	Tidal	Crossing	Summ	arv Sheet			
	Nov Hampsh	viro's Tidal C	roccing Acc	ary Direct	ocol		
	Crossing ID:	lires ridui C	10551119 ASS		0001	Ţ	
Observer(s) &			-	Date:		8/13/20)18
Organization:	TS, JB (NHDE	S Coastal)		Start Time:		7:45:00	AM
Municipality:	SEABROOK			End Time:		12:00:00	AM
Stream Name:	Blackwater River			Tide Prediction		High	Low
Road Name:	Route 286				Time:	1:34 PM	7:37 AM
				Eleva	tion:	9.7	-1.5
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Locat	ion:	Hampto	n Harbor
Crossing Conditio	n	1					
Tidal Restriction Ev	aluation		DS viev	v toward structu	ıre	US view	above structure
Tidal Range Ratio		1					
Crossing Ratio		5					
Erosion Classificat	tion	3		Entranne -	100000		
Tidal Restriction C	Overall Score	3	A STATE				
Tidal Aquatic Orga	nism Passage				-		
Tidal Range Ratio	Ū	1					
Salt Marsh Migratio	on Evaluation			2	1000	-	
Salt Marsh Migrat	ion Potential (Eval. Unit)	3					
Salt Marsh Migrat	ion Potential (Wshed.)	5	US viev	v toward structu	ıre	DS view	above structure
Vegetation Evaluat	ion						
Vegetation Comp	arison Matrix	1	A				
Infrastructure Risk	Evaluation	_		All and an and the			Distant Accession
Inundation Risk to	the Roadway (US, DS)	2,4		- alesin		and the second s	

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

2,3

2

4

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3

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Combined



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-8.6323	CB	S
360	-5.5323	СВ	S
640	-5.3323	HC	S
900	-26.832	Ρ	S
960	-8.8423	I	В
1002	-9.1923	I	В
1077	-26.202	Ρ	G
1302	-4.8023	HC	С
1602	-9.7023	Ρ	G
1902	-9.8023	СВ	C/S



Stru	Structure Characteristics:					
00.0	Structure Type:	Bridge with Side Slopes and Abutments	Date of Last			
	Structure Material:	Concrete	Known	N/A		
	Tide Gate Present:	No	Replacement:			

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	9	0	90	
Dimension B ^{CB} (height):	15	.16	15.45	
Crossing Length (Invert to Invert):		42		

Crossing Condition:		Headwall Material	Headwall Condition	ll Wingwall Material Wing n Condi		Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Good	Armoring	Medium
	Downstream	None	N/A	Rip Rap	Good	Armoring	Medium

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing		Structure Condition Overall		
	None	None	Good	Gas pipeline, overhead electric, tel poles in marsh		Good		
	Structure Condition Comments: N/A							
Ecol	ogical Assessmen	it:	<u>Upstream</u>	<u>Upstream</u>		<u>ownstream</u>		
	Natural Communi	ty Classification:	High Salt Mar	High Salt Marsh		Salt Marsh		
	Upstream Salt Ma	rsh Migration Potent	ial (acres): 79.35					
			ľ					
Floo	d Hazard & Emer	gency Access						
	Site Identified in H	lazard Mitigation Pla	n: Yes	Yes				
	Emergency Access	or Evacuation Route	:: Yes	Yes				
	History of Floodin	g:	1.4.2018 Road 0	1.4.2018 Road Closed due to flooding				

New Hampshire's Tidal Crossing Assessment Protocol

Crossing ID:		3
	JB (NHDES Coastal)	
EABROOK		
/A		
oute 286		
	Crossing ID: ABROOK /A pute 286	Crossing ID: JB (NHDES Coastal) GABROOK /A Dute 286

Date:			8/10/2	018
Start Time:	4:00:00 PM 5:30:00 PM			
End Time:				
Tide Prediction			High	Low
Ті	me:		10:11 PM	4:10 PM
Elevation:			10.2	0.0
Tide Chart Location:		Hampton Harbor		

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	4
Erosion Classification	4
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	1
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	3
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,3
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	4
Overall Scores	
Infrastructure	3
Ecological	3
Combined	3



US view toward structure



DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist. Hght. Feat. Sub. 0 -1.2434 HC G 18 -0.9934 СВ G 50 -1.5334 СВ C/S -1.8034 Ρ C/S 55 HC G 94 -0.9934 -1.2034 S 106 T G 216 -1.3634 L 220 -1.3034 GC В Ρ G 224 -2.6534 240 -1.4734 HC С 258 -1.9234 СВ G Ρ 267 -2.5834 G 315 -1.9934 HC G



Structure Characteristics:				
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):		ream	<u>Downstream</u>	
Dimension A (width):	5		4	
Dimension B ^{CB} (height):	3.	95	4	
Crossing Length (Invert to Ir	110			

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Concrete	Fair	Wingwalls	Low
	Downstream	Concrete	Good	Concrete	Good	Wingwalls	Low

	Scour in Structure	Scour Severity in Structure	Road Su	rface Condition	Utilities	at Crossing	Structure Condition Overall
	Culvert	Low		Good		OHE	Good
	Structure Conditio Comments:	n N/A					
Ecol	ogical Assessment			<u>Upstream</u>		<u>Do</u>	<u>wnstream</u>
	Natural Community Classification:			High Salt Marsh		High Salt Marsh	
	Upstream Salt Mar	sh Migration Potent	tial (acres)	: 15.81			
Floo	d Hazard & Emerg	ency Access					
	Site Identified in Hazard Mitigation Plan:			No			
	Emergency Access or Evacuation Route:			Yes			
	History of Flooding:			Unknown			

D

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	4
Observer(s) &		
Organization:	TS	, KL (NHDES Coastal)
Municipality:	SEABROOK	
Stream Name:	N/A	
Road Name:	South Main St	

Date:		8/9/20)18
Start Time:		3:30:00	PM
End Time:	End Time: 4:45:		
Tide Prediction		High	Low
Ti	me:	10:11 PM	4:10 PM
Elevation:		10.2 0.0	
Tide Chart Locatio	n:	Hampto	n Harbor

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	4
Tidal Restriction Evaluation	
Tidal Range Ratio	5
Crossing Ratio	5
Erosion Classification	4
Tidal Restriction Overall Score	5
Tidal Aquatic Organism Passage	
Tidal Range Ratio	5
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	4,5
Inun. Risk to the Crossing Structure (US, DS)	4,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	4
Overall Scores	
Infrastructure	5
Ecological	5
Combined	5

S view toward structure	US view above structure
	Mac Olan Salar
	and the second second second



US view toward structure







* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Feat.

Sub.

C/S

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Hght.

Dist.

A pipe running under South Main Street in Seabrook conducts very limited tides to a small square marsh surrounded by a moat dredged at its edge which in turn is surrounded by a berm. The marsh was used to pasture horses without need for any fencing (moat) according to Sue Foote, long-time resident. The undersized crossing shows erosion, poor opportunity for organism passage and poses some risk to flooding the roadway, with an overall combined score of 5: highest priority for restoration.



Structure Characteristics:

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Plastic - Smooth	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):		2	1.5
Dimension B ^{CB} (height):		2	1.5
Crossing Length (Invert to Invert):		80	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Rip Rap	Poor	Rip Rap	Poor	Wingwalls	Medium
	Downstream	None	N/A	Rip Rap	Fair	Culvert	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	Overhead electric, tel pole in marsh	Fair
	I			

Structure Condition Comments:

Two separate structures connected in sewer

Ecological Assessment:		<u>Upstream</u>		Downstream	
	Natural Community Classification:	High Salt Marsh		High Salt Marsh	
	Upstream Salt Marsh Migration Potent	ial (acres): 15.20			

Flood Hazard & Emergency Access Site Identified in Us M N A :+:

Site Identified in Hazard Mitigation Plan:	No
Emergency Access or Evacuation Route:	N/A
History of Flooding:	Unknown

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	5
Observer(s) &		
Organization:	TS	, JB (NHDES Coastal)
Municipality:	SEABROOK	
Stream Name:	N/A	
Road Name:	Cross Beach Rd	

Date:	8/6/2018			
Start Time:	1:00:00 PM			
End Time:	1:35:00 PM			
Tide Prediction	High Low			
Ті	me:		7:10 PM	1:08 PM
Elevat	ion:		9.1	0.6
Tide Chart Locatio	n: Hampton Harbor			

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	2
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	5
Erosion Classification	1
Tidal Restriction Overall Score	2
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	1
Salt Marsh Migration Potential (Wshed.)	1
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,4
Inun. Risk to the Crossing Structure (US, DS)	3,3
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	4
Ecological	1
Combined	3

The Chart Location:	
DS view toward structure	US view above structure
US view toward structure	DS view above structure





* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile Feat.

HC

HC

СВ

Т

Т

HC

СВ

HC

Hght.

3.455

3.625

3.445

3.715

3.705

3.975

4.085

4.145

Dist.

<u>Sub.</u>

S C/S

G

G

G

G

C/S

C/S



Stru	cture Characteristics			
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Plastic - Smooth	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	2	.5	2.5
Dimension B ^{CB} (height):	2	.5	2.5
Crossing Length (Invert to Ir	vert):	36	

Cros Con	sing dition:	Headwall Material	Ill Material Headwall Wingwall Material Condition Wingwall Material Condition		Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Fair	None	None
	Downstream	None	N/A	Rip Rap	Fair	Wingwalls	Low

Scour in Structure	Scour Severity in Structure	Road Sur	face Condition	Utilities	at Crossing	Structure Condition Overall	
None	None		Fair	Overhead electric		Fair	
Structure Condit Comments:	ion N/A						
Ecological Assessme	nt:		<u>Upstream</u>		<u>-</u>	Jownstream	
Natural Commun	Natural Community Classification:			High Salt Marsh H		ligh Salt Marsh	
Upstream Salt Ma	Upstream Salt Marsh Migration Potential (acr						
Flood Hazard & Eme	rgency Access						
Site Identified in	Site Identified in Hazard Mitigation Plan:						
Emergency Acces	Emergency Access or Evacuation Route:			N/A			
History of Floodir	History of Flooding:			storm tides	5		

New Hampshire's Tidal Crossing Assessment Protocol

Crossing ID:	6
JB TS (NHDES Coastal)	
SEABROOK	
Cains Brook	
Causeway St	
	JB TS (NHDES Coastal) SEABROOK Cains Brook Causeway St

Date:	8/15/2018				
Start Time:	10:45:00 AM				
End Time:	12:00:00 PM				
Tide Prediction	High Low				
т	ime:	4.10 DM	0·20 AM		
	inc.	4.19 FIVI	3.20 AIVI		
Elevat	ion:	9.5	-0.9		

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	2
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	3
Erosion Classification	3
Tidal Restriction Overall Score	2
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	4
Salt Marsh Migration Potential (Wshed.)	4
Vegetation Evaluation	
Vegetation Comparison Matrix	3
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,4
Inun. Risk to the Crossing Structure (US, DS)	2,2
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	4
Ecological	3
Combined	3

DS view toward structure US view abov	
	ove

US view toward structure





structure

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile Feat.

HC

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HC

Ρ

HC

Sub.

C/S

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C/S

G

С

В

С

С

В

С

G

C/S

S

Hght.

-2.3972

-3.9972

-4.6372

-4.0972

-4.5172

-1.3072

-1.5472

-1.6772

-2.0472

-6.5472

-2.8972

-4.4972

-4.2472

Dist.

Cains Brook has two tidally influenced road crossings (crossing ID #6 and #7). The lower one is a bridge at Causeway Street where a dredged channel under the current bridge replaced a sinuous tidal creek to the south. The overall restriction score is 3, moderate priority. A combination of soil disturbance, restrictions and freshwater sources allowed common reed (*Phragmites australis*, an invasive weedy grass) to colonize the marsh on both sides of the crossing and the upstream marsh was the site of a long-term *Phragmites* control project that did not use herbicide.



Stru	cture Characteristics		
	Structure Type:	Bridge with Side Slopes and Abutments	Date of Last
	Structure Material:	Concrete	Known
	Tide Gate Present:	No	Replacement:

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	4	0	40
Dimension B ^{CB} (height):		75	8.6
Crossing Length (Invert to Ir	26		

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Fair	Wingwalls	Low
	Downstream	None	N/A	Rip Rap	Fair	Wingwalls	Low

	Scour in Structure	Scour Severity in Structure	Road Su	rface Condition	Utilities	at Crossing	Structure Condition Overall
	None	None		Good Sewer line parallel to		rallel to rd US & DS	Fair
	Structure Condition Comments:	N/A					
Есо	logical Assessment	t:		Upstream		<u>[</u>	Downstream
	Natural Communit	y Classification:		High Salt Marsh		н	igh Salt Marsh
	Upstream Salt Mar	sh Migration Poten	tial (acres): 8.00			
Floc	od Hazard & Emerg	ency Access					
	Site Identified in H	azard Mitigation Pla	an:	No			
	Emergency Access	or Evacuation Rout	e:	N/A			
	History of Flooding	:		Unknown			

7

New Hampshire's Tidal Crossing Assessment Protocol

Crossing ID:
TS, KL (NHDES Coastal)
SEABROOK
Cains Brook
N/A

Date:		8/8/20	18
Start Time:		3:50:00	PM
End Time:		5:00:00	PM
Tide Prediction		High	Low
Ті	me:	9:11 PM	3:10 PM
Elevation:		9.8	0.3
Tide Chart Location:		Portsmouth Harbor	

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	4
Crossing Ratio	3
Erosion Classification	4
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	4
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	2
Salt Marsh Migration Potential (Wshed.)	2
Vegetation Evaluation	
Vegetation Comparison Matrix	0
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,3
Inun. Risk to the Crossing Structure (US, DS)	2,3
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	3
Ecological	4
Combined	3

DS view toward structure



US view above structure

US view toward structure DS view







* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist. Hght. Feat. Sub. 0.7367 0 HC S Ρ 17 -0.2133 S 67 0.9667 HC S 71 -1.6633 Ρ S GC В 90 0.9167 0.9567 В 96 Т L В 120 0.5267 124 0.4367 GC В С 138 -0.8833 СВ 164 -2.9133 Ρ С C/S 231 -1.2133 HC -2.9633 Ρ C/S 262 324 -0.9333 HC C/S

The upper tidal crossing at Cains Brook was restored in the mid 1990s by adding a concrete box culvert alongside the existing perched pipe, which still exists. The overall combined score is 3, moderate priority, because tides and organism passage appear to be partially restricted, there are signs of erosion and inundation risk to the structure is moderate. Above this crossing the marsh is brackish with cattail dominant and soon becomes fresh, but *Phragmites* has begun to invade this marsh (two colonies in 2016).



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	1	0	10
Dimension B ^{CB} (height):	6	5	6
Crossing Length (Invert to Ir	24		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Fair	Wingwalls	Medium
	Downstream	Concrete	Good	None	N/A	Armoring	Medium

	Scour in Structure	Scour Severity in Structure	Road Su	rface Condition	Utilities	at Crossing	Structure Condition Overall
	None	None		Fair Overhead electric. Smel		tric. Smells of sewer.	Good
	Structure Condition Comments:	N/A					
			-				
Есо	logical Assessmen	t:		<u>Upstream</u>		<u>D</u>	<u>ownstream</u>
	Natural Communit	y Classification:		High Salt Marsh		Hi	gh Salt Marsh
	Upstream Salt Mar	sh Migration Poten	tial (acres): 1.64			
Flo	od Hazard & Emerg	ency Access					
	Site Identified in H	azard Mitigation Pla	an:	No			
	Emergency Access	or Evacuation Rout	e:	N/A			
	History of Flooding	:		Unknown			

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	8	3
Observer(s) &			
Organization:	TS	, JB (NHDES Coastal)	
Municipality:	HAMPTON		
Stream Name:	N/A		
Road Name:	Brown Ave		

	7/30/2	018
	8:00:00	AM
9:00:00 AM		
Tide Prediction		Low
me:	2:00 PM	8:00 AM
Elevation:		0.2
Tide Chart Location:		on Harbor
	me: ion:	7/30/2 8:00:00 9:00:00 High me: 2:00 PM ion: 8.0 n: Hampto

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	5
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	5
Erosion Classification	3
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	1
Salt Marsh Migration Potential (Wshed.)	1
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,2
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	5
Ecological	3
Combined	4

DS view toward structure



US view above structure

US view toward structure



DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-0.4183	HC	C/S
44	-0.4883	HC	C/S
63	-0.4183	HC	C/S
142	0.2117	HC	G
156	0.2017	GC	В
161	-0.6183	I	С
535.2	-1.6483	I	С
542.2	-2.6583	Р	С
549.2	-0.7783	HC	С
705.2	-1.2583	HC	G

ong. From

Brown Avenue crosses three tidal creeks (#8, 9, 10) providing tides to small marsh areas surrounded by development in Hampton. This crossing leads to the largest of the marsh areas where the upper portion has been filled for a parking lot. The tide is conducted by a 4foot round culvert, which operates at a much lower capacity since the upstream side is crushed. The crossing condition is poor, and the culvert constricts the channel. The overall combined score is a 4, high priority for replacement.



Stru	cture Characteristics	:		
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Plastic - Corrugated	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	4	.1	3.9
Dimension B ^{CB} (height):	1	.9	3.1
Crossing Length (Invert to Invert):		374.2	2

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Poor	None	N/A	Headwall	High
	Downstream	Rip Rap	Fair	None	N/A	Headwall	Medium

	Overall
None None Fair Overhead electric	Poor

Structure Condition Comments:

Tide gate next to DS structure, see photo. US metal corrugated pipe.

Ecological Assessment:	<u>Upstream</u>	<u>Downstream</u>	
Natural Community Classification:	Low Salt Marsh High Salt Marsh		
Upstream Salt Marsh Migration Potential (acres): 0.83			
Flood Hazard & Emergency Access			
Site Identified in Hazard Mitigation Plan	I in Hazard Mitigation Plan: Yes		
Emergency Access or Evacuation Route:	e: N/A		
History of Flooding:	Flooded up to 1/2 foot water at time of high tide		

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:		9
Observer(s) &			
Organization:	TS	, JB (NHDES Coastal)	
Municipality:	HAMPTON		
Stream Name:	N/A		
Road Name:	Brown Ave		

Date:		7/19/2018		
Start Time:	11:45:00 AM			
End Time:	12:28:00 PM			
Tide Prediction	High Low		Low	
ті	me:	5:40 PM	11:36 AM	
Elevat	vation: 9.1 -0.2		-0.2	
Tide Chart Locatio	Chart Location: Hampton Harbor		on Harbor	

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	5
Tidal Restriction Evaluation	
Tidal Range Ratio	3
Crossing Ratio	5
Erosion Classification	3
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	3
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	2
Salt Marsh Migration Potential (Wshed.)	2
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,4
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	5
Ecological	3
Combined	4

DS view toward structure	
	1923
	10000
	0.000

US view toward structure



US view above structure

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	3.2644	HC	С
11	3.0444	HC	С
25	2.7844	HC	G
27	2.2644	I	С
90	1.8944	I	С
92	2.4644	СВ	G
102	2.3844	GC	G
117	1.8344	HC	G
131	1.3944	СВ	G
169	0.9244	HC	G

Brown Avenue crosses three tidal creeks (#8, 9, 10) providing tides to small marsh areas surrounded by development in Hampton. This crossing leads to the smallest of the marsh areas. The crossing condition is poor, the channel is severely restricted, and the 2-foot round culvert is largely buried by sediment, further restricting the tide. The upstream marsh plain appears to have subsided about 0.4 feet. The overall combined score is 4, high priority for replacement.



Stru	Structure Characteristics:				
	Structure Type:	Round Culvert	Date of Last		
	Structure Material:	Steel - Corrugated	Known	N/A	
	Tide Gate Present:	No	Replacement:		

Crossing Dimensions (ft): Upst		ream	<u>Downstream</u>
Dimension A (width):	0.8		2
Dimension B ^{CB} (height):	0.4		0.4
Crossing Length (Invert to Invert):		63	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Rip Rap	Poor	None	N/A	Headwall	Medium
	Downstream	Rip Rap	Poor	None	N/A	Headwall	High

	Scour in Structure	Scour Severity in Structure	Road Sur	face Condition	Utilities at Crossing		Structure Condition Overall	
	None	None		Fair	Overhead electric, t	elephone pole near bank	Poor	
	Structure Conditi Comments:	on Collapsed inlet a	and outlet	, completely sub	merged			
Ecol	ogical Assessmer	nt:		<u>Upstream</u>		Do	wnstream	
	Natural Communi	ity Classification:		High Salt Marsh		High	High Salt Marsh	
	Upstream Salt Marsh Migration Potential (acre			: 1.30				
Floo	d Hazard & Emei	gency Access						
	Site Identified in Hazard Mitigation Plan:			Yes				
	Emergency Access	s or Evacuation Route	:	N/A				
	History of Floodin	listory of Flooding: Flooded up to 1/2 foot water at time of high tide					e	

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 10 Date: 7/17/2018 Observer(s) & Organization: JB, TS (NHDES Coastal) Start Time: 9:40:00 AM Municipality: HAMPTON End Time: 10:36:00 AM Stream Name: N/A **Tide Prediction** High Low Road Name: Brown Ave 3:46 PM 9:45 AM Time: Elevation 9.4 -1.1 * Tide Chart Location: Hampton Harbor

Crossing Condition Evaluation	Score
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	2
Crossing Ratio	5
Erosion Classification	3
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	2
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	2
Salt Marsh Migration Potential (Wshed.)	3
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,3
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	3
Ecological	3
Combined	3







* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority	
**Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk	



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	1.604	HC	G
20	1.114	СВ	G
73	1.044	GC	С
78	0.014	I	G
153	-0.286	I	G
157	-1.136	Р	G
160	-0.056	HC	G
224	-0.336	HC	G
337	-0.886	HC	C/S



Stru	Structure Characteristics:				
	Structure Type:	Round Culvert	Date of Last		
	Structure Material:	Steel - Smooth	Known	N/A	
	Tide Gate Present:	Yes	Replacement:		

Crossing Dimensions (ft): Upst		<u>Downstream</u>
Dimension A (width):	3	3
Dimension B ^{CB} (height):	3	2.8
Crossing Length (Invert to Invert):		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	None	N/A	Headwall	Medium
	Downstream	Concrete	Good	None	N/A	Culvert	Low

	Scour in Structure	Scour Severity in Structure	Road Su	Surface Condition Utilities a		at Crossing	Structure Condition Overall	
	None	None		Fair		DHE US	Good	
	Structure Condition Comments:	N/A						
			_			-		
Ecol	cological Assessment:			<u>Upstream</u>		Dov	<u>ownstream</u>	
	Natural Communit	y Classification:		High Salt Marsh		High	High Salt Marsh	
	Upstream Salt Ma	rsh Migration Potent	tial (acres)	: 4.73				
Floo	d Hazard & Emerg	gency Access						
	Site Identified in Hazard Mitigation Plan:			Yes				
	Emergency Access or Evacuation Route:			N/A				
	History of Flooding	History of Flooding: Has experienc			flooding duri	ng high tide event	S.	

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol Crossing ID: 11 Observer(s) &

Organization:	JB TS (NHDES Coastal)
Municipality:	HAMPTON
Stream Name:	N/A
Road Name:	Highland Ave

Date:	7/17/2018			
Start Time:	10:46:00 AM			
End Time:	11:30:00 AM			
Tide Prediction		High	Low	
Ti	me:	3:46 PM	9:45 AM	
Flevat	ion	9.4 -1.1		
Lievae	1011.	9.4	1.1	

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	5
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	4
Erosion Classification	4
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	3
Salt Marsh Migration Potential (Wshed.)	3
Vegetation Evaluation	
Vegetation Comparison Matrix	5
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	4,4
Inun. Risk to the Crossing Structure (US, DS)	4,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	5
Ecological	4
Combined	4

DS view toward structure	US view above structure
	Line Stranger (Stranger (S
The Links	
	STATE AND
	and the second
	and the start of

US view toward structure





* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	2.7215	HC	C/S
43	2.4415	HC	C/S
80	2.2615	GC	С
90	1.4715	Ι	С
210	0.1715	I	С
212	0.2015	Р	С
231	1.4915	HC	G

One of the small marshes in Hampton surrounded by development depends on the culvert under Highland Avenue in Hampton for its tides. The culvert is a round pipe about 3 feet in diameter, but its capacity is reduced by sediment. The crossing condition is poor, the channel is constrained with signs of erosion at the culvert. The original marsh is mostly filled by development. The overall combined score is 4, high priority for replacement.



Stru	cture Characteristics	:		
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Steel - Corrugated	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft): Ups		ream	<u>Downstream</u>
Dimension A (width):	3	.2	3.2
Dimension B ^{CB} (height):	2	.5	1.8
Crossing Length (Invert to Ir	120		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Masonry	Poor	None	N/A	Culvert	Low
	Downstream	Masonry	Poor	None	N/A	Headwall	Medium

	Scour in Structure	Scour Severity in Structure	Road Su	face Condition	Utilities	at Crossing	Structure Condition Overall
	None	None		Good	OHE. Electric meter US RR		Poor
	Structure Conditio	n					
	Comments:	N/A					
		·					
Есо	ogical Assessment	:		<u>Upstream</u>		<u>[</u>	<u>Downstream</u>
	Natural Communit	y Classification:		High Salt Marsh		н	igh Salt Marsh
	Upstream Salt Mar	sh Migration Poten	tial (acres)	: 3.66			
Floc	d Hazard & Emerg	ency Access					
	Site Identified in H	azard Mitigation Pla	an:	Yes			
Emergency Access or Evacuation Route: N/A							
	History of Flooding			Flooded up to $1/2$	foot water a	it time of high t	ide

	Т	idal Crossing	Summa	ary Sheet			
	New H	lampshire's Tidal Cro	ossing Asse	essment Protoc	col		
	Crossing ID:		12			7	
Observer(s) &				Date:		8/8/20	18
Organization:	TS,	KL (NHDES Coastal)		Start Time:		2:00:00	PM
Municipality:	HAMPTON			End Time:		2:55:00	PM
Stream Name:	N/A			Tide Prediction		High	Low
Road Name:	Ross Ave			Tin	ne:	9:11 PM	3:10 PM
				Elevatio	on:	9.8	0.3
Crossing Condition	Evaluation	Score*		Tide Chart Location	1:	Hampto	n Harbor
Crossing Condition	n	2					
Tidal Restriction Ev	aluation		DS view	toward structure	5	US view	above structure
Tidal Range Ratio		3	The as I at				月 11
Crossing Ratio		3			1110	34 Jan	
Erosion Classificat	ion	4	AND ST	1.73			
Tidal Restriction C	Overall Score	3	Nº CO	- Washington I.	14.0	A Star	
Tidal Aquatic Organ	nism Passage				1		
Tidal Range Ratio		3	. (Sid time

1

1

3

4,4

4,4

1

4

3

3

US۱	view toward structure
Sa Brai	
	And Man Life Contraction
State of the	A REAL PROPERTY OF
	X // Walter



IT

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Salt Marsh Migration Evaluation

Vegetation Comparison Matrix **Infrastructure Risk Evaluation**

Adverse Impacts Evaluation**

Vegetation Evaluation

Overall Scores Infrastructure

Ecological

Combined

Salt Marsh Migration Potential (Eval. Unit)

Salt Marsh Migration Potential (Wshed.)

Inundation Risk to the Roadway (US, DS)

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development



Long. Profile

Feat.

HC

Ρ

HC

Т

Т

CB

HC

CB

HC

Sub.

C/S

G

G

G

G

G

C/S

C/S

C/S

Hght.

4.7799

4.4299

4.6199

4.7899

4.5899

4.5799

4.7699

4.3899

4.7899

Dist.

0

3

6

10

20

23

28

53

60



Stru	cture Characteristics	:		
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Other	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	1	.9	1.9
Dimension B ^{CB} (height):	1	.5	1.9
Crossing Length (Invert to Ir	10		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	None	N/A	None	N/A	None	None

	Scour in Structure	Scour Severity in Structure	Road Surf	ace Condition	Utilities	at Crossing	Structure Condition Overall
	None	None		N/A	Overh	ead electric	Fair
	Structure Condition Comments:	Clay culvert					
						-	
Ecol	ogical Assessmen	t:		<u>Upstream</u>		Downstream	
	Natural Communit	ty Classification:		High Salt Marsh		High Salt Marsh	
	Upstream Salt Ma	rsh Migration Potent	ial (acres):	0.71			
Floo	d Hazard & Emer	gency Access					
	Site Identified in Hazard Mitigation Plan:			No			
	Emergency Access or Evacuation Route:			N/A			
	History of Flooding:			Area experienced 6"""""""" flooding in March 2018.			

TT: 1 1	<u> </u>	<u> </u>		
lidal	Crossing	g Summary Sheet		
New Hampsh	ire's Tidal C	rossing Assessment Proto	col	
Crossing ID:		13		
Observer(s) &		Date:	8	/6/2018
Organization: JB TS (NHDE	S Coastal)	Start Time:	2::	15:00 PM
Municipality: HAMPTON		End Time:	3:(00:00 PM
Stream Name: N/A		Tide Prediction	High	Low
Road Name: Church St		Ti	me: 7:10 PN	1:08 PM
Constant Constitutions Free locations	Cooro*	Elevati Tido Chort Locatio	.on: 9.1	0.7
	<u>score</u> .	Tide Chart Locatio	n: Ha	mpton Harbor
	4	 • • • • • •		
Tidal Restriction Evaluation	-	DS view toward structur	e US	view above structure
lidal Range Ratio	3		STATE	
Crossing Ratio	3		W. MAR	
Erosion Classification	3	A LANDARY S		
Tidal Restriction Overall Score	3		N 3 3	
Tidal Aquatic Organism Passage			NI NI NI	
Tidal Range Ratio	3			STREET BURN
Salt Marsh Migration Evaluation				
Salt Marsh Migration Potential (Eval. Unit)	1			
Salt Marsh Migration Potential (Wshed.)	2	US view toward structur	e DS	view above structure
Vegetation Evaluation				
Vegetation Comparison Matrix	3	LA TUR IN		
Infrastructure Risk Evaluation		A CARLE		
Inundation Risk to the Roadway (US, DS)	5,4			
Inun. Risk to the Crossing Structure (US, DS)	4,4			
Adverse Impacts Evaluation**				Real March
Inundation Risk to Low-Lying Development	1			
Overall Scores				
Infrastructure	5			
Ecological	3			
Combined	4			Long. Profile

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	2.4222	HC	C/S
6	2.2022	Ρ	C/S
12	2.4722	HC	C/S
23	2.5222	СВ	S
44	2.6822	HC	C/S
57	2.7822	HC	C/S
62	2.2122	I	S
74	1.8322	I	C/S
86	2.6522	HC	C/S
101	2.4922	СВ	C/S
117	2.4122	СВ	C/S
136	2.4322	HC	C/S

Church Street in Hampton crosses a tidal creek, providing tidal flow with a 2.5-foot round culvert. The crossing condition is fair and inundation risk to the road is high. Exotic Phragmites appears to increase above the crossing. The overall combined score is 4, high priority for replacement.



Structure Characteristics:

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Other	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft): Upstr		<u>ream</u>	<u>Downstream</u>
Dimension A (width):	2.5		2.5
Dimension B ^{CB} (height):	1	.5	2.3
Crossing Length (Invert to Ir	12		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Poor	None	None
	Downstream	None	N/A	None	N/A	None	None

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall	
	None	None	N/A	US OHE	Poor	
	Structure Condition Clay culvert Comments: Clay culvert					
Ecol	ogical Assessment	:	<u>Upstream</u>	D	<u>ownstream</u>	
	Natural Community Classification:		Brackish Riverbank M	arsh Brackisł	n Riverbank Marsh	
	Upstream Salt Marsh Migration Potential (acres): 1.04					

FIOO	a Hazara & Emergency Access	
	Site Identified in Hazard Mitigation Plan:	No
	Emergency Access or Evacuation Route:	N/A
	History of Flooding:	Area experienced 6""""""" flooding during March 2018.

	m· 1 1	<u> </u>	0	<u>C1</u>			
	Tidal	Crossing	Summ	ary Sheet			
	New <u>H</u> amps	hire's Tidal C	rossing As	sessment Proto	ocol		
	Crossing ID:		14				
Observer(s) &				Date:		7/10/20)18
Organization:	JB TS (NHD	ES Coastal)		Start Time:		2:50:00	PM
Municipality:	HAMPTON			End Time:		4:45:00	PM
Stream Name:	Tide Mill Creek			Tide Prediction		High	Low
Road Name:	Winnacunnet Rd			т	ïme:	9:33 PM	3:33 PM
				Eleva	tion:	9.8	0.3
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Locati	on:	Hampto	n Harbor
Crossing Condition	n	2					
Tidal Restriction Ev	aluation		DS viev	v toward structu	re	US view	above structure
Tidal Range Ratio		1	- False		A.		
Crossing Ratio		3					
Erosion Classificat	tion	4					
Tidal Restriction C	Overall Score	3			1.100		and the second
Tidal Aquatic Organ	nism Passage			Semme T			
Tidal Range Ratio		1	1		North Carl		
Salt Marsh Migratio	on Evaluation						
Salt Marsh Migrat	ion Potential (Eval. Unit)	5					
Salt Marsh Migrat	ion Potential (Wshed.)	5	US viev	v toward structu	re	DS view	above structure
Vegetation Evaluat	ion		1				
Vegetation Compa	arison Matrix	1			the state		
Infrastructure Risk	Evaluation				Jak H	AL COLO	A Press

Combined 3 * Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Inundation Risk to the Roadway (US, DS)

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development



3,3

3,2

1

2

1

Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-0.4904	HC	С
17	-2.6904	Р	C/S
43	-0.4104	HC	C/S
97	-1.0304	I	С
140	-2.2204	I	С
173	-1.1104	HC	В
225	-3.0704	СВ	G
318	-4.8304	Ρ	G
400	-2.7304	HC	S



Stru	cture Characteristics			
	Structure Type:	Arch Bridge	Date of Last	
	Structure Material:	Concrete	Known	1996
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstrea</u>	m	<u>Downstream</u>
Dimension A (width):	24		24
Dimension B ^{CB} (height):	7		6.4
Crossing Length (Invert to Ir	vert): 4	3	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Fair	None	None
	Downstream	None	N/A	Concrete	Fair	Wingwalls	Low

	Scour in Scour Severity in Roa		Road Su	ad Surface Condition Utilities		at Crossing	Structure Condition			
	Structure	otractare								
	None	None		Good	Overh	ead electric	Good			
	Structure Condition									
	Comments:	Center of DS are	ch not in t	he thalwag						
		ł								
Ecol	ogical Assessmer	nt:		<u>Upstream</u>			<u>)ownstream</u>			
	Natural Communi	ty Classification:		High Salt Marsh Low Salt Marsh			Salt Marsh			
	Upstream Salt Ma	rsh Migration Potent	ial (acres)	: 83.39						
Floo	d Hazard & Emer	gency Access								
	Site Identified in Hazard Mitigation Plan:			Yes						
	Emergency Access	or Evacuation Route	:	Yes						
	History of Flooding:			Upstream 3+' during hightide/storm events.						

	Tidal	Crossing	Summa	ary Sheet					
	I Iuai		5 Juiinia	ary Sheet	1				
	New Hamps	nire's Tidal C	rossing Asso 15	essment Proto	ocol	1			
Observer(s) 8				Date:		_ 9/:	11/2018		
Organization:	JB TS (NHDE	ES Coastal)		Start Time:		9:3	0:00 AM		
Municipality:	HAMPTON	,		End Time:		10:1	15:00 AM		
Stream Name:	N/A			Tide Prediction		High		Low	
Road Name:	High St			т	ime:	1:11 PM		7:15 AM	
Crossing Condition	Evaluation	Score*		Elevat Tide Chart Locatio	tion: on:	9.9 Har	npton Har	-1.2	
Crossing Conditio	n	5							
Tidal Postriction Ev	aluation	5	DS view	toward structu	ro	115 1	iow abo	wo strue	turo
Tidal Danga Datio	diudtion	1	D3 VIEW			031	new abc	Jve stru	
Creasing Datio		1						and the	
		4		SKING /		1 State	A		
Erosion Classificat	tion	0	XXXXXX	CE AND	X		She and	$\rightarrow S^{\dagger}$	
Tidal Restriction (Overall Score	3		A AND CO	3				
Tidal Aquatic Orga	nism Passage				Card a		AN CO		
Tidal Range Ratio		1			1.5			No. Pro	
Salt Marsh Migrati	on Evaluation								
Salt Marsh Migrat	tion Potential (Eval. Unit)	5							
Salt Marsh Migrat	tion Potential (Wshed.)	5	US view	toward structu	re	DS	view abo	ove stru	ture
Vegetation Evaluat	ion			APPARE AND A					
Vegetation Comp	arison Matrix	5	and the	are .		9	1756		
Infrastructure Risk	Evaluation			NO CARE			the second	Statistics and	
Inundation Risk to	o the Roadway (US, DS)	5,4	S M	1 Rock	22			140	
Inun. Risk to the (Crossing Structure (US, DS)	5,5	Res				W.		
Adverse Impacts Ev	valuation**		NX.					a sug	
Inundation Risk to	o Low-Lying Development	1		. Marine		1	54. 11		
Overall Scores	, , , , ,								
Infrastructure		5							
Fcological		4							
Combined		5					Long	Profile	
combined		5				Diet	Long.	Foot	Ch
* Scoring system ranges fi **Adverse Impacts Evalua	rom 1 to 5, where 1 = lowest replacements ation scores range from 1 to 5, where 1	ent priority and 5 = h = high risk and 5 = lo	ighest replacement ow risk	priority		0	1.5753	CB	<u>505.</u> C/S
						25	1.6253	СВ	C/S
Cros	sing Cross Section and	Stream Lon	igitudinal P	rofile		50	1.5253	СВ	C/S
6				Road Profile	* ۵	50	0.6253	1	c/s
5				- Rodd From		103	0.6253		c/s
ຼິ			-	HWI Wrack	·	115	1 5453	нс	c/s
e 4				HWI Stain		102	1 2452	CB	C/S
8 -				Avg March	Diain	222	0 5 2 5 2	CP	C/S
N 3	/				1 Idili	225	0.5255	CD	C/3
L (S				Low Tide					
				Stream Prot	file				
Ĭ,				*The road profile is					
T	↓✔			centered over the inv	erts				
0			-	for graphical purpose does not necessarily	25; It				
0	50 100 15	50 200	250	reflect its true	he				
D	istance from Upstream Hydra	ulic Control (fee	et)	longitudinal profile.					

Fresh water from wetlands to the north drain into Meadow Pond under High Street in Hampton. The undersized culvert and low-lying roadway leave the crossing underwater at low tide and make it vulnerable to flooding. The crossing condition is poor and the potential for salt marsh expansion upstream is high, leading to an overall combined score of 5, highest priority for replacement.



Stru	cture Characteristics			
	Structure Type:	Round Culvert	Date of Last	
Structure Material: Aluminum - Corrugated		Known	N/A	
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	<u>eam</u>	<u>Downstream</u>
Dimension A (width):	4		4
Dimension B ^{CB} (height):	2	<u>)</u>	2
Crossing Length (Invert to Ir	53		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	None	N/A	None	N/A	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	oad Surface Condition Utilities at Crossing	
None	None	Good	OHE US	Poor

Structure Condition Comments:

Totally submerged and partially clogged. Two twin pipes

Ecological Assessment:			<u>Upstream</u>	Downstream	
	Natural Community Classification:	Invasive Dominant		Brackish Marsh	
	Upstream Salt Marsh Migration Potential (acres): 30.32				
Floo	d Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Pla	n: Y	′es		
	Emergency Access or Evacuation Route: Yes				
	History of Flooding: floods at any high tide w/ above avg rain event			ve avg rain event	

	<u> </u>	G 01			
Tidal	Crossing	g Summary Shee	t		
New Hampsh	ire's Tidal C	rossing Assessment Pro	tocol		
Crossing ID:		16		1	
Observer(s) &		Date:		9/11/20	18
Organization: JB ts (NHDES	S Coastal)	Start Time:		8:30:00 /	AM
Municipality: HAMPTON		End Time:		9:20:00 /	AM
Stream Name: N/A		Tide Prediction	1	High	Low
Road Name: High St			Time:	1:11 PM	7:15 AM
	a	Ele	vation:	9.9	-1.2
Crossing Condition Evaluation	Score*	Tide Chart Loca	ation:	Hamptor	h Harbor
Crossing Condition	3				
Tidal Restriction Evaluation		DS view toward struc	ture	US view	above structure
Tidal Range Ratio	5			2.	
Crossing Ratio	3		mines A		
Erosion Classification	5		All Andrews	13	
Tidal Restriction Overall Score	4	AL AN	and the second second		the second
Tidal Aquatic Organism Passage		A CONTRACTOR OF THE OWNER			
Tidal Range Ratio	5		3		
Salt Marsh Migration Evaluation					
Salt Marsh Migration Potential (Eval. Unit)	1				
Salt Marsh Migration Potential (Wshed.)	1	US view toward struc	ture	DS view	above structure
Vegetation Evaluation			-		ALL XI
Vegetation Comparison Matrix	0	CAS MAN	4		and the second sec
Infrastructure Risk Evaluation		Service Cold	the second		182 - D
Inundation Risk to the Roadway (US, DS)	3,2	Sales			
Inun. Risk to the Crossing Structure (US, DS)	3,3				
Adverse Impacts Evaluation**					A CARE AS
Inundation Risk to Low-Lying Development	5	A ARCA	A State		The Alban
Overall Scores					
Infrastructure	3				
Ecological	5				
Combined	3			Lo	ng. Profile
-	-				0

Dist.

<u>Hght.</u>

6.8653

5.1953

5.7853

4.5153

4.6853

4.1653

3.7953

2.0753

1.6653

2.7153

2.2653

2.7153

1.5653

Feat.

HC

Ρ

HC

СВ

GC

Т

L

СВ

Ρ

GC

СВ

HC

Ρ

Sub.

В

В

В

В

В

В

В

В

В

В

С

С

C/S

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk





Stru	cture Characteristics			
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Plastic - Smooth	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstr</u>	<u>eam</u>	<u>Downstream</u>
Dimension A (width):	6		6
Dimension B ^{CB} (height):	3		3
Crossing Length (Invert to In	nvert):	54	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	Wingwalls	Medium
	Downstream	Dry Fit Stone	Poor	Dry Fit Stone	Fair	Wingwalls	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Con	dition	Utilities at Cro	ossing	Structure Condition Overall	
None	None	Good		OHE diagonal over	road	Fair	
Structure Condition Comments:	m Two twin culve	rts					
cological Assessmen	t:	Ups	tream_		Do	wnstream	
Natural Communit	y Classification:	Freshwa	Freshwater Stream Brackish		ckish Marsh		
Upstream Salt Mar	rsh Migration Poten	tial (acres): 0.00					
lood Hazard & Emerg	gency Access						
Site Identified in H	azard Mitigation Pla	an: Yes					
Emergency Access	Emergency Access or Evacuation Route:			Yes			
History of Flooding	History of Flooding:			floods at any high tide w/ above avg rain event			

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 17 7/25/2018 Date: Observer(s) & TS, JB (NHDES Coastal) Start Time: 2:40:00 PM Organization: Municipality: HAMPTON End Time: 3:30:00 PM High **Tide Prediction** Low Stream Name: N/A Road Name: Cusack Rd Time: 10:57 PM 5:00 PM 1.1

Score*

	Elevation:	8.8	1.1	
Tide Chart Location:		Hampton Harbor		
DS view toward structure		US view	above structu	re
A DE LA DE L			A COMPANY AND A CO	_

Crossing Condition	2
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	1
Erosion Classification	1
Tidal Restriction Overall Score	1
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	0
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,3
Inun. Risk to the Crossing Structure (US, DS)	4,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	4
Overall Scores	
Infrastructure	2
Ecological	4
Combined	3

Crossing Condition Evaluation



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk





СВ

СВ

Ρ

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T

Р

СВ

CB

Р

3.3352

3.4652

3.0052

3.1452

2.0252

2.2552

3.1052

3.3252

2.1852

Sub.

C/S

C/S

C/S

C/S

G

C/S

C/S

C/S

C/S

Dist.

0

11

14

18

52

59

67

74

80

N/A



Structure Characteristics:				
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Plastic - Corrugated	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):		ream	<u>Downstream</u>
Dimension A (width):		3	3
Dimension B ^{CB} (height):	1	.5	1.5
Crossing Length (Invert to Ir	vert):	34	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Fair	None	N/A	None	None
	Downstream	Concrete	Fair	None	N/A	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	Overhead electric	Fair
None	None	Good	Overhead electric	Fai

Structure Condition Comments:

Twin culverts surveyed as one structure, completely submerged downstream

			1		
Ecol	ogical Assessment:	<u>Upstream</u>	Downstream		
	Natural Community Classification:	Freshwater Marsh	Freshwater Marsh		
	Upstream Salt Marsh Migration Potent	tial (acres): 15.25			
Floo	Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan	n: Yes			
	Emergency Access or Evacuation Route	e: N/A			
	History of Flooding:	Culvert washed out; replaced	Culvert washed out; replaced - prone to high flows		

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 18 Date: 8/17/2018 Observer(s) & TS, JB (NHDES Coastal) Start Time: 10:00:00 AM Organization: Municipality: HAMPTON End Time: 11:02:00 AM Stream Name: Tide Mill Creek **Tide Prediction** High Low Road Name: NH Rt 101 5:07 PM 11:05 AM Time: Elevation 9.0 0.1 **Crossing Condition Evaluation** Tide Chart Location: Hampton Harbor Score* **Crossing Condition** 1

	-
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	4
Erosion Classification	3
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	3
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	1
Ecological	3
Combined	2







* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-7.3381	HC	S
270	-12.638	Р	G
330	-12.138	HC	С
570	-17.638	Р	S
630	-11.558	I	В
672	-12.358	I	В
780	-19.358	Р	S
970	-9.7581	HC	G
1177	-16.358	Р	C/S
1816	-7.8581	HC	S



Stru	Structure Characteristics:					
	Structure Type:	Bridge with Side Slopes and Abutments	Date of Last			
	Structure Material:	Concrete	Known	N/A		
	Tide Gate Present:	No	Replacement:			

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	117		117
Dimension B ^{CB} (height):	20.45		21.36
Crossing Length (Invert to Inv		42	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity	
	Upstream	None	N/A	Concrete	Good	None	None	
	Downstream	None	N/A	Concrete	Good	None	None	

	Scour in Structure	Scour Severity in Structure	Road Sur	face Condition	n Utilities at Crossing Overhead electric, sewer running along bridge		Structure Condition Overall	
	None	None		Fair			Good	
	Structure Condition Comments:	N/A						
			•					
Ecol	ogical Assessmen	t:		<u>Upstream</u>		<u>Dov</u>	<u>wnstream</u>	
	Natural Communit	ty Classification:		High Salt Marsh		High Salt Marsh		
	Upstream Salt Ma	rsh Migration Potent	ial (acres)	es): 110.26				
Floo	d Hazard & Emer	gency Access						
	Site Identified in Hazard Mitigation Plan:			No				
	Emergency Access or Evacuation Route:			Yes				
	History of Flooding	g:		No				

Tida	al Crossing	g Summa	ary Sheet				
New Hami	oshire's Tidal C	, Trossing Asse	ssment Protoco	ol			
Crossing ID:		19					
Observer(s) &			Date:	7/3	31/2018		
Organization: JB TS (N	HDES Coastal)		Start Time:	9:5	9:50:00 AM		
Municipality: HAMPTON	End Time:				11:00:00 AM		
Stream Name: N/A			Tide Prediction	High		Low	
Road Name: Nh Rt 101			Time	2:35 PM		8:39 AM	
			Elevation	n: 8.1		0.3	
Crossing Condition Evaluation	<u>Score</u> *		Tide Chart Location:	Har	npton Har	bor	
Crossing Condition	5						
Tidal Restriction Evaluation		DS view	toward structure	US	view abo	ve stru	cture
Tidal Range Ratio	4				Sense and	R. Martin	
Crossing Ratio	4		10 miles		A STATES		
Erosion Classification 4						When the	
Tidal Restriction Overall Score 4							
Tidal Aquatic Organism Passage						623	
Tidal Range Ratio	4		A A A A A A A A A A A A A A A A A A A			INT AS	50 C
Salt Marsh Migration Evaluation		M.					
Salt Marsh Migration Potential (Eval. Unit) 1						
Salt Marsh Migration Potential (Wshed.)	, 1	US view	toward structure	ure DS view above structu			
Vegetation Evaluation				Acres 1	and the second second	and the second second	revealers and
Vegetation Comparison Matrix	4	AND A ME		the strain		Se dia	0-
Infrastructure Risk Evaluation	•	CALL LAND	And A	1	357		HA web and
Inundation Risk to the Roadway (US_DS)	3 3	illine and	The second second		- de		L. Vert
Inum Pick to the Crossing Structure (US D			CENTRAL ST		14	6	
Adverse Impacts Evaluation**	-5) 4,4	A. T			16	and the	
Adverse impacts Evaluation		AL BOARD	-	A TAIN	1		25
Inundation Risk to Low-Lying Developmer	IL 5						100 12 10
Overall Scores	-						
Infrastructure	5						
Ecological	4						
Combined	4				Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replac	ement priority and 5 = h	ighest replacement	priority	<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub</u>
**Adverse Impacts Evaluation scores range from 1 to 5, whe	re 1 = high risk and 5 = 10	ow risk		0	2.7223	HC	С
Crossing Cross Section a	nd Stream Lor	ogitudinal P	rofile	21	1.9523	CB	G
10				26	2.0723	GC	В
		–	 Road Profile* 	29	1.9423	I	В
8				117	1.7723	I	В
				117	1.5723	СВ	В
4 6			HWI Stain	119	1.5523	GC	В
		-	Avg. Marsh Pla	ain 137	-0.1277	СВ	C
Y			Low Tide	139	-0.0777	HC	С
¥ 2			Low Hue	157	-0.7277	Р	G
HE		-	 Stream Profile 	277	-1.3577	HC	S

0

-2 0

50

100

150

Distance from Upstream Hydraulic Control (feet)

200

250

*The road profile is centered over the inverts for graphical purposes; it does not necessarily
 reflect its true configuration along the longitudinal profile.

Route 101 was built at the edge of the Hampton Seabrook Estuary and a small marsh that was left upstream of the highway was provided with a 3.5-foot round concrete culvert to supply tidal flow and drainage. The crossing condition is poor, and the tidal range is muted, leading to fresher vegetation upstream of the crossing. The overall combined score is 4, a high priority for replacement of this crossing.



Stru	Structure Characteristics:						
	Structure Type:	Round Culvert	Date of Last				
	Structure Material:	Concrete	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	ossing Dimensions (ft): Upst		<u>Downstream</u>
Dimension A (width):	3.5		3.5
Dimension B ^{CB} (height):	3	.5	3.5
Crossing Length (Invert to Invert):		88	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Masonry	Poor	Masonry	Poor	Wingwalls	High
	Downstream	Masonry	Poor	Rip Rap	Poor	Wingwalls	High

	Scour in Structure	Scour Severity in Structure	Road Surf	Good Utilities at Cro		at Crossing	Structure Condition Overall		
	None	None	(None	Poor		
	Structure Condition Comments:	N/A							
Есо	logical Assessmen	t:		<u>Upstream</u>		<u>Dc</u>	<u>wnstream</u>		
	Natural Communit	y Classification:		Brackish Marsh		High Salt Marsh			
	Upstream Salt Ma	rsh Migration Poten	tial (acres):	cres): 0.23					
				·					
Floc	od Hazard & Emerg	gency Access							
	Site Identified in H	azard Mitigation Pla	an: N	No					
	Emergency Access	or Evacuation Route	e: Y	Yes					
	History of Flooding	3:	U	unknown					
	Tidal (Crossing	Summ	ary Sheet					
-----------------------------------	-----------------------------------	-----------------------	------------------	---	----------------	--------------------	---------------------------------------	--------------	
	New Hampshi	re's Tidal Ci	rossing Ass	sessment Proto	col				
	Crossing ID:		20						
Observer(s) &				Date:	A	8/1/201	8		
Organization:	JB TS (NHDES	Coastal)		Start Time:		10:00:00	٩M		
Municipality: HAM	PTON			End Time:		11:00:00	۹M		
Stream Name: N/A				Tide Prediction		High	Low		
Road Name: Landi	ng Rd			Ti	me: 3:	12 PM	9:15 AM		
		~ *		Elevati	ion:	8.2	0.3		
Crossing Condition Eval	uation	Score*		Tide Chart Locatio	n:	Hampton	Harbor		
Crossing Condition		4							
Tidal Restriction Evaluat	tion		DS viev	v toward structur	e	US view	above stru	ictu	
lidal Range Ratio		4			-		K	-	
Crossing Ratio		4		and the second second			1 - Car		
Erosion Classification		5			1	ne se	6.25		
Tidal Restriction Overa	II Score	4	37.	A CONTRACTOR	23		AND IT		
Tidal Aquatic Organism	Passage					10	The second		
Tidal Range Ratio		4				THEO:			
Salt Marsh Migration Ev	aluation			Contraction of the second		A State Providence		A	
Salt Marsh Migration P	'otential (Eval. Unit)	4							
Salt Marsh Migration P	otential (Wshed.)	4	US viev	v toward structur	e	DS view	above stru	ictu	
Vegetation Evaluation						-land-			
Vegetation Compariso	n Matrix	1	12					-	
Infrastructure Risk Evalu	uation		all and a state	AND	-		Nue		
Inundation Risk to the	Roadway (US, DS)	5,5	and and		100				
Inun. Risk to the Cross	ing Structure (US, DS)	5,5	1					Constant of	
Adverse Impacts Evalua	tion**			COL COL				24	
Inundation Risk to Low	-Lying Development	5	1000		and the second		A A A A A A A A A A A A A A A A A A A	Pro Property	
Overall Scores									
Infrastructure		5							
Ecