW) 11/2/2007 total (ug/l)	B6 (OW) 3/28/2007 (ug/l)	B6 (OW) 11/2/2007 dissolved (ug/l)	B6 (OW) 11/2/2007 total (ug/l)
Volatile Organic Compounds							
Acetone	6000	<10	-	-	**20**	-	-
Polychlorinated Biphenyls (PCBs)							
PCBs	0.5	<0.5	-	-	<0.5	-	-
Semivolatiles							
3/4 Methylphenol	40	<1	-	-	**13**	-	-
Isophorone	100	**1**	-	-	<1	-	-
Diethylphthalate		<1	-	-	**3**	-	-
bis(2-Ethylhexyl)phthalate	6	**110**	-	-	**32**	-	-
Di-n-octylphthalate		**23**	-	-	**16**	-	-
Polycyclic Aromatic Hydrocarbons							
Phenanthrene	210	**1**	<1	<1	**4**	<1	<1
Fluoranthene	280	**2**	<1	<1	**6**	<1	<1
Pyrene	210	**2**	<1	<1	**9**	<1	<1
Benzo(a)anthracene	0.05	**0.8**	<0.1	**0.2**	**3.7**	<0.1	**0.4**
Chrysene	5	**0.7**	<0.1	**0.1**	**2.8**	<0.1	**0.2**
Benzo(b)Fluoranthene	0.05	**1.2**	<0.1	**0.2**	**7.4**	<0.1	**0.4**
Benzo(k)fluoranthene	0.5	**0.4**	<0.1	<0.1	**2.2**	<0.1	**0.2**
Benzo(a)pyrene	0.2	**1.1**	<0.1	**0.1**	**6.1**	<0.1	**0.3**
Indeno(1,2,3-cd)pyrene	0.05	**0.9**	<0.1	<0.1	**5.7**	<0.1	**0.2**
Benzo(g,h,i)perylene	210	**0.9**	<0.1	**0.1**	**5.5**	<0.1	**0.2**
Dibenz(a,h)anthracene	0.005	**0.2**	<0.1	<0.1	**1.8**	<0.1	<0.1
TPH							
TPH (C9-C40)		<500	-	-	**1700**	-	-
Oil & Grease		<5000	-	-	<5000	-	-
Solids Suspended		**18000000**	-	**8300000**	**29000000**	-	**6700000**
Cyanide Total	200	<20	-	-	**90**	-	-
Total Residual Chlorine		<500	-	-	<500	-	-
pH		**7.3**	-	-	**7.2**	-	-
Metals (dissolved)							
Antimony	6	<1	-	-	<1	-	-
Arsenic	10	**6**	-	-	**14**	**50**	-
Beryllium	4	<1	-	-	<1	-	-
Cadmium	5	<1	-	-	<1	-	-
Chromium	100	<1	-	-	**2**	-	-
Copper	1300	**4**	-	-	**5**	-	-
Lead	15	<1	-	-	**2**	-	-
Mercury	2	<0.1	-	-	<0.1	-	-
Nickel	100	**14**	-	-	**9**	-	-
Selenium	50	**5**	-	-	**5**	-	-
Silver	100	<1	-	-	<1	-	-
Thallium	2	<1	-	-	<1	-	-
Zinc		**100**	-	-	**110**	-	-

Abbreviations:

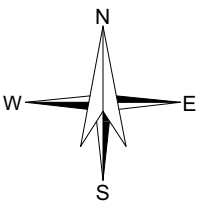
ug/l	Micrograms per liter.
<50	Denotes the analyte was not detected above the reported sample quantitation limit in ug/l.
-	Not analyzed.

General Notes:

1. **Shaded** indicates the result is equal to or exceeds the applicable Ambient Groundwater Quality Standards contained in Env-Or 600.
2. **Bold** indicates concentration is above laboratory detection limit.
3. Groundwater samples were collected from observation wells.



SITE COORDINATES: 43°04'42"N 70°45'11"W



U.S.G.S. QUADRANGLE: PORTSMOUTH, NH-ME

HALEY & ALDRICH

SCOTT AVENUE BRIDGE
REHABILITATION OF THE MEMORIAL BRIDGE
PORTSMOUTH, NEW HAMPSHIRE

PROJECT LOCUS

SCALE: 1:24000
MARCH 2008

FIGURE 1

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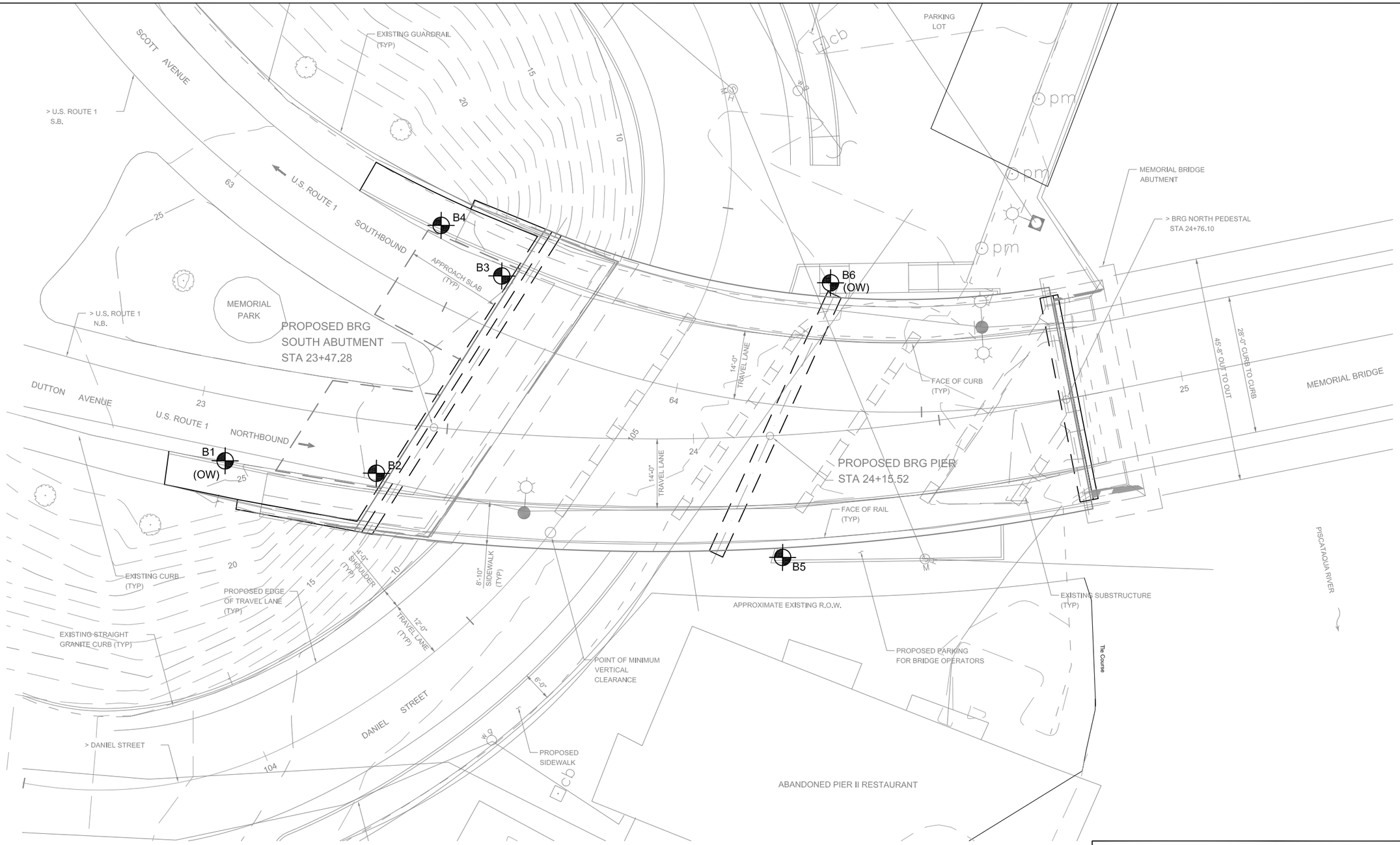

LEGEND:

B1 — LOCATION AND IDENTIFICATION OF TEST BORING MADE BY NEW HAMPSHIRE BORING, INC. BETWEEN 26 FEBRUARY AND 13 MARCH 2007

(OW) — OBSERVATION WELL INSTALLED IN BORING

NOTES:

1. BASE PLAN PROVIDED IN ELECTRONIC FORMAT BY MCFARLAND-JOHNSON, INC. ON 30 APRIL 2007.
2. ELEVATIONS INDICATED ON THIS DRAWING ARE IN FEET AND REFER TO THE NATIONAL GEODETIC VERTICAL DATUM OF 1929 (NGVD 29).
3. TECHNICAL MONITORING OF TEST BORINGS WAS PERFORMED BY HALEY & ALDRICH, INC.
4. AS-DRILLED LOCATIONS OF TEST BORINGS WERE DETERMINED IN THE FIELD BY HALEY & ALDRICH, INC. BY TAPE MEASUREMENTS FROM EXISTING FEATURES.

N S E

0 20 40
SCALE IN FEET

HALEY & ALDRICH

SCOTT AVENUE BRIDGE
REHABILITATION OF MEMORIAL BRIDGE
PORTSMOUTH, NEW HAMPSHIRE

GROUNDWATER AND SOIL SAMPLING LOCATION PLAN

SCALE: AS SHOWN
MARCH 2008

FIGURE 2

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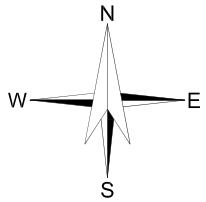

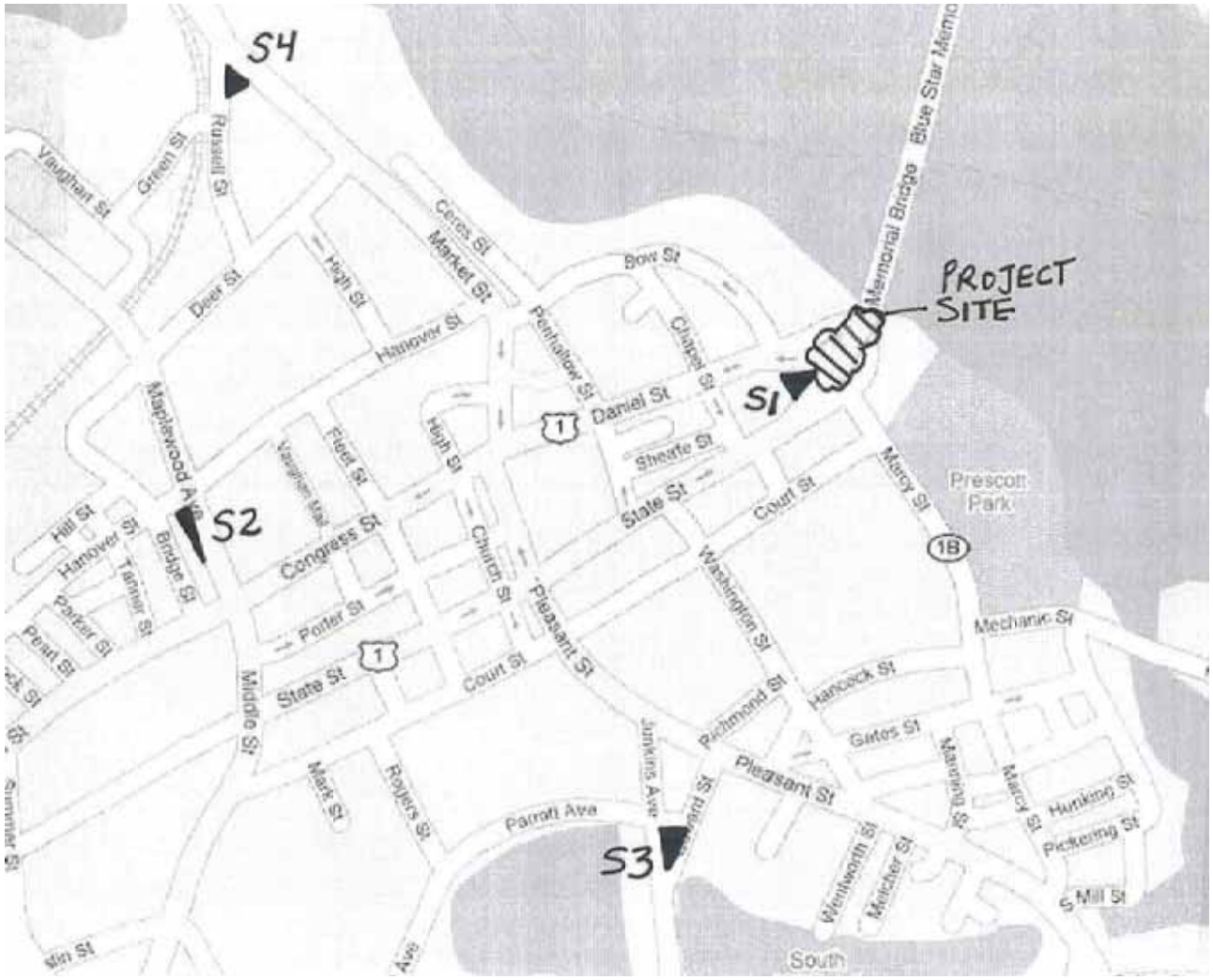

HALEY & ALDRICH

SCOTT AVENUE BRIDGE
REHABILITATION OF MEMORIAL BRIDGE
PORTSMOUTH, NEW HAMPSHIRE

BACKGROUND SOIL SAMPLING LOCATIONS

SCALE: AS SHOWN
MARCH 2008

FIGURE 3

REPORT ON
ENVIRONMENTAL RECORDS REVIEW
REHABILITATION OF THE MEMORIAL BRIDGE
PORTSMOUTH, NEW HAMPSHIRE

by

Haley & Aldrich, Inc.
Manchester, New Hampshire

for

HNTB Corporation
Boston, Massachusetts

File No. 28332-000
Revised 10 December 2007

HALEY & ALDRICH

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HALEY & ALDRICH

Revised 10 December 2007
17 November 2005
File No. 28332-000

HNTB Corporation
75 State Street
Boston, Massachusetts 02109

Attention: John Watters, P.E.

Subject: Environmental Records Review
Rehabilitation of the Memorial Bridge
Portsmouth, New Hampshire

Ladies and Gentlemen:

This letter report contains the results of a review of federal and state environmental databases and specific files at the New Hampshire Department of Environmental Services (NHDES) to identify sites with potential for oil and hazardous materials contamination which could impact the subject site (Figure 1). We also contacted selected municipal officials who may have knowledge of environmental conditions in the Memorial Bridge area. This work was performed by Haley & Aldrich, Inc. (Haley & Aldrich) in accordance with our Supplemental Agreement No. 1, dated 29 September 2005.

BACKGROUND

An investigation is currently underway by the project team to address environmental documentation, public involvement, and engineering support tasks for rehabilitation of the Portsmouth Memorial (U.S. Route 1) Bridge over the Piscataqua River in Portsmouth, New Hampshire and Kittery, Maine. The proposed construction includes replacement of the Scott Avenue Bridge adjacent to the south bridge abutment in Portsmouth. Construction of the replacement bridge is the only portion of the project that is expected to require earthwork during construction. Therefore, the focus of this environmental review is the area of the Scott Avenue Bridge replacement, and environmental conditions were not evaluated at other locations of the Memorial Bridge.

The project site is generally bounded by Daniel Street, Wright Avenue, State Street, and the Piscataqua River. The site is occupied by the existing Scott Avenue Bridge, Memorial Park, and municipal parking.

PURPOSE AND SCOPE

The purpose of this review was to identify properties with environmental conditions that have the potential to adversely impact future reconstruction of the bridge that is planned at the site.

No site explorations were included in this work. Haley & Aldrich performed the following scope of services:

- Review of federal and state environmental database information within the ASTM Standard Phase I Environmental Site Assessment- specified radii from the subject property using a database service to access records. HNTB Corporation provided the Environmental FirstSearch™ Report to Haley & Aldrich on 4 October 2005.

- Review of state files for the former Portsmouth Gas Works site (currently Harbor Place).

- Phone interviews with Mr. David O'Brien (Fire Chief, Kittery Fire Department) and Mr. Steven Griswold (Deputy Chief, Portsmouth Fire Department).

- Interpretation of information and data assembled as a result of the above work tasks, and preparation of this report.

SITE HISTORY

Past usage of the site and the adjoining areas is summarized in this section. Information reviewed to complete this section of the report includes nine Sanborn Fire Insurance maps (Sanborn Maps) for years between 1887 and 1980, obtained from Environmental Data Resources, Inc. The Sanborn Maps are included in Appendix A. Past usage of the subject site and adjacent properties is summarized below by Sanborn Map survey years.

1887:
This map indicated that a coal gasification plant with several coal houses, a gasometer, and a tar house was located northwest of the intersection of Daniel and Bow Streets. At the end of Daniel Street, on the river was J.H. Broughton Lumber Yard, with lumber storage on the adjacent wharf. C.E. Walker & Co. Coal yard, with coal pockets and storage, was present on the wharf at the end of State Street. The adjacent wharf to the southeast was owned by O.F. Philbrick & Co and includes coal storage as well as buildings for stone cutting.

1892:
This map indicates that the coal gasification plant was owned by Portsmouth Gas & Electric Light Works. The coal house on the 1887 map was labeled Electric Light Stan. in 1892. The gasometer, remaining coal house and tar house were still present and there was an additional coal shed and shed on site. C.E. Walker Co. Coal Wharf and J.H. Broughton Lumber were still present, although there was less lumber storage on the wharfs.

1898:
This map indicates that Portsmouth Gas & Electric Light Works was still present. C.E. Walker Co. Coal Wharf and J.H. Broughton Lumber were also still present.

1904:
The maps indicate that Portsmouth Gas & Electric Light Co. expanded between 1898 and 1904 to include a power station. The coal gasification plant listed 4 engines and 4 generators

as well as new fire proof building for the fuel economizer. C.E. Walker Co. Coal Wharf and J.H. Broughton Lumber were still present.

1910:
The map indicates that the power plant changed ownership, and was labeled Rockingham County Light & Power Co. The coal gasification portion of the property was still owned by Portsmouth Gas Co. No additional buildings appear to have been built on this property. There appear to be 6 engines and two exciters in the power building (housing the fuel economizer) in 1910 compared to 4 engines in 1904. C.E. Walker & Co. Coal Wharf was still in existence with coal sheds and coal pockets. The John H. Broughton Lumber Yard was also present; however, lumber, lime, and cement were all listed as being stored on the wharf.

1920:
This map is similar to the 1910 map except that 6 engines and 3 exciters (one more exciter than in 1910) were listed in the power building. C.E Walker & Co. Coal Wharf appears to have expanded toward the lumber yard.

1949:
The Memorial Bridge is identified for the first time on this Sanborn map in the place where John H. Broughton Lumber yard was formerly located. N. H. Gas & Electric Co. owned the power plant, but it appears that Portsmouth Gas Co. – Gas Works still owned the gas works buildings on the property. A wood pile and miscellaneous storage were located on the wharf adjacent to the Memorial Bridge to the south. C.E. Walker & Co. Coal Wharf was the next wharf to the south. N.H. Gas & Electric Co. owned additional property to the northwest of Portsmouth Gas Works Co. (formerly occupied by Portsmouth Brewery Co.).

1956:
This Sanborn Map is difficult to read. N.H. Gas & Electric Co. continued to own the power plant, and Portsmouth Gas Co. – Gas Works owned the gas works buildings on the property. C.E. Walker & Co. Coal wharf still occupied piers south of the Memorial Bridge.

1980:
This map indicates that the power plant north of the Memorial Bridge was still owned by N.H. Gas & Electric Co. but the northern portion of this property was used for parking and the gas works buildings were no longer listed on the map. The piers to the south of Memorial Bridge appear to be storage and a commercial wharf with a few buildings shown.

ENVIRONMENTAL RECORDS REVIEW

Portsmouth Gas Works (Harbor Place)

Haley & Aldrich reviewed the files available at the New Hampshire Department of Environmental Services (NHDES) for the Portsmouth Gas Works site. This site is located to the northwest of the Scott Avenue Bridge, between Daniel Street, Bow Street, the Piscataqua River, and the Theatre by the Sea. The Harbor Place development (commercial office building, bank building, and parking) and condominiums currently occupy this property.

The file review indicates that the property was purchased from Public Service Company of New Hampshire (PSNH) by Bow Street Associates Limited Partnership in 1984. The property was subdivided into two lots and one lot was sold to Seaboard N.H., Inc. in 1985. An Administrative Consent Order for remediation of the property was issued to the two owners in 1986.

Documents indicate that the property was operated as a manufactured gas plant (MGP) using the coal gasification process from the early to mid 1800's until the 1940's. The coal gasification process generated an iron-cyanide complex when the coal gas was passed through wood chips and iron filings in the purification process. Documents indicate that purifier wastes may have been landfilled on the facility's property. The process also generated coke, tars, oils, light oils, and heavy oils. These materials may have been sold, rather than disposed of as waste.

Two underground storage tanks (USTs) were uncovered at the site during construction activities for the Harbor Place development. The two tanks were removed by Jet-Line Services, Inc., and disposed of around 1985.

GZA GeoEnvironmental, Inc. (GZA) performed borings and test pits in 1985. The deeper borings encountered a zone of black, oily, odorous substance, up to 3 ft thick, just above refusal. Information on the depth of this zone was not available during preparation of this report. This information suggests the presence of coal tar at depth beneath the Harbor Place property.

GZA completed an air monitoring program in 1992 as part of an ongoing monitoring program initiated in 1986. The air monitoring was performed to assess the potential migration of volatile organic compounds (VOCs) from the subsurface into the airspace within the Harbor Place development. The results of the 1992 monitoring program indicate four sample locations with detectable concentrations of VOCs. GZA completed a Limited Environmental Site Assessment Update in 1996. GZA concluded that because the site had been effectively capped during development, conditions at the site "do not pose a significant threat to public health or the environment."

The contaminated groundwater at the site is being managed under the provisions of a groundwater management permit (GMP). In correspondence to the United States Environmental Protection Agency dated 21 August 1997, the NHDES states that based on available data, the extent of groundwater contamination is limited to the property and is bounded by the Piscataqua River to the north. Consequently, the Groundwater Management Zone (GMZ) established by the GMP encompasses only the Harbor Place development property.

Based on our review of NHDES files, it does not appear that investigation of the former MGP included the adjacent Memorial Bridge site. Based on our understanding of MGP sites in general and the proximity of the former MGP to the subject site, MGP residuals and other materials typical of urban and industrial settings (e.g., urban fill) may be present beneath the Memorial Bridge site, particularly if the site was filled.

Other Impacted Properties

Several other sites have the potential to impact soil and groundwater at the Scott Avenue Bridge replacement:

- Former State Street Exxon, State Street and Wright Avenue (0.07 mi. SW) – Seven underground storage tanks were removed from this site on 13 October 1986. The site has a GMP, and results of the GMP testing show elevated levels of naphthalene and alkylbenzene. This property is located immediately upgradient from the Memorial Bridge site, and therefore we believe it has the potential to impact groundwater at the Memorial Bridge site.

- Dows Gulf Station, 480 State Street (0.46 mi. SW) – Seven tanks were closed at this site on 1 July 1987 and 20 December 2002, and 16 July 1999. NHDES online information indicates that compliance is not yet met for this Leaking UST site. This property is located upgradient from the Memorial Bridge site, however given its distance from the site (almost ½ mile), it does not appear likely that releases of petroleum at this property will impact soil or groundwater at the Memorial Bridge site.

- Portsmouth Herald, 111 Maplewood Avenue (0.44 mi. NW) – The site currently has a GMP with NHDES. They are an on premise use facility containing fuel oil with a discharge in the past (1997). This property is not believed to be upgradient from the Memorial Bridge site and is almost ½ mile from the site; therefore it does not appear likely that releases of petroleum at this property will impact soil or groundwater at the Memorial Bridge site.

CONCLUSIONS AND RECOMMENDATIONS

Haley & Aldrich's conclusions and recommendations, based on the information contained in this report, are as follows:

1. The historic industrial uses in the site area, its proximity to the former MGP and the presence of other properties impacted primarily by releases of petroleum products in the site area indicate the potential for adverse impacts to soil and groundwater at the site. Consequently, appropriate measures for management of contaminated media should be in place in advance of construction.

2. Soil and groundwater sampling and analysis are recommended in advance of earthwork for site construction. The purpose of the testing program is to establish measures for appropriate disposal or reuse of soil that will be excavated during site development and for management of other wastes that may be generated during construction, such as effluent from excavation dewatering. The scope of the testing program will depend on quantities and locations of excavation required for the bridge project and on whether excavation dewatering will be required. A typical testing program would include analysis of soil samples for VOCs, PAHs, RCRA 8 metals, PCBs, total petroleum hydrocarbons (TPH), ignitability, and cyanide and analysis of

groundwater samples for similar parameters and additional parameters that may be required to evaluate management of excavation dewatering effluent.

3. Based on the historical uses of the site and adjacent properties and known releases of MGP materials and petroleum in the site area, Haley & Aldrich recommends preparing a Soils and Materials Management Plan for use during construction of the proposed bridge. The plan is intended to provide measures for appropriate management and disposal of materials encountered during construction, such as miscellaneous debris in the existing fill materials (i.e. former foundations, urban fill, etc.), and soil and groundwater impacted by the MGP residuals, petroleum, or other contaminants. The plan should be included in project specifications so that management of potentially contaminated media is included in the project planning and contractor procurement processes.

LIMITATIONS

This Environmental Records Review was not intended to meet the ASTM Standard Phase I Environmental Site Assessment (ESA) or other standards for Phase I ESAs.

The scope of our environmental review for the Scott Avenue Bridge replacement did not include investigation of the Site for: Asbestos Containing Building Materials, Radon, Lead in Drinking Water, Wetlands, Regulatory Compliance, Cultural and Historic Risks, Industrial Hygiene, Health and Safety, Ecological Resources, Endangered Species, Indoor Air Quality, and High Voltage Power lines. In addition, an assessment for the presence of mold or other biological pollutants is not included in this study.

This Report was prepared pursuant to an Agreement dated 29 September 2005 between HNTB Corporation and Haley & Aldrich. All uses of this Report are subject to, and deemed acceptance of, the conditions and restrictions contained in the Agreement. The observations and conclusions described in this Report are based solely on the Scope of Services provided pursuant to the Agreement. Haley & Aldrich has not performed any additional observations, investigations, studies or other testing not specified in the Agreement. Haley & Aldrich shall not be liable for the existence of any condition the discovery of which would have required the performance of services not authorized under the Agreement.

This Report is prepared for the exclusive use of HNTB Corporation in connection with the construction of the Scott Avenue Bridge replacement. There are no intended beneficiaries other than HNTB Corporation. Haley & Aldrich shall owe no duty whatsoever to any other person or entity on account of the Agreement or the Report. Use of this Report by any person or entity other than HNTB Corporation for any purpose whatsoever is expressly forbidden unless such other person or entity obtains written authorization from HNTB Corporation and from Haley & Aldrich. Use of this Report by such other person or entity without the written authorization of HNTB Corporation and Haley & Aldrich shall be at such other person's or entity's sole risk, and shall be without legal exposure or liability to Haley & Aldrich.

Use of this Report by any person or entity, including by HNTB Corporation, for a purpose other than for the review of environmental conditions at the Scott Avenue Bridge Replacement in Portsmouth, New Hampshire is expressly prohibited unless such person or entity obtains

written authorization from Haley & Aldrich indicating that the Report is adequate for such other use. Use of this Report by any person or entity for such other purpose without written authorization by Haley & Aldrich shall be at such person's or entity's sole risk and shall be without legal exposure or liability to Haley & Aldrich.

This report reflects site conditions observed and described by records available to Haley & Aldrich as of the date of report preparation. The passage of time may result in significant changes in site conditions, technology, or economic conditions, which could alter the findings and/or recommendations of the report. Accordingly, HNTB Corporation and any other party to whom the report is provided recognize and agree that Haley & Aldrich shall bear no liability for deviations from observed conditions or available records after the time of report preparation.

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We appreciate the opportunity to provide environmental consulting services on this project. Please do not hesitate to call if you have any questions or comments.

Sincerely yours,
HALEY & ALDRICH, INC.

Erin F. Wood, P.E.
Senior Engineer

Robert A. Mullin, P.E.
Vice President

Enclosures:

Figure 1 – Site Locus
Appendix A – Sanborn Maps (1887, 1892, 1898, 1904, 1910, 1920, 1949, 1956, 1980)

G:\- PROJECTS\28-\28332\Environmental Review\2007-1210-HAI-Environmental Report-F.doc

REFERENCES

1. FirstSearch Technology Corporation, Environmental FirstSearch™ Report, prepared for HNTB Corporation, dated 26 July 2005.

2. State of New Hampshire, Department of Health and Human Services, Division of Public Health Services, "Administrative Order: Order of Abatement No. 86-37," signed 2 December 1986.

3. State of New Hampshire, Department of Environmental Services, Waste Management Division, "Screening Site Inspection Report, Portsmouth Gas Works, Portsmouth, NH, NHD 980520886," dated 25 September 1991.

4. GZA GeoEnvironmental, Inc., "Air Monitoring Program, Harbour Place Development, Portsmouth, New Hampshire," 18 March 1993.

5. GZA GeoEnvironmental, Inc., "Limited Environmental Site Assessment Update, Harbour Place (DES #840484), Portsmouth, New Hampshire," 19 July 1996.

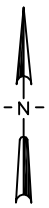
6. GZA GeoEnvironmental, Inc., "Limited Environmental Site Assessment Update, Supplement, Harbour Place (DES #840484), Portsmouth, New Hampshire," 8 August 1996.

7. State of New Hampshire, Department of Environmental Services, "Portsmouth, Archival Request Letter, Portsmouth Gas Works (Harbour Place), CERCLIS #:NHD980520886, DES #:840484," 21 August 1997.

8. State of New Hampshire, Department of Environmental Services, "Portsmouth – Harbour Place (former Portsmouth Gas Works), Renewed Groundwater Management Permit No. GWP-198404084-P-002 (DES #198404084)," 11 October 2001.

9. GZA GeoEnvironmental, Inc., "Annual Summary of Groundwater Quality, Harbour Place, Portsmouth, New Hampshire (Site), GMP No. GWP-19840484-P-002, NHDES No. 840484," 17 June 2005.

SITE COORDINATES: 43°04'41"N 70°45'13"W



U.S.G.S. QUADRANGLE: PORTSMOUTH, NH

HALEY & ALDRICH

UNDERGROUND ENGINEERING & ENVIRONMENTAL SOLUTIONS

ENVIRONMENTAL RECORDS REVIEW
REHABILITATION OF THE MEMORIAL BRIDGE
PORTSMOUTH, NEW HAMPSHIRE

PROJECT LOCUS

APPROXIMATE SCALE: 1:24,000

NOVEMBER 2005

28332-000 A01

FIGURE 1

APPENDIX A

Sanborn Maps
1887, 1892, 1898, 1904, 1910, 1920, 1949, 1956, 1980

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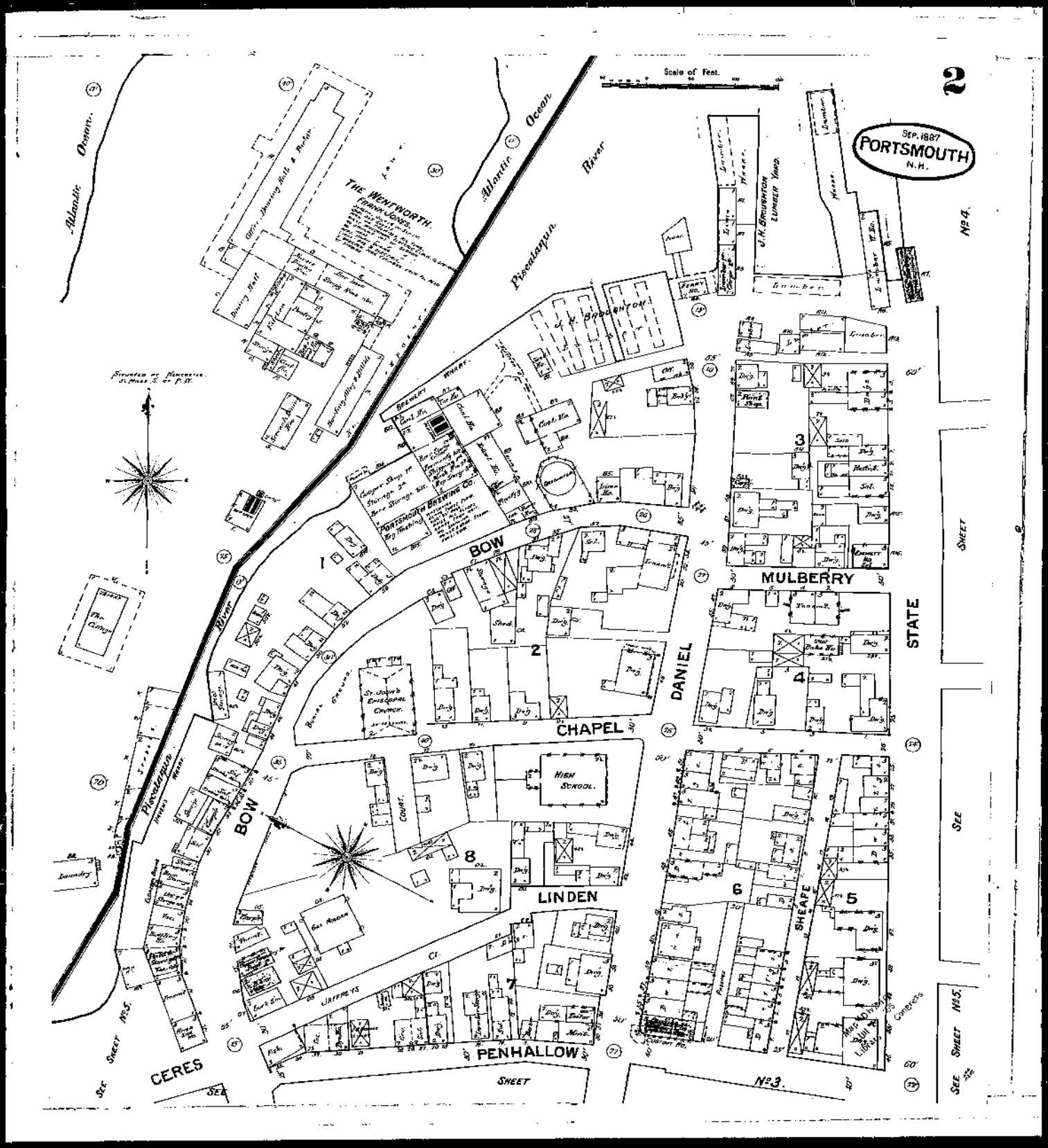

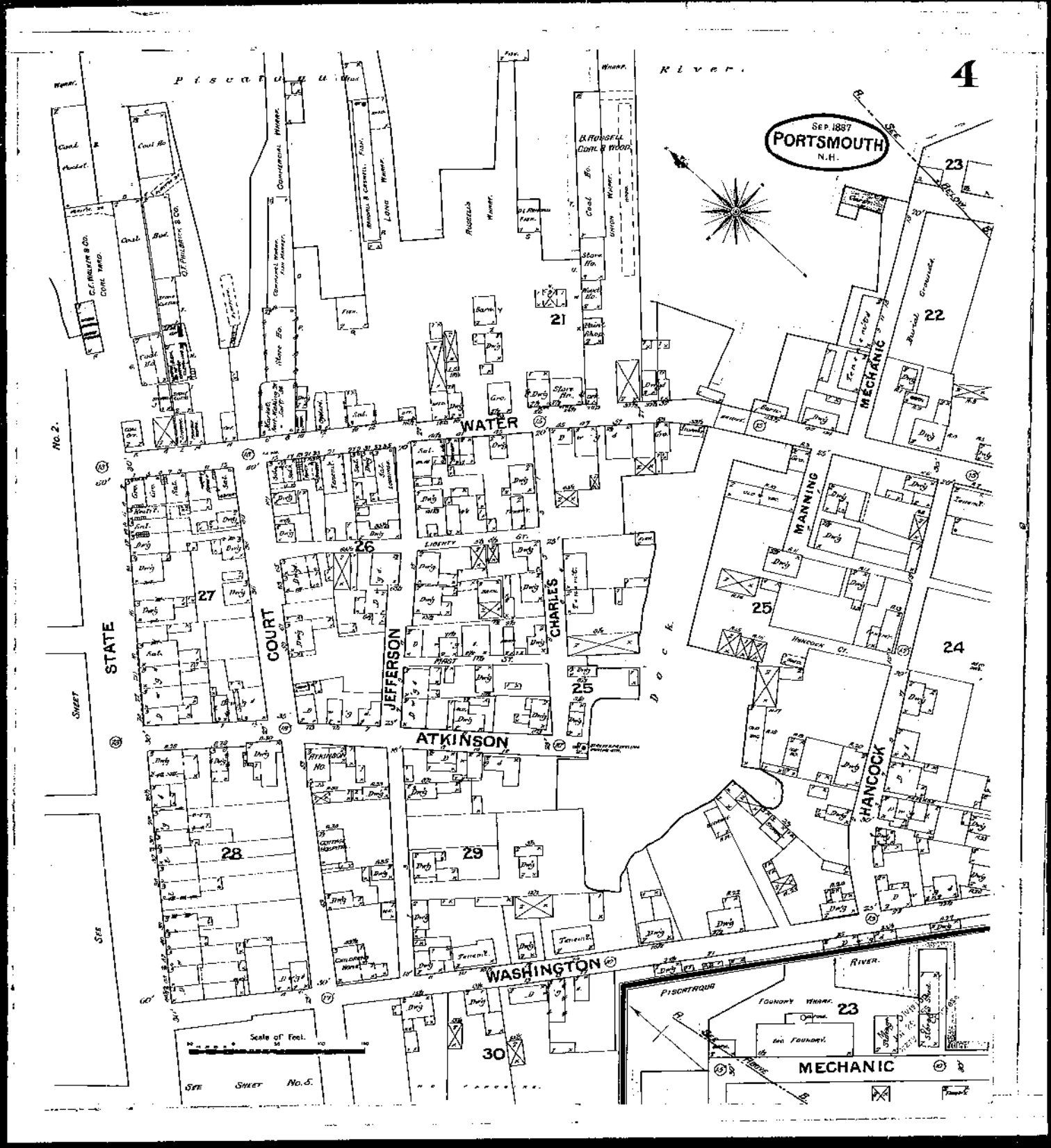

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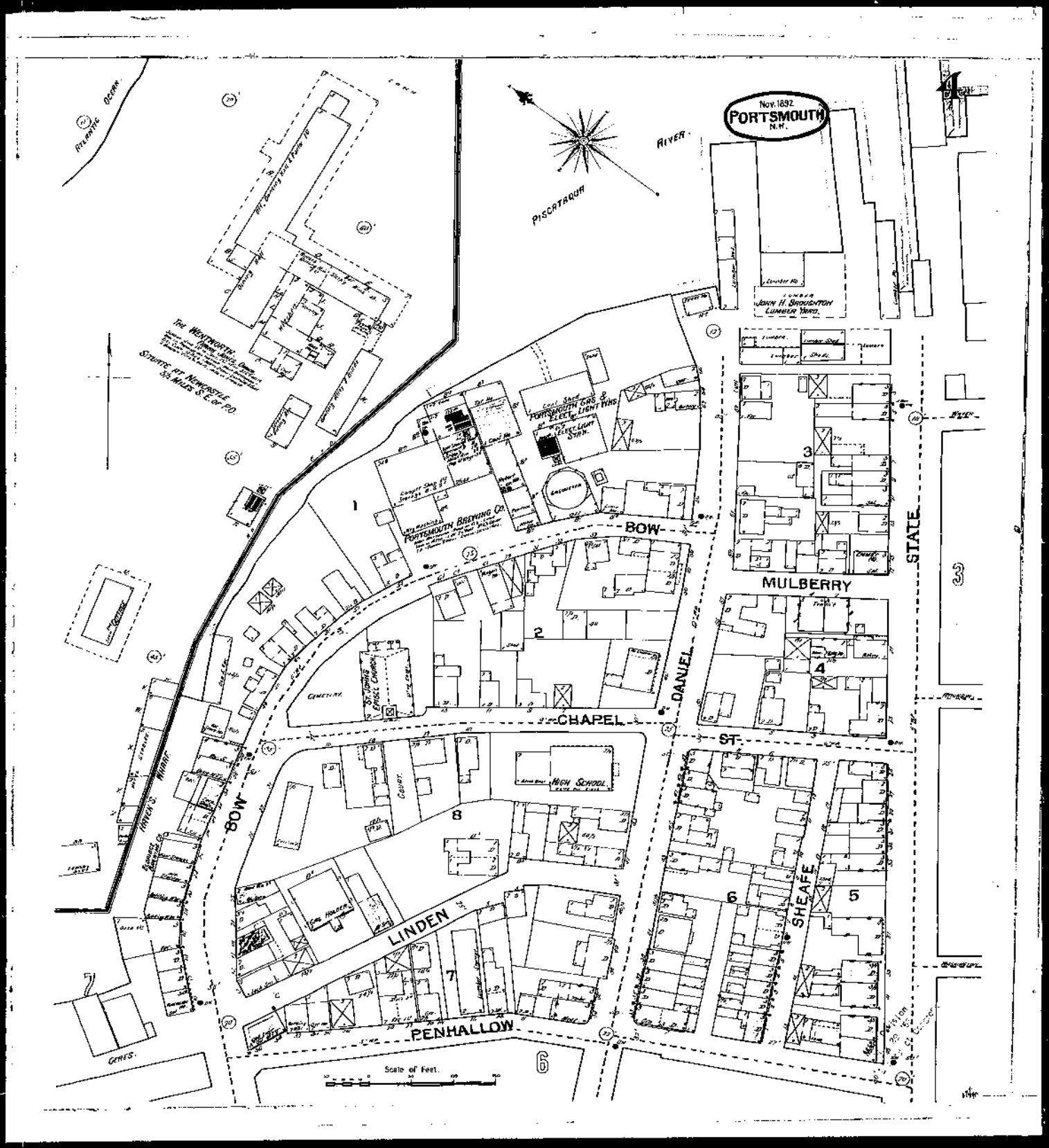

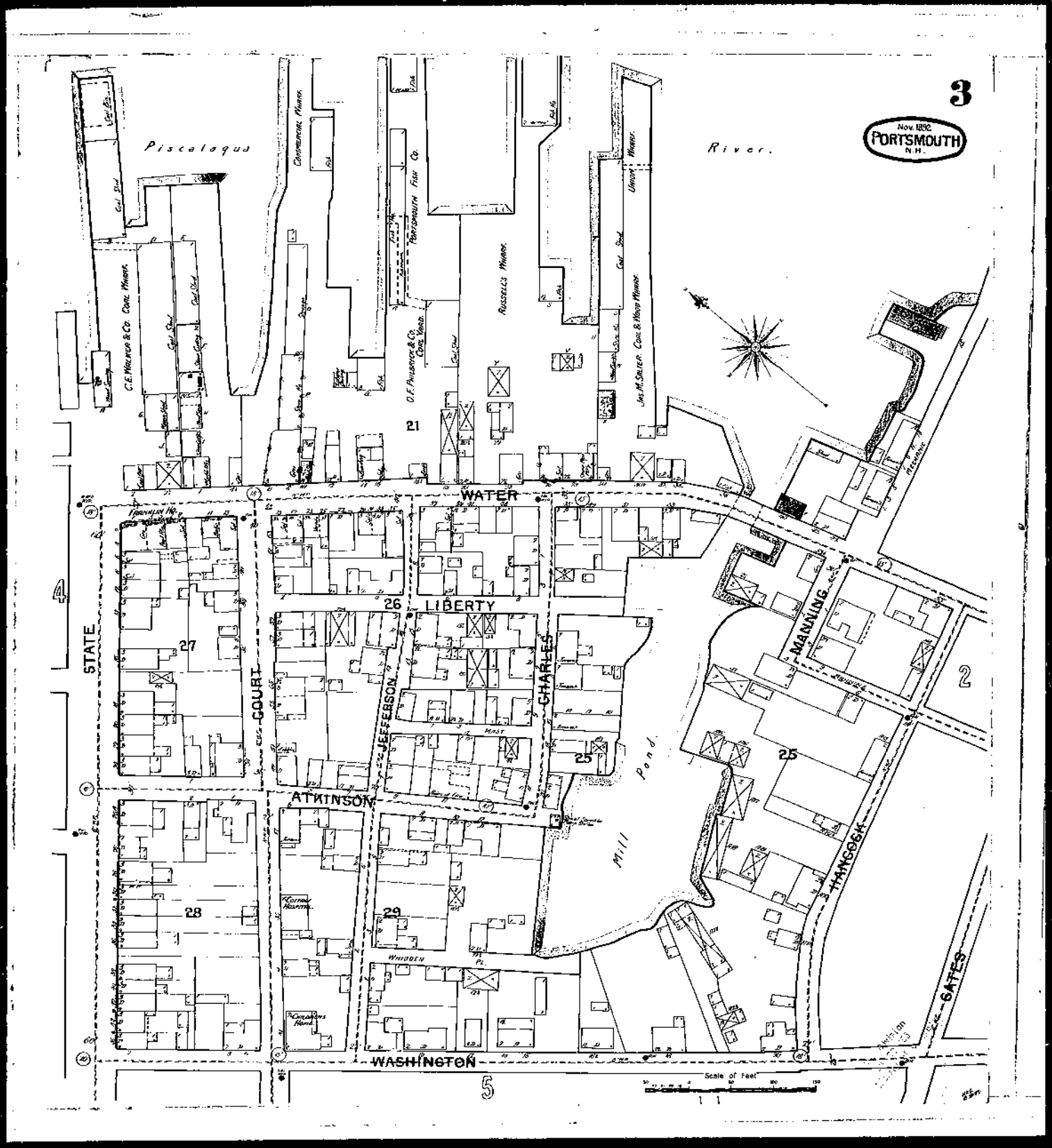

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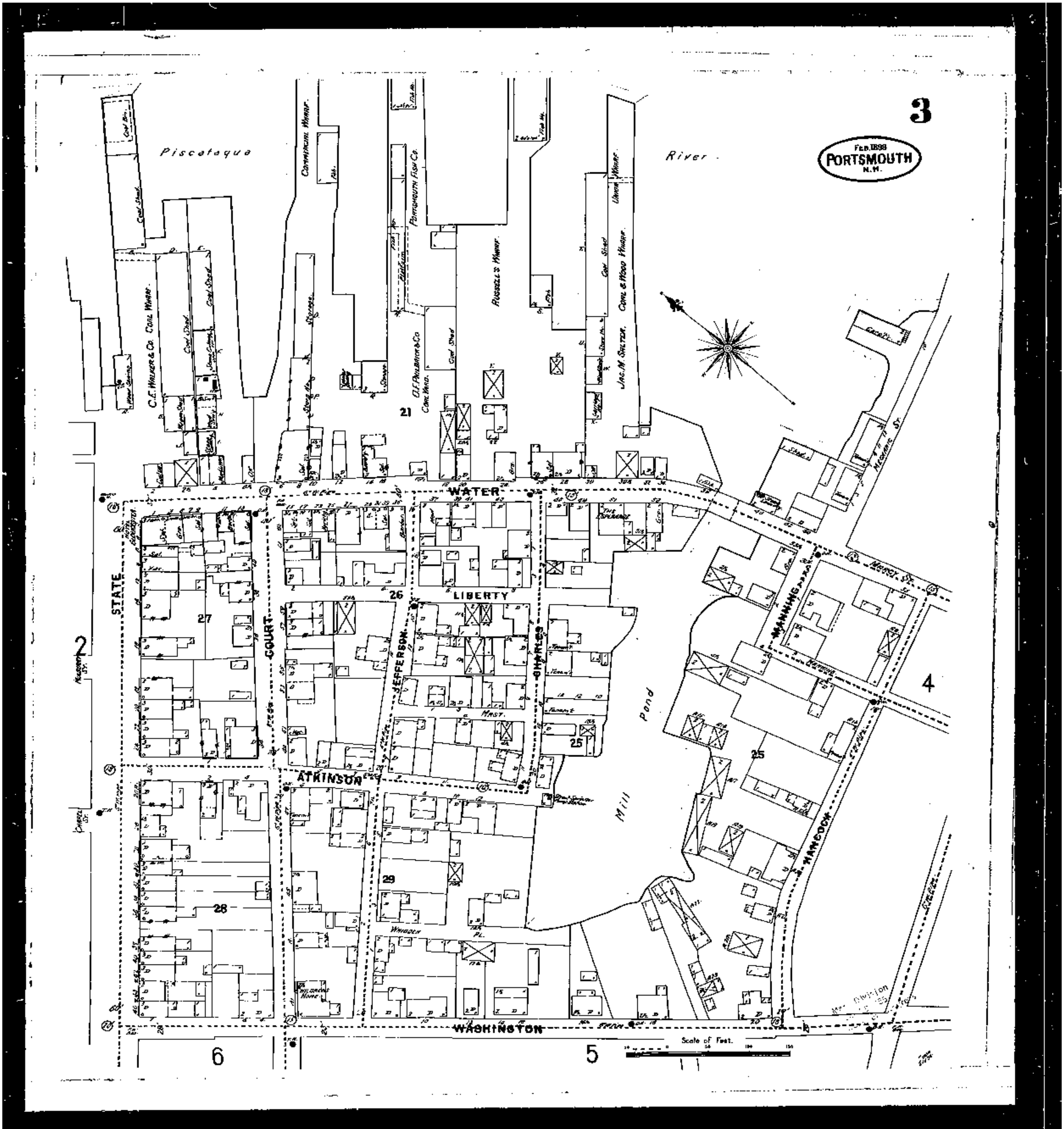

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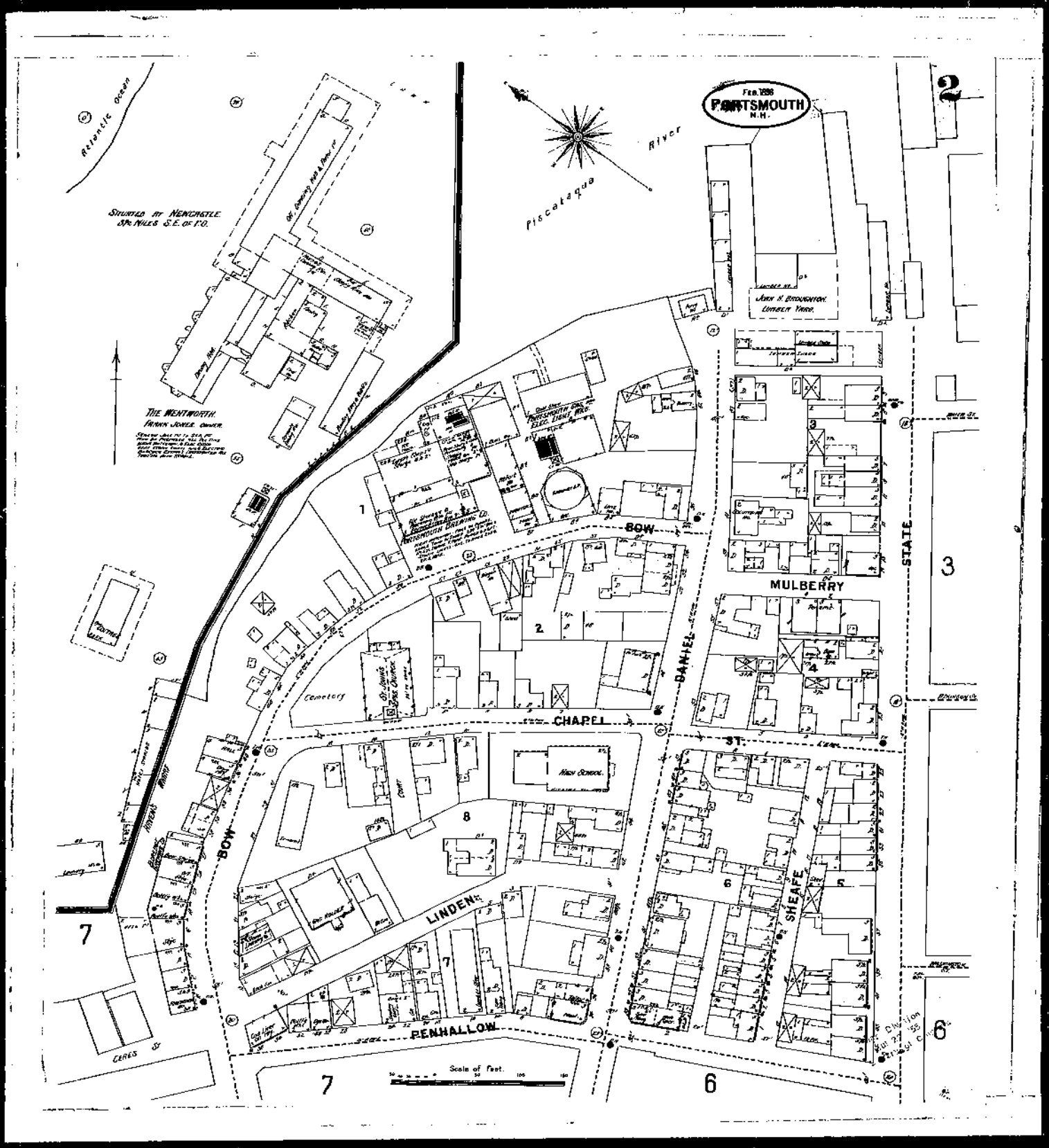

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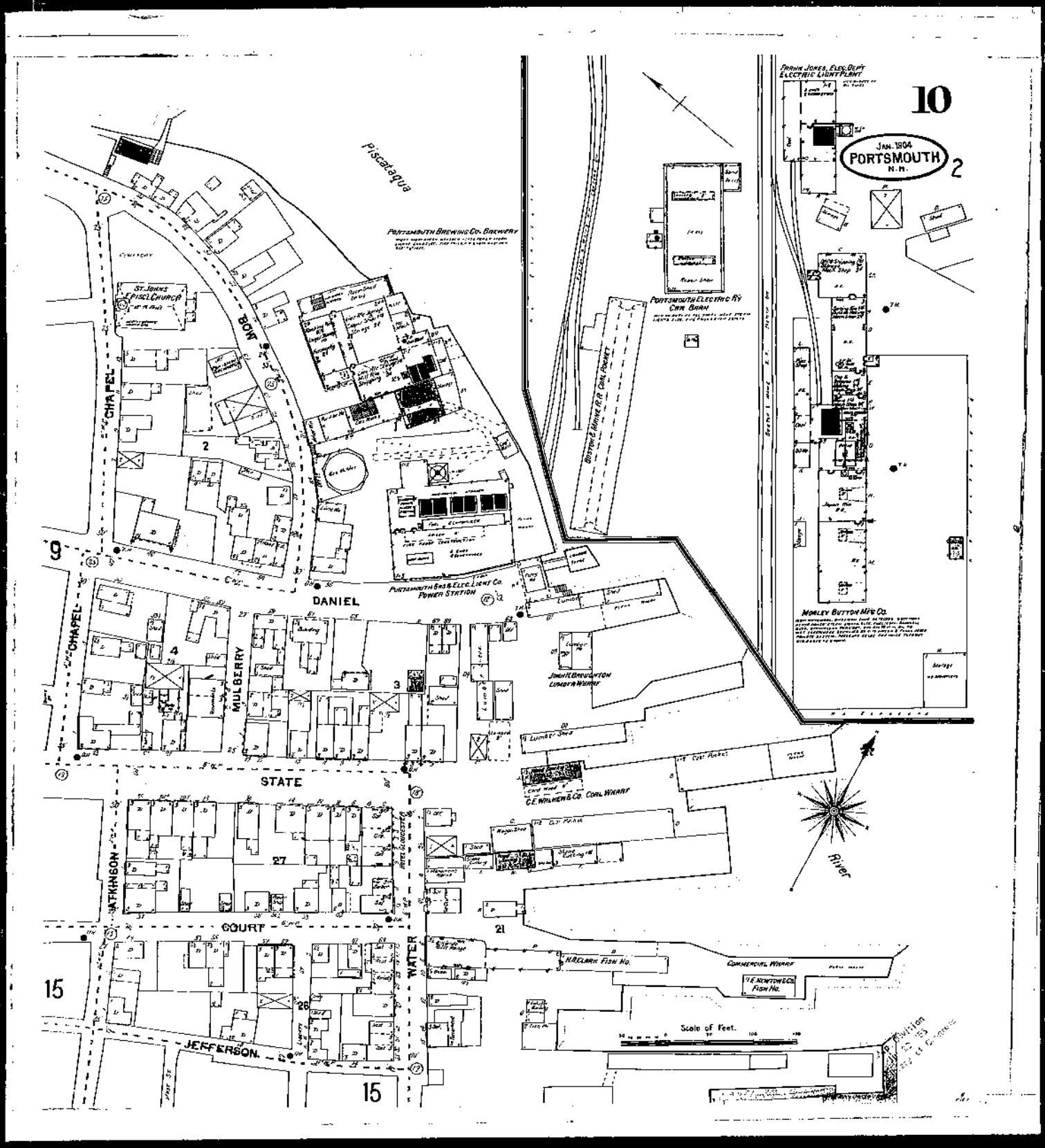

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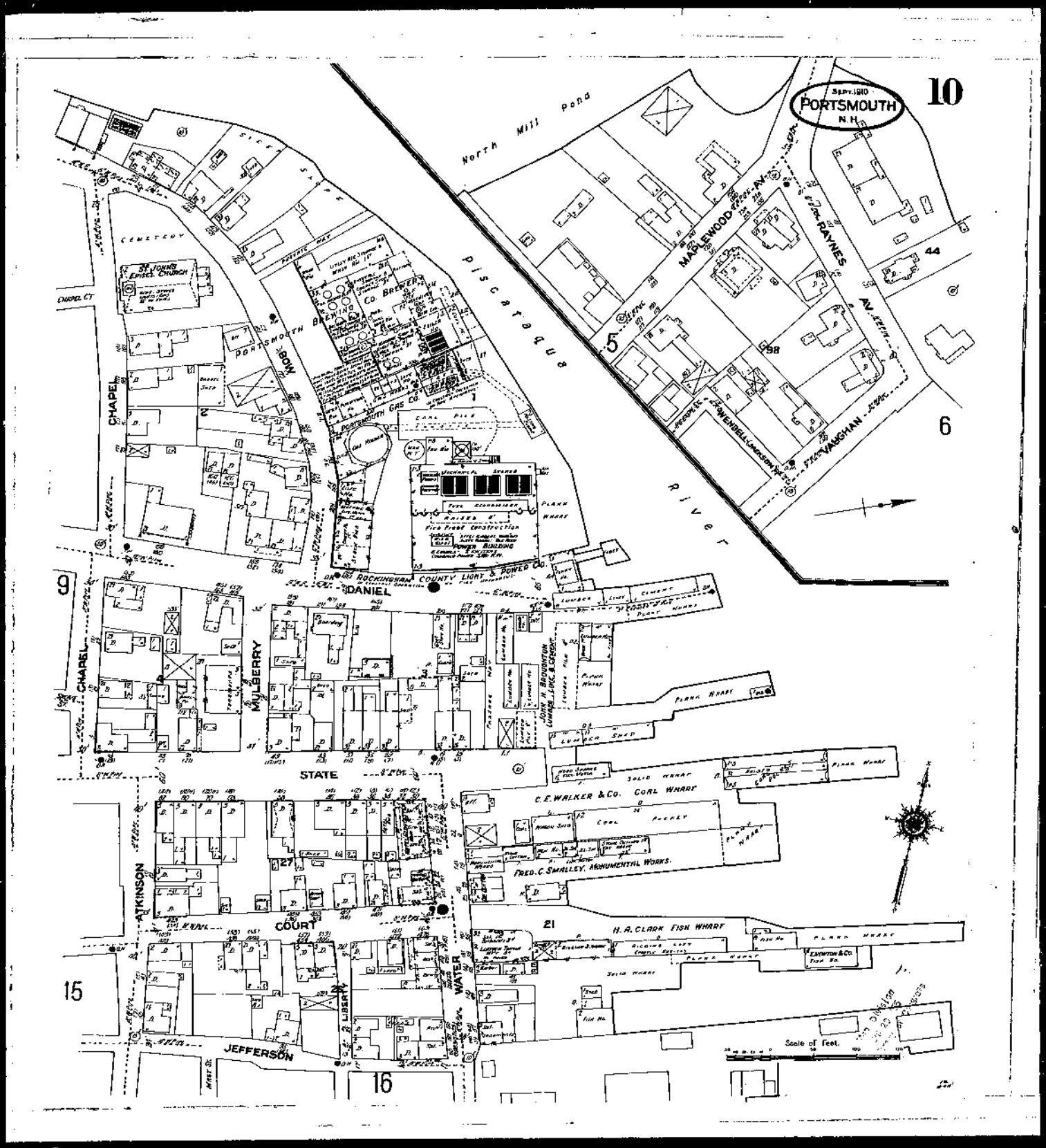

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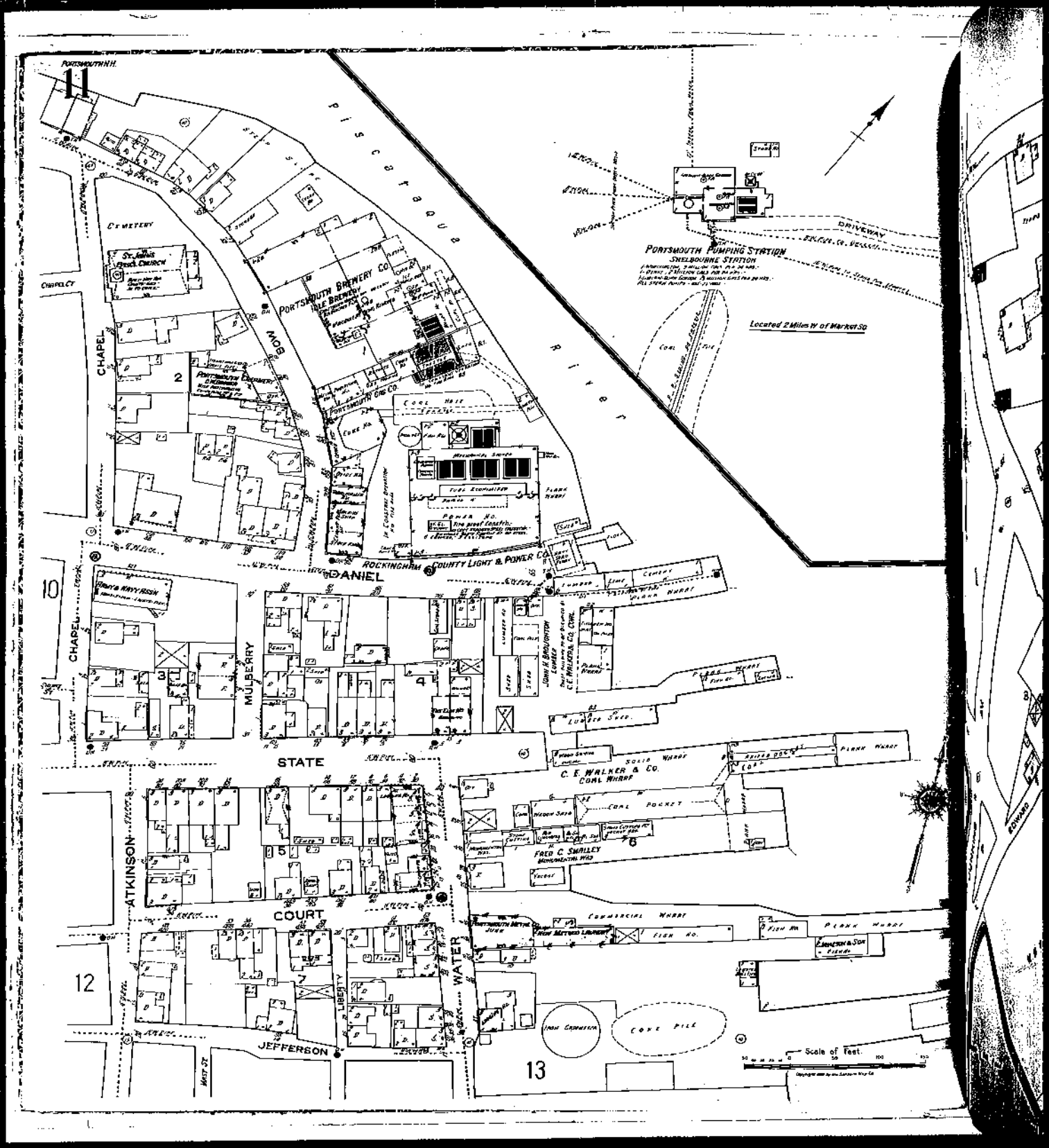

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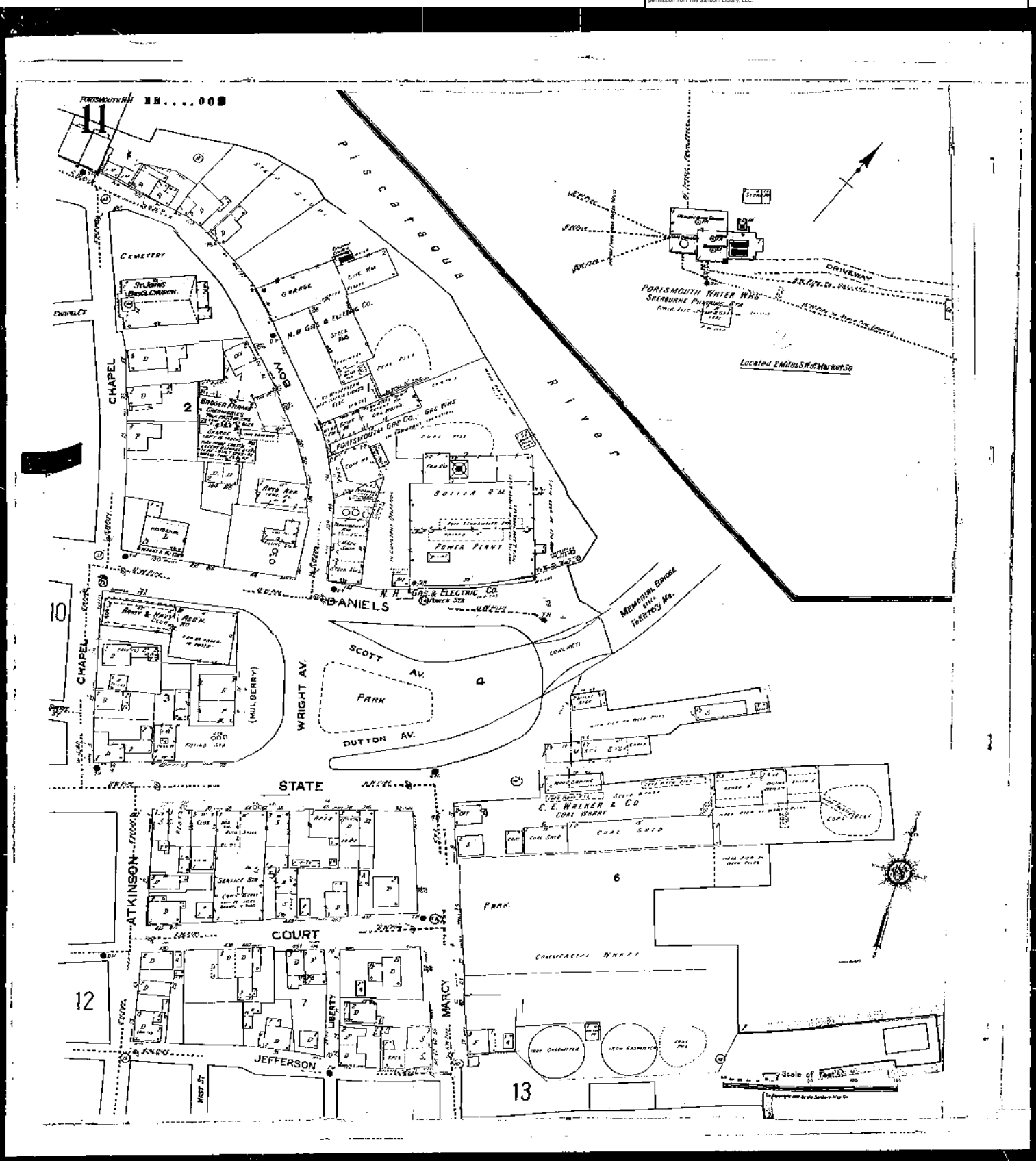

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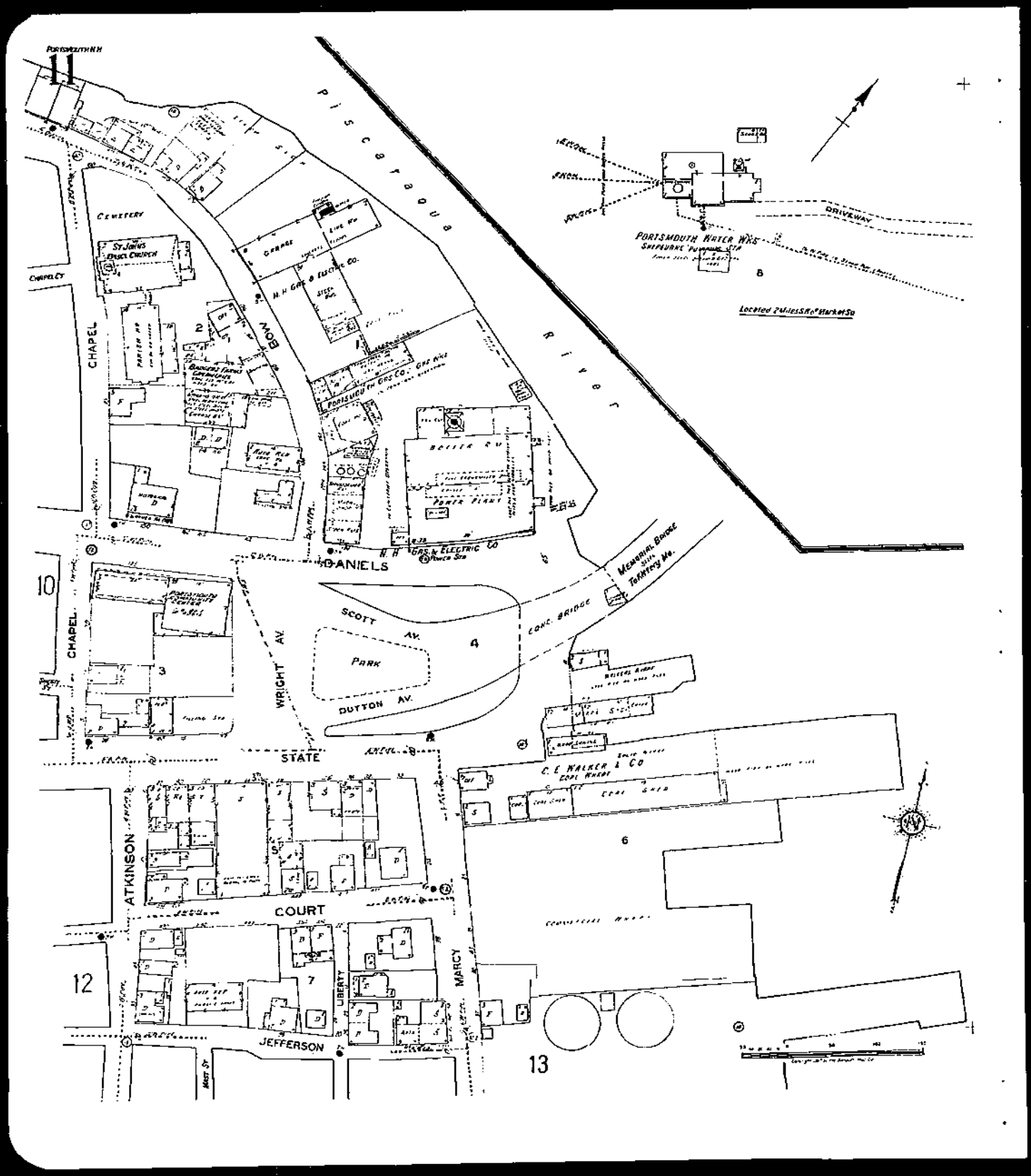

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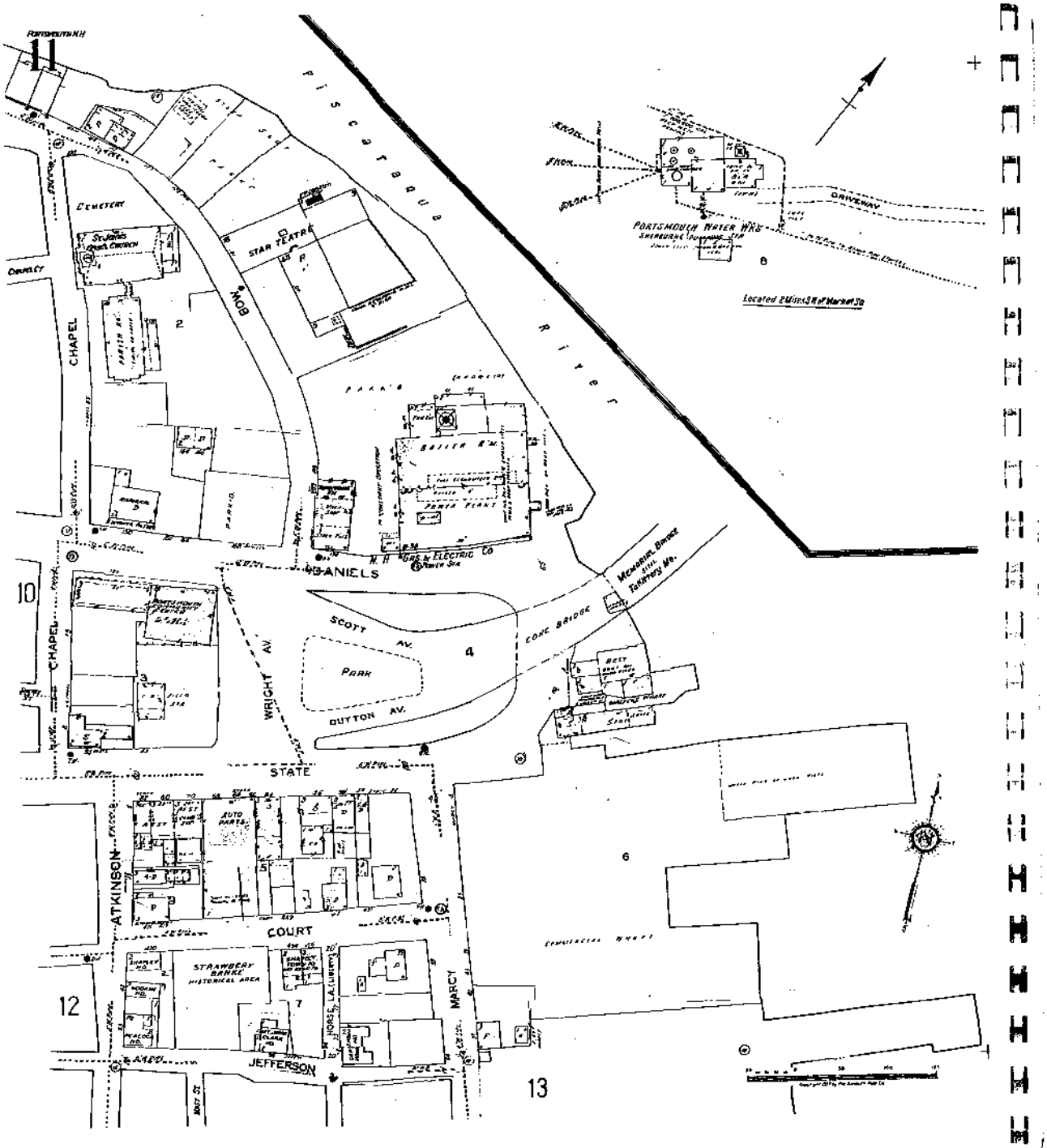

Exhibit D

NHDOT Environmental Justice Memo

CHH CHH
KTA

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION
INTER-OFFICE COMMUNICATION

DATE: July 30, 2007

FROM: David Chandler, Chief of Labor Compliance

TO: Kevin Nyhan, Environmental Manager

RE: Environmental Justice Population Analysis, Project: Portsmouth-Kittery, #13678

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.

If you have questions regarding this analysis, please contact me @ 271-2467.

encls: EJ Population Analysis

cc: Peter Crouch, Bureau of Traffic

EJ Population Analysis for Project Portsmouth-Kittery, #13678:

STUDY AREA	AVG% Elderly Population	AVG % Minority Population	AVG % Low-income Population	AVG% Disabled Population		AVG% LEP**
				Sensory	Mobility	
Impacted Area (US Census Tract # 691, Block Groups 1 and 3)	17%	2.4%	6.7%	3.2%	6%	0%
Surrounding Area	19%	4.2%	11%	7.4%	12.3%	.3%

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 ("not well" or "not at all" as indicated by the U.S. Census data). When a particular LEP language group reaches 5% or 1,000 people within 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 for Project is defined by the population within Census Tract 691, Block Groups 1 and 3.

Surrounding Area: All Block Groups immediately adjacent to the impacted area.

Special Considerations: It is apparent that both the **low income and elderly populations** within the impacted area are relatively significant and above statewide averages. It would be appropriate to consider additional outreach efforts to encourage public comment from these groups. In light of a significant elderly population, special consideration should be given to all features that affect pedestrian accessibility. This project constitutes a structural alteration. In accordance with Title II of the Americans with Disabilities Act and the most recent FHWA guidance, the scope of this project might trigger a requirement for other accessibility improvements. If you require further assistance, please contact the Title VI Coordinator or go to: http://www.access-board.gov/prowac/status.htm

Outreach Recommendations:

Keefe House
20 Islington Street
Portsmouth, NH 03801-4230

Contact: EastPoint Properties, Inc.
Tel: 669-8551

Portsmouth Apartments
263 Rockland Street
Portsmouth, NH 03801-5172

Contact: Portsmouth Housing Authority
Tel: 436-4310

Japan-America Society of NH
82 Court Street
Portsmouth, NH 03801
Tel: 433-1360

Exhibit E

Essential Fish Habitat Assessment

- Essential Fish Habitat Assessment
- Essential Fish Habitat Assessment Worksheet
- National Marine Fisheries Service Determination

NOAA FISHERIES
NORTHEAST REGIONAL OFFICE
EFH ASSESSMENT WORKSHEET FOR
FEDERAL AGENCIES
(modified 08/04)

Introduction:

The Magnuson-Stevens Fishery Conservation and Management Act mandates that federal agencies conduct an EFH consultation with NOAA Fisheries regarding any of their actions authorized, funded, or undertaken that may adversely effect essential fish habitat (EFH). An adverse effect means any impact that reduces the quality and/or quantity of EFH. Adverse effects may include direct or indirect physical, chemical, or biological alterations of the waters or substrate and loss of, or injury to, benthic organisms, prey species and their habitat, and other ecosystem components. Adverse effects to EFH may result from actions occurring within EFH or outside of EFH and may include site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

This worksheet has been designed to assist Federal agencies in determining whether an EFH consultation is necessary, and developing the needed information should a consultation be required. This worksheet will lead you through a series of questions that will provide an initial screening to determine if an EFH consultation is necessary, and help you assemble the needed information for determining the extent of the consultation required. The information provided in this worksheet may also be used to develop the required EFH Assessment.

Consultation through NOAA Fisheries regarding other NOAA-trust resources may also be necessary if a proposed action results in adverse impacts. Part 6 of the worksheet is designed to help assess the effects of the action on other NOAA-trust resources. This helps maintain efficiency in our interagency coordination process. In addition, consultation with NOAA Fisheries may be required if a proposed action impacts marine mammals or threatened and endangered species for which we are responsible. Staff from our Northeast Regional Office, Protected Resources Division should be contacted regarding potential impacts to marine mammals or threatened and endangered species.

Instructions for Use:

An EFH Assessment must be submitted by a Federal agency to NOAA Fisheries as part of the EFH consultation. An EFH Assessment must include the following information:
1) A description of the proposed action.
2) An analysis of the potential adverse effects of the action on EFH, and the managed species.
3) The Federal agency=s conclusions regarding the effects of the action on EFH.
4) Proposed mitigation if applicable.

In some cases, this worksheet can be used as an EFH Assessment. If the Federal agency determines that the action will not cause substantial impacts to EFH, then this worksheet may suffice. If the action may cause substantial adverse effects on EFH, then a more thorough discussion of the action and its

impacts in a separate EFH Assessment will be necessary. The completed worksheet should be forwarded to NOAA Fisheries Northeast Regional Office, Habitat Conservation Division (HCD) for review.

The information contained on the HCD website (http://www.nero.noaa.gov/hcd/) will assist you in completing this worksheet. The HCD web site contains information regarding: the EFH consultation process; Guide to EFH Designations which provides a geographic species list; Guide to EFH Species Descriptions which provides the legal description of EFH as well as important ecological information for each species and life stage; and other EFH reference documents including examples of EFH Assessments and EFH Consultations.

EFH ASSESSMENT WORKSHEET FOR FEDERAL AGENCIES (modified 08/04)

PROJECT NAME: Memorial Bridge Replacement **DATE:** March 17, 2011

PROJECT NO.: Federal No. A000(911), State No. 13678F

LOCATION: Portsmouth NH and Kittery Maine

PREPARER: Vicki Chase/ Kevin Nyhan

Step 1. Use the Habitat Conservation Division EFH webpage, Guide to Essential Fish Habitat Designations in the Northeastern United States to generate the list of designated EFH for federally-managed species for the geographic area of interest (http://www.nero.noaa.gov/hcd/index2a.htm). Use the species list as part of the initial screening process to determine if EFH for those species occurs in the vicinity of the proposed action. Attach that list to the worksheet because it will be used in later steps. Make a preliminary determination on the need to conduct an EFH Consultation.

1. INITIAL CONSIDERATIONS		
EFH Designations	**Yes**	**No**
Is the action located in or adjacent to EFH designated for eggs?	X	
Is the action located in or adjacent to EFH designated for larvae?	X	
Is the action located in or adjacent to EFH designated for juveniles?	X	
Is the action located in or adjacent to EFH designated for adults?	X	
Is the action located in or adjacent to EFH designated for spawning adults?	X	
If you answered no to all questions above, then EFH consultation is not required -go to Section 5. If you answered yes to any of the above questions proceed to Section 2 and complete remainder of the worksheet.		

Step 2. In order to assess impacts, it is critical to know the habitat characteristics of the site before the activity is undertaken. Use existing information, to the extent possible, in answering these questions. Please note that, there may be circumstances in which new information must be collected to appropriately characterize the site and assess impacts.

2. SITE CHARACTERISTICS	
Site Characteristics	**Description**
Is the site intertidal, sub-tidal, or water column?	The project site is a bridge spanning the river and includes areas within the intertidal and subtidal zones. Proposed activities include repair of piers supporting the Memorial Bridge, removal of the piers supporting the Kittery Approach Spans, and construction of new piers to support new Kittery Approach Spans. The Kittery Approach spans are within the intertidal and subtidal zones and will require work in the riverbed.
What are the sediment characteristics?	The Piscataqua River is the third fastest navigable river in the world. The lower estuary of the Piscataqua River is characterized by hard substrate, consisting largely of rock ledge, gravel, and cobble. Little sedimentation occurs due to the high tidal currents in the lower estuary. Because of the fast currents, the river bottom substrate is expected to consist of a hard (rocky, consisting of boulders or gravel) or sandy substrate. The depth to bedrock at the bridge site, based on the 1920 and 1943 bridge plans, ranges from 0 to 20 feet. The Memorial Bridge foundation components (south abutment, south pier, north pier, north abutment) were all constructed on rock ledge. Four of the piers for the Kittery approach spans are founded directly on bedrock. Not much silty or fine-grained sediment is anticipated within the substrate materials. The shorelines are developed (seawall in Portsmouth) or rocky or riprapped (in Maine).
Is Habitat Area of Particular Concern (HAPC) designated at or near the site? If so what type, size, characteristics?	There are no identified Habitat Areas of Particular Concern designated at the project site.
Is there submerged aquatic vegetation (SAV) at or adjacent to project site? If so describe the spatial extent.	As discussed above, the currents in this reach of river are high, and there is little submerged aquatic vegetation at or adjacent to the project site. The swift currents in this section of the Piscataqua River are not conducive to eelgrass/SAV growth. There is an area of eelgrass mapped by the Maine Department of Marine Resources approximately 100 feet downstream of the Kittery Approach Spans. This area measures 2,493 square feet and supports 40-70% cover. Eelgrass has been mapped in calmer waters upstream in Great Bay, and in areas of Portsmouth Harbor downstream of the project site.
What is typical salinity and temperature regime/range?	Salinities can be expected to range from approximately 25 parts per thousand upwards to approximately 30 parts per thousand, which is typical for an estuarine/near coastal environment. Water temperature can be expected to range from 32 degrees to 68 degrees Fahrenheit.

What is the normal frequency of site disturbance, both natural and man-made?	The area is heavily trafficked by recreational boats, fishing vessels, barges, and large commercial freighters and vessels. The Piscataqua River is an important commercial deepwater port for the Seacoast regions of New Hampshire and Maine. The Memorial Bridge is located within Portsmouth Harbor, which is the only harbor for deep draft vessels between Portland, Maine and Gloucester, Massachusetts. The main navigational channel under the bridge can accommodate deep draft vessels up to 34 feet. The combination of greater depths in the river and swift currents keeps the river icefree in the winter, making this the closest icefree port to Europe and the only deep water port in the State of New Hampshire.
What is the area of proposed impact (work footprint & far afield)?	Removal of the nine Kittery Approach span piers will require work below the high tide line and in the riverbed, as would construction of the three replacement piers. Installation of dolphins in front of the Memorial Bridge piers would require drilling of shafts into the riverbed. Repairs of bridge piers and fendering would be performed above the waterline. Replacement of a drainage outfall along the seawall in Portsmouth will not alter the adjoining tidal flats. The project will not result in a measurable increase in impervious surfaces that would affect runoff characteristics. If construction dewatering will require a discharge into the river, existing catch basins will be used and all discharges will comply with applicable NPDES effluent limitations.

Step 3. This section is used to describe the anticipated impacts from the proposed action on the physical/chemical/biological environment at the project site and areas adjacent to the site that may be affected.

3. DESCRIPTION OF IMPACTS			
Impacts	**Y**	**N**	**Description**
Nature and duration of activity(s)			The entire construction duration will extend over approximately 18 months. However, the process for advertising and constructing this project is a design-build process. Design-build (DB) is a method of project delivery in which the design and construction phases of a project are combined into one contract. This can provide substantial time savings compared with the more traditional Design-Bid-Build approach. As such, until the eventual DB contractor is selected the number and location of new piers for the Kittery Approach Spans and dolphin system is not known.
Will benthic community be disturbed?	X		Yes. The work will require disturbance to the benthic community for the drilling of the dolphin shafts for the Memorial Bridge and for the replacement of the Kittery Approach Span piers.
Will SAV be impacted?		X	No alterations to submerged aquatic vegetation will occur as a result of the project.
Will sediments be altered and/or sedimentation rates change?		X	Existing drainage patterns on the Memorial Bridge and Scott Avenue Bridge will largely be maintained. However, until the eventual DB is contractor selected the number and location of new piers for the Kittery Approach Spans and dolphin system is not known. Best management practices will be employed during construction to avoid impacts to the water quality of the Piscataqua River. A professionally prepared Erosion and Sedimentation Control Plan will be prepared by the contractor and will require NHDOT approval prior to commencement of construction, specifying measures designed to protect the water quality of the Piscataqua River during Memorial Bridge, Kittery Approach Span, and Scott Avenue Bridge construction.
Will turbidity increase?		X	All appropriate technologies will be used to minimize turbidity in the Piscataqua River during construction. See also discussion above regarding the proposed water treatment system for the permanent drainage system and Best Management Practices to be in place during construction. Best management practices will be employed during construction to avoid impacts to the water quality of the Piscataqua River. A professionally prepared Erosion and Sedimentation Control Plan will be prepared by the contractor and will require NHDOT approval prior to commencement of construction, specifying measures designed to protect the water quality of the Piscataqua River during Memorial Bridge, Kittery Approach Span, and Scott Avenue Bridge construction.

Will water depth change?		X	It is not expected that alterations to the water depth will occur as a result of the project.
Will contaminants be released into sediments or water column?		X	Containment systems will be used on the Memorial Bridge during demolition and construction to prevent debris from entering the river. A Soils and Materials Management Plan will be in place for handling of materials during on land excavations for the Scott Avenue Bridge and for the Kittery Approach Span replacements.
Will tidal flow, currents or wave patterns be altered?	X		The number and location of piers associated with the Kittery Approach Spans may be changed/ modified. The process for advertising and constructing this project is a design-build process. As such, until the eventual DB contractor is selected the number and location of new piers for the Kittery Approach Spans and dolphin system is not known.
Will ambient salinity or temperature regime change?		X	If there are discharges to the river as a result of the bridge construction, these discharges will comply with applicable NPDES effluent limitations, and would represent a negligible proportion of the total flow in the river. There will be no changes in ambient salinity or temperature as a result of the project.
Will water quality be altered?		X	If dewatering is required during construction, provisions will be made for either discharge to the sanitary system or discharge to surface waters, provided that the water quality of the discharge complies with applicable provisions under the National Pollutant Discharge Elimination System (NPDES) permit program. If applicable water quality standards for the discharge to comply with either the NPDES General Permit for Construction Dewatering Activity Discharges *or* the NPDES Remediation General Permit cannot be met through treatment, then the contractor will be required to direct discharges to holding tanks and transport them off-site.

Step 4. This section is used to evaluate the consequences of the proposed action on the functions and values of EFH as well as the vulnerability of the EFH species and their life stages. Identify which species from the EFH species list (generated in Step 1) will be adversely impacted from the action. Assessment of EFH impacts should be based upon the site characteristics identified in Step 2 and the nature of the impacts described within Step 3. The Guide to EFH Descriptions webpage (http://www.nero.noaa.gov/hcd/list.htm) should be used during this assessment to determine the ecological parameters/preferences associated with each species listed and the potential impact to those parameters.

4. EFH ASSESSMENT			
Functions and Values	**Y**	**N**	**Describe habitat type, species and life stages to be adversely impacted**
Will functions and values of EFH be impacted for:			
Spawning	X		Habitat type: rock ledge, gravel and cobbles Species: Atlantic cod, Winter flounder, Atlantic halibut, Atlantic sea scallop, Atlantic salmon, Whiting, Atlantic herring, and Pollock Life cycle stages: Spawning adults Impacts: Impacts are associated with bridge pier work and installation of dolphins and fenders.
Nursery	X		Habitat type: rock ledge, gravel and cobbles Species (life cycle stage(s)): Atlantic cod (eggs), Red hake (eggs, larvae, juveniles), White hake (eggs), Winter flounder (eggs), Windowpane flounder (eggs), Atlantic halibut (juveniles), Atlantic sea scallop (eggs, juveniles), Whiting (eggs, larvae, juveniles), Haddock (juveniles), Atlantic herring (eggs), and Pollock (juveniles) Impacts: Impacts are associated with bridge pier work and installation of dolphins and fenders.
Forage	X		Habitat type: rock ledge, gravel and cobbles Species: Atlantic cod, Winter flounder, Atlantic halibut, Atlantic sea scallop, Atlantic salmon, Whiting, Atlantic herring, Pollock, and Haddock Life cycle stages: Adults, and juveniles Impacts: Impacts are associated with bridge pier work and installation of dolphins and fenders.
Shelter	X		Habitat type: rock ledge, gravel and cobbles Species (life cycle stages): Atlantic cod (adults, eggs), Winter flounder (adults, eggs), Atlantic halibut (adults, juveniles), Atlantic sea scallop (adults, eggs, juveniles), Atlantic salmon (adults), Whiting (adults, eggs, larvae, juveniles), Atlantic herring (adults, eggs), Pollock (adults, juveniles), Red hake (larvae, juveniles), and Haddock (juveniles) Impacts: Impacts are associated with bridge pier work and installation of dolphins and fenders.

Will impacts be temporary or permanent?			There will be temporary impact and permanent impact to the riverbed of the Piscataqua River for the construction of the Kittery Approach Span piers and installation of dolphins and fenders.
Will compensatory mitigation be used?		X	In river work will completed between November 15th and March 15th. Any in-water, silt producing work conducted between March 16 and November 14 should occur within cofferdams or similar silt-containment structures, provided these structures are installed during the recommended work window.

Step 5. This section provides the Federal agency=s determination on the degree of impact to EFH from the proposed action. The EFH determination also dictates the type of EFH consultation that will be required with NOAA Fisheries.

5. DETERMINATION OF IMPACT		
	/	**Federal Agency=s EFH Determination**
Overall degree of adverse effects on EFH (not including compensatory mitigation) will be: **(check the appropriate statement)**		**There is no adverse effect on EFH** **EFH Consultation is not required**
	X	**The adverse effect on EFH is not substantial.** **This is a request for an abbreviated EFH consultation. This worksheet is being submitted to NMFS to satisfy the EFH Assessment requirement.**
		The adverse effect on EFH is substantial. **This is a request for an expanded EFH consultation. A detailed written EFH assessment will be submitted to NMFS expanding upon the impacts revealed in this worksheet.**

Step 6. Consultation with NOAA Fisheries may also be required if the proposed action results in adverse impacts to other NOAA-trust resources, such as anadromous fish, shellfish, crustaceans, or their habitats. Some examples of other NOAA-trust resources are listed below. Inquiries regarding potential impacts to marine mammals or threatened/endangered species should be directed to NOAA Fisheries' Protected Resources Division.

6. OTHER NOAA-TRUST RESOURCES IMPACT ASSESSMENT	
Species known to occur at site (list others that may apply)	**Describe habitat impact type (i.e., physical, chemical, or biological disruption of spawning and/or egg development habitat, juvenile nursery and/or adult feeding or migration habitat).**
alewife	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
blueback herring	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
rainbow smelt	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
Atlantic sturgeon	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
Atlantic menhaden	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
American shad	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
American eel	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
American lobster	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
blue mussels	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.

soft-shell clams	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
quahog	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.
Other species:	The project will have no impact on spawning, egg development, juvenile nursery, and/or adult feeding or migration habitat.

Exhibit F

Section 106 Documentation

- Memorandum of Agreement Submitted to the Advisory Council on Historic Preservation Pursuant to 36 CFR Part 800.6
- Adverse Effect Memo
- Letter from Advisory Council on Historic Preservation

Memorandum of Agreement
SUBMITTED TO THE ADVISORY COUNCIL ON HISTORIC PRESERVATION PURSUANT TO 36 CFR PART 800.6(a)

WHEREAS, the NH Division of the Federal Highway Administration (NHFHWA) and the Maine Division of the Federal Highway Administration (MEFHWA) propose the replacement of all spans of the Memorial Bridge that carries US Route 1 over the Piscataqua River between Portsmouth, NH and Kittery, Maine; and

WHEREAS, the NHFHWA and MEFHWA in consultation with the NH State Historic Preservation Officer (NHSHPO) and the Maine State Historic Preservation Officer (MESHPO) and pursuant to regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f) have determined that the proposed undertaking will have an adverse effect on the following properties that are eligible for listing in the National Register of Historic Places:

Memorial Bridge Historic District, Portsmouth, NH and Kittery, Maine
Scott Avenue Bridge, Portsmouth, NH
Memorial Bridge (lift span and two flanking spans), Portsmouth, NH and Kittery, Maine
Memorial Park, Portsmouth, NH
Portsmouth Historic District, Portsmouth, NH
John Paul Jones Memorial Park, Kittery, Maine

and;

WHEREAS, the NHFHWA and the MEFHWA have agreed that the New Hampshire Department of Transportation (NHDOT) and the Maine Department of Transportation (Maine DOT) shall participate in the consultation with the NHSHPO and MESHPO respectively to find ways to mitigate the effects to the above six properties through their respective standard consultation processes; and

WHEREAS, the NHDOT and Maine DOT on behalf of the NHFHWA and MEFHWA respectively will execute these efforts to mitigate the adverse effects of the project; and

WHEREAS, the NHDOT and Maine DOT have solicited public comment through the public involvement process and the consulting party procedures with NHFHWA and MEFHWA as stated in 36 CFR 800 (2); and

WHEREAS, the FHWA has consulted with the Aroostook Band of MicMacs, the Houlton Band of Maliseet Indians, the Passamaquoddy Tribe, and the Penobscot Nation and will apprise them of any findings; and

WHEREAS, the NHDOT and Maine DOT have consulted with the following Consulting Parties to the Section 106 Process: the National Trust for Historic Preservation, Port of Portsmouth Maritime Museum and Albacore Park, Historic Bridge Foundation, and the Portsmouth Historical Society in the development of this agreement; and

WHEREAS, the NHFHWA and MEFHWA have agreed that the NHDOT and Maine DOT shall participate in consultation with the NHSHPO and the MESHPO to find ways to mitigate its effects on impacted archaeological sites found eligible for the National Register of Historic Places under its standard phased investigations; and

WHEREAS, to the best of our knowledge and belief, no human remains and/or associated or unassociated funerary objects or sacred objects of cultural patrimony as defined in the Native American Graves Protection Act (25 U.S.C. 3001), are expected to be encountered in the archaeological work; and

WHEREAS, in accordance with 36 CFR 800.6(a)(1), NHFHWA has notified the Advisory Council on Historic Preservation (Council) of its adverse effect determination with specified documentation and the Council has chosen not to participate in the consultation pursuant to 36 CFR 800.6(a)(1)(iii).

NOW, THEREFORE, NHFHWA with the assistance of MEFHWA, NHDOT, and Maine DOT shall ensure that the following terms and conditions will be implemented by the NHDOT and Maine DOT under this MOA in a timely manner and with adequate resources in compliance with the National Historic Preservation Act of 1966 16 U.S.C. 470.

Stipulations

NHFHWA, with the assistance of MEFHWA, NHDOT, and Maine DOT will ensure that the following stipulations are carried out:

Project Development

1. The NHSHPO, the MESHPO, FHWA and the Parties consulted during the Section 106 and National Environmental Policy Act (NEPA) processes as listed above will be provided the opportunity to review and comment on the bridge design during the design-build process *at the following milestones: 25-30% (30 day review), 60% (10 day review), and 90% design (10 day review).* The bridge design for the replacement of the bridge will follow *the Secretary of the Interior's Standards for Rehabilitation and Guidelines for the Rehabilitation of Historic Buildings*, Standards 9 and 10, as determined by FHWA in consultation with NHSHPO and MESHPO. This continued consultation will focus on the design's conformance with Standards 9 and 10.

2. NHDOT will ensure that the Memorial Bridge, including the three-span Memorial Bridge, the Scott Avenue Bridge (Portsmouth Approach Span), and the Kittery Approach Spans are marketed together for reuse in compliance with 23 USC Sec. 144 for relocation. Marketing will occur once within a New Hampshire and Maine state and local newspaper by June 1, 2011. Additionally, the NHDOT and Maine DOT will market the bridge on their websites between April 1 and June 1, 2011. Ownership transfer will require the use of preservation covenants or other instruments to ensure the long-term protection of the qualifying characteristics of the Memorial Bridge.

3. FHWA shall ensure that NHDOT provides a letter report on all activities carried out under this agreement to the MESHPO, NHSHPO, and the consulting parties to the Section 106 process. Each party who contributes to the mitigation of the Memorial Bridge Replacement Project will prepare a section of this letter report relative to such involvement annually due one month prior to the due date of the letter report on April 1 of each year beginning in 2012 and terminating at the termination of this MOA.

Historical Resources

4. NHDOT will provide NHSHPO with funding in an amount not to exceed $175,000 to prepare a National Register Historic District Nomination for the Portsmouth Downtown District.

5. The Maine DOT, in coordination with the MESHPO will develop a phased plan to identify National Register Eligible properties in the Town of Kittery. The survey plan will include geographically relevant areas of the town and a priority order to survey the areas. The Maine DOT will provide $50,000 from the project for the completion of the survey that will be completed in accordance with the phased plan.

6. The NHDOT will fund and oversee the development of an interpretive panel as follows. A 36 CFR 61(Appendix A)-qualified architectural historian will prepare an interpretive panel explaining the history of the Memorial Bridge crossing, the Engineering significance of the bridge, and background of its design engineer, J.A.L. Waddell, the preeminent designer of lift bridges. The panel will be placed in Prescott Park or a location near the bridge identified by the Public Outreach Committee (see stipulation 10 below). The first location is contingent upon continuing consultation with and agreement by the Prescott Park Trustees, Trustees of Trust Funds. Any other location will be coordinated with the landowner. NHDOT will ensure that the interpretive panel is manufactured and erected with appropriate American with Disabilities Act access as part of this design-build project. The design and content of the panel will be subject to the

approval of the NHSHPO and MESHPO, who will be provided 45 calendar days for review; and will be subject to approval by the property owner on which the panel is placed. The panel will be erected as part of the design-build contract.

7. The preparation of the Historic Structures Report (HSR) for the Memorial Bridge, which included the distribution of thirty copies to state and local repositories and its placement on the NHDOT website, has been completed. The Historic American Engineering Record for the bridge is within this document and includes the detailed description, narrative history, discussion of engineering significance, archivally stable large format photographs, and archivally stable copies of the original design plans. NHDOT will also ensure that an annotation of the bibliography of the HSR is completed to provide the location and a brief description of the contents of primary sources. The bibliography will be placed on the NHDOT and NHSHPO websites. The bibliographic annotation will be prepared by an architectural historian qualified under 36 CFR 61 (Appendix A) under the direction of the NHDOT and reviewed by NHSHPO and MESHPO within 45 calendar days of submission. It will be completed by December 1, 2014.

8. For the 2012 meeting schedules, the NHDOT will work towards setting up pre-defined educational forums for the maintenance and rehabilitation of historic bridges by the NHDOT at an appropriate venue, such as: Technology Transfer Center at UNH (Local Government Center), the American Council of Engineering Companies, Structural Engineers of New Hampshire, and the NHDOT Training. The NHDOT will ensure that this training is offered by qualified persons with demonstrated expertise in historic bridge maintenance and rehabilitation.

Archaeologically-Based Impacts

9. All necessary archaeological investigations will be completed before or during construction as specified in the stipulations below. If preservation in place is found necessary, then NHFHWA and MEFHWA will consult with their respective SHPOs and identified Native American groups that may attach religious or cultural importance to the affected property to resolve the treatment of such archaeological deposits. Such Native American groups will be identified prior to the commencement of construction under the design-build contract. NHDOT will oversee the following efforts.

   a. Portsmouth Approach Span (Scott Avenue and Memorial Park)

   NHFHWA will ensure that NHDOT conducts all necessary phases of archaeological investigation based on archaeological protocols and research designs incorporated into the design-build contract. Although the replacement

of the Portsmouth abutment may broaden the scope of work, the protocols and scope of work for the Rehabilitation of the Memorial Bridge were adequately defined in the following documents: *Memorial Bridge Rehabilitation: Scope of work for Archaeological Monitoring During Construction (October 23, 2007)* and *Memorial Bridge Rehabilitation: Archaeological Monitoring Protocol (April 2006)* by Independent Archaeological Consulting. The archaeological monitoring and investigations will be conducted by a historical archaeologist qualified under 36 CFR 61 (Appendix A) with the ability to consult with an archaeologist qualified in Native American archaeological studies. The historical archaeologist will have five years' experience in historical archaeology in the New England region. The final report will be reviewed and finalized by December 1, 2016.

b. Maine Approach Span

Independent Archaeological Consulting assessed the archaeological sensitivity of the Kittery Approach for the ME-NH Connections Study in the *ME-NH Connections Study Summary Report on Phase 0 (ME) / Phase IA (NH) Archaeological Sensitivity Assessment* (Rev. August 27, 2009). This portion of the project area was assessed at moderate archaeological sensitivity. If accessible prior to construction, all necessary phases of archaeological investigation will be completed prior to construction. If portions of the sensitive area are not accessible prior to construction, then a monitoring protocol and research goals will be developed for this portion of the construction monitoring. An archaeologist qualified under 36 CFR 61 (Appendix A) will conduct the archaeological investigations with the ability to consult with an archaeologist qualified in historical archaeological studies. The archaeologist will have five years' experience in the archaeology of Native American cultures in the New England region. The final report will be reviewed and finalized by December 1, 2016.

c. Data Recovery Process

The NHDOT and NHSHPO agree that recovery of significant information from affected significant archaeological sites will be done in accordance with published guidance. In accordance with 36 CFR 800, the NHFHWA and MEFHWA acknowledge and accept the advice and conditions outlined in the Advisory Council on Historic Preservation's "Recommended Approach for Consultation on the Recovery of Significant Information from Archaeological Sites," and other mitigation procedures published in the Federal Register on May 18, 1999. Additionally, all consulting parties agree that Native American tribes that may attach religious or cultural importance to the affected property

will be consulted in the development of a mitigation approach to each significant Native American site as noted above in this stipulation.

d. Discovery of Burials

If human remains and/or grave-associated artifacts are discovered while carrying out the activities pursuant to this MOA, the NHFHWA, MEFHWA, NHDOT, and Maine DOT will immediately notify the appropriate authorities, as prescribed by New Hampshire and Maine statutes to determine an appropriate course of action in accordance with the Advisory Council on Historic Preservation's (Council's) Revised "Policy Statement Regarding Treatment of Burial Sites, Human Remains, and Funerary Objects," adopted by the Council on February 23, 2007 at its quarterly business meeting in Washington, D.C.

Economic-Based Impacts

10. NHDOT/Maine DOT and FHWA will provide funding through the project to hire and supervise a Public Outreach Coordinator, that is 36 CFR 61 (Appendix A) qualified, for two years or for the duration of construction whichever is greater. This individual will, in part, act as the project's conduit for communication and interface with the public. To this end, NHDOT/ Maine DOT and FHWA will seek first to augment an existing part-time position at an existing entity, such as the Portsmouth or Kittery city/town offices and attempt to use existing office facilities. If no appropriate position(s) exist, NHDOT/ Maine DOT, and FHWA will create a new fulltime, temporary position for this purpose. This individual will be qualified under 36 CFR 61 (Appendix A) as a historian or architectural historian or closely related field with demonstrated five years' experience in conducting public programming, public coordination, and promotion of businesses and organizations within a historical setting. This position will have the following functions:
    a. Coordinate with an advisory committee, known as the Public Outreach Committee, established for this purpose. The Public Outreach Coordinator will invite the business community in Portsmouth and Kittery (i.e., Seacoast Chamber of Commerce); city and town representatives; historical societies and historic district commissions; museums; historic house museums; the arts community; and trustees of public parks and lands within the two communities to participate in the Public Outreach Committee.
    b. Market and promote the business districts in Portsmouth and Kittery during construction.
    c. Monitor visitorship at local museums / National Historic Landmarks (for example Strawbery Banke and the MacPhaedris-Warner House respectively).

d. Assist the Design-Build Contractor and other city and state entities involved in access issues with continued vehicle access to the downtowns by designation of the placement and wording of directional signs; mapping; internet communication; coordination with the design/build contractor to establish sufficient parking; and any other transportation issues.
e. Assist in access to planned events in the City of Portsmouth and the Town of Kittery.
f. Coordinate planned cultural events within the two communities to promote the downtowns.
g. Arrange public educational outreach programs concerning the history of the two communities, the significance of the Memorial Bridge, and other effective types of outreach education determined through the Public Outreach Committee. The program(s) identified by the committee will generate a lasting physical product, such as a book or film, which would be available to the communities and be within the budget established for this effort.

One suggested approach to fulfilling the above objectives would be to use the National Trust for Historic Preservation's Main Street Program model. The Trust provides guidance for this type of position. Guidance for this will be sought through Kathy LaPlante of the National Trust's Washington Office or her designated representative

Construction-Based Impacts

11. The existing plaques on the Memorial Bridge and in Memorial Park will be conserved and re-installed on the proposed replacement bridge and in an appropriate area adjacent to the bridge entrance. This installation will be completed by the Design-Build Contractor under the direction of NHDOT in close consultation with the conservator described below. The conservation of the plaques will follow the original proposal completed for the former Rehabilitation of the Memorial Bridge Project, but there would need to be some design modifications of the plaques to fit them onto the replacement bridge. The scope of this work will be incorporated in the Design-Build contract. The Design-Build Contractor will contract with an established and qualified metal conservator. The conservator will hold a Masters of Arts Degree in Art History or related field with a certificate or similar designation in Conservation and at least ten years of experience in the field of conservation that includes at least three major successful projects involving metal conservation. The NH Division of Historical Resources will approve a list of at least three metal conservators. The conservator will be hired within a timeframe sufficient to re-examine the plaques, verify the method of safe removal, and conserve the plaques for their installation on the replacement bridge during the design-build contract.

12. Modern dedication signs will be prepared and installed at each portal of the proposed bridge. They will place the bridge and other plaques into their historical contexts. The wording of the signs will be prepared by a 36 CFR 61 (Appendix A) architectural historian and reviewed by the NHSHPO and MESHPO within 45 days of submission. The signs will be fabricated within sufficient time for their placement by the Design-Build contactor under the direction of NHDOT.

13. Vibration levels will be monitored during construction. The Design-Build Contractor will hire a qualified individual whose qualifications are specified below to conduct a preconstruction survey. This survey will establish the area of vibration impact, provide details about the fragility of building materials, and specify the environmental conditions in the area of impact that would affect transmission of vibrations. This preconstruction survey will establish the baseline conditions for monitoring during construction, the construction activities that require monitoring, the general timeframes for monitoring, and the thresholds of vibration levels that will be maintained during construction. These elements will be placed in a Vibration Monitoring Plan. The NHSHPO and MESHPO will be provided fourteen days in which to comment on the Vibration Monitoring Plan prior to its finalization prior to the beginning of construction. The NHSHPO and MESHPO will also be afforded five days to review any modifications to the Vibration Monitoring Plan made during construction. While it is noted that the national standard for vibration threshold is established at 0.2 inches per second, the vibration limit for this project will be based on the findings of the preconstruction survey. Vibration will remain within safe levels for the historic buildings and structures within the Portsmouth Historic District that lie adjacent to the project area, including the National Historic Landmarks such as the MacPhaedris-Warner House, and Kittery properties in the vicinity of the construction. If vibrations are found to exceed the thresholds established for this project, the work causing that vibration will cease and corrective action will be taken to return the vibration level to acceptable thresholds. The vibration monitoring for these particular structures will be incorporated into the design-build "Request for Proposals" for the requirements of the contract. If damage should occur to buildings within the area of vibration impact, then the contractor will be responsible for repairing the damage in accordance with *the Secretary of the Interior's Standards for Rehabilitation and Guidelines for the Rehabilitation of Historic Buildings*.

    When developing the vibration thresholds and preparing the Vibration Monitoring Plan, the Design-Build Contractor will contract with an individual trained in Historic Architecture or closely related field. The individual will have five years of professional experience as a Building Conservation Specialist and will have successfully completed three building conservation projects where he/she has taken into account the effects of different levels of vibration on historic masonry

and frame buildings. The standards cited herein are the *Secretary of the Interior's Historic Preservation Professional Qualification Standards 62, Fed. Reg. 33, 707 (June 20, 1997/Historic Architecture [http://www.cr.nps.gov/local-law/gis/html/quals.html]).* The NHSHPO will provide the names and contact information of at least three individuals who would be qualified to perform such services.

Discovery of Unidentified Properties

14. The NHDOT and Maine DOT will ensure that if additional previously unidentified architectural and / or archaeological properties are discovered, which may be affected by the undertaking or known properties are affected in an unanticipated manner, it will notify FHWA and the NHSHPO and MESHPO. FHWA and the NHSHPO and MESHPO will apply the criteria of eligibility and consult pursuant to 36 CFR 800.13.

NHFHWA and MEFHWA shall also ensure that the following terms and conditions are implemented:

1. Dispute Resolution

Should the any party to this agreement or a consulting party to the Section 106 process for this project object within 30 days to any actions proposed or findings submitted for review, NHFHWA and MEFHWA shall consult with the objecting party(ies) to resolve the objection. If NHFHWA and MEFHWA determine that any objection(s) remains unresolved, NHFHWA and MEFHWA shall:

a. Forward all documentation relevant to the dispute to the ACHP in accordance with 36 CFR 800.2(b)(2). On receipt of adequate documentation, the ACHP shall review and advise NHFHWA and MEFHWA on the resolution of the objection within 30 days. Any comment provided by the ACHP, and all comments from the parties to the agreement will be taken into account by FHWA in reaching a final decision regarding the dispute.
b. If the ACHP does not provide comments regarding the dispute within 30 days after receipt of adequate documentation, NHFHWA and MEFHWA may render a decision regarding the dispute. In reaching its decision, NHFHWA and MEFHWA will take into account all comments regarding the dispute from the parties to this agreement.
c. NHFHWA's and MEFHWA's responsibility to carry out all other actions subject to the terms of this agreement that are not subject of the dispute remain unchanged. NHFHWA and MEFHWA will notify all parties of its decision in writing before implementing that portion of the undertaking subject to the dispute under this stipulation. NHFHWA's and MEFHWA's decision will be final.

2. Termination of Agreement

   If any signatory determines that the terms of the MOA cannot be executed, the signatories shall consult to seek amendment of the agreement. If the agreement is not amended, any signatory may terminate the agreement. If the terms of this agreement have not been implemented by December 1, 2016, this agreement shall be considered null and void. In such event, the agency shall notify the parties to this agreement, and if it chooses to continue with the undertaking, shall reinitiate review of the undertaking in accordance with 36 CFR 800.

3. Amendment

   Any party to this agreement may propose to other parties that the agreement be amended, whereupon the agency will consult with the other parties to this agreement to consider the amendment. An amendment shall be executed when it has been signed by all of the signatories to this MOA.

Execution of this MOA by NHFHWA, NHSHPO, NHDOT, MEFHWA, MESHPO, and the Maine DOT and its subsequent filing with the Council, and implementation of its terms are evidence that FHWA has afforded the Council an opportunity to comment on this project, and that FHWA has taken into account the effects of the undertaking on historic properties.

New Hampshire Officials:

3-15-11 3/15

Patrick Bauer — Date
Acting Administrator
Federal Highway Administration
NH Division

George N. Campbell, Jr. — Date
Commissioner
NH Department of Transportation

3/15/2011
Linda Ray Wilson, DSHPO, for

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

Maine Officials:

3/15/11

Jonathan McDade
Administrator
Federal Highway Administration
ME Division

Date

3/15/11

David Bernhardt
Commissioner
ME Department of Transportation

Date

3/15/11

Earle G. Shettleworth, Jr.
State Historic Preservation Officer
ME Historic Preservation Commission

Date

New Hampshire DOT
Department of Transportation

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

GEORGE N. CAMPBELL, JR.
COMMISSIONER

JEFF BRILLHART, P.E.
ASSISTANT COMMISSIONER

Memorial Bridge Replacement Project
Portsmouth, NH-Kittery, ME
A000(911)
13678F
Page 1

Adverse Effect Memo

Pursuant to meetings and discussions on June 3 and 24, 2010 for the initial effects meeting under the Maine - New Hampshire Connections Study and on October 14, November 18, and December 17, 2010, January 20, and February 17, 2011, for the currently defined Memorial Bridge project (replacement of Memorial Bridge/ Scott Avenue Bridge/ Kittery Approach Spans), and for the purpose of compliance with regulations of the National Historic Preservation Act, as amended, the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), and the State of Maine's Programmatic Agreement signed November 4, 2004, the NH State Historic Preservation Officer (NHSHPO), the Maine Historic Preservation Officer (MESHPO), the NH Division of the Federal Highway Administration (NHFHWA), the Maine Division of the Federal Highway Administration (MEFHWA), the Maine Department of Transportation (MEDOT), and the NH Department of Transportation (NHDOT) have coordinated the identification and evaluation of historic and archaeological properties with plans to replace the Memorial Bridge connecting the Town of Kittery, Maine, and the City of Portsmouth, New Hampshire. The preferred alternative, the Replacement Alternative, will provide a replacement structure compatible with the adjacent National Register listed or eligible properties and districts listed below. Compatibility will be determined through *the Secretary of the Interior's Standards and Guidelines for Rehabilitation*, Standards 9 and 10.

Based on reviews pursuant to 36 CFR 800.4 of the historical and architectural significance of identified resources and the potential presence of significant archaeological remains in the project area, we agree that the following properties are eligible for or listed in the National Register of Historical Places. Some are additionally National Historic Landmarks (NHL).

Memorial Bridge (Three Spans), Portsmouth and Kittery
Memorial Bridge Historic District, Portsmouth and Kittery
Memorial Park, Portsmouth
Scott Avenue Bridge, Portsmouth
Portsmouth Historic District (Local), Portsmouth
Richard Jackson House, Portsmouth (NHL)
MacPhaedris-Warner House, Portsmouth (NHL)
Moffatt-Ladd House, Portsmouth (NHL)
Wentworth-Gardner House, Portsmouth (NHL)
Governor John Langdon Mansion, Portsmouth (NHL)
Albacore Submarine, Portsmouth (NHL)
Sarah Mildred Long Bridge, Portsmouth and Kittery
US Route 1 Bypass, Portsmouth and Kittery

Christian Shore District, Portsmouth
Eastern Railroad, Portsmouth and Kittery
Lobster Sign, Kittery
John Paul Jones Memorial Park, Kittery
Badger Island Bridge, Kittery
14 Stimson Road (survey map #61), Kittery

Applying the criteria of effect at 36 CFR 800.5, we have determined that the preferred alternative will have an adverse effect on the following properties through direct and visual impacts.

Memorial Bridge (Three Spans), Portsmouth and Kittery
Memorial Bridge Historic District, Portsmouth and Kittery
Memorial Park, Portsmouth
Scott Avenue Bridge, Portsmouth
Portsmouth Historic District (Local), Portsmouth
John Paul Jones Memorial Park, Kittery

Mitigation for the loss of this bridge will be determined and documented in a memorandum of agreement prior to the removal of the bridge.

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

New Hampshire Officials:

3/3/11
Date

for Patrick Bauer
Acting Administrator
Federal Highway Administration
NH Division

3/4/11
Date

George N. Campbell, Jr.
Commissioner
NH Department of Transportation

Concurred with by the New Hampshire State Historic Preservation Officer:

Elizabeth H Muzzey 3/3/11
Date

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

Preserving America's Heritage

March 14, 2011

Mr. Patrick A. Bauer
Acting Division Administrator
FHWA – New Hampshire Division
19 Chenell Drive, Suite One
Concord, NH 03301

Ref: *Proposed Replacement of the Memorial Bridge (247/084) carrying US Route 1 over the Piscataqua River between Portsmouth, New Hampshire & Kittery, Maine*

Dear Mr. Bauer:

The Advisory Council on Historic Preservation (ACHP) has received your notification and supporting documentation regarding the adverse effects of the referenced undertaking on a property or properties listed or eligible for listing in the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from a State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer, affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and you determine that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the New Hampshire and Maine State Historic Preservation Office's (SHPO's), and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA, and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with your notification of adverse effect. If you have any questions or require further assistance, please contact Ms. Carol Legard at 202-606-8522 or via email at clegard@achp.gov.

Sincerely,

LaShavio Johnson

LaShavio Johnson
Historic Preservation Technician
Office of Federal Agency Programs

ADVISORY COUNCIL ON HISTORIC PRESERVATION

1100 Pennsylvania Avenue NW, Suite 803 • Washington, DC 20004
Phone:202-606-8503 • Fax: 202-606-8647 • achp@achp.gov • www.achp.gov

Maine Officials:

for Cheryl B. Martin 3/4/11

Jonathan McDade
Administrator
Federal Highway Administration
ME Division

Date

David Bernhardt
Commissioner
ME Department of Transportation

Date 3/4/11

Concurred with by the Maine State Historic Preservation Officer:

3/4/11

Earle G. Shettleworth, Jr.
State Historic Preservation Officer
ME Historic Preservation Commission

Date

c.c. Jamie Sikora Keith Cota Bob Landry Chris St. Louis Kevin Nyhan

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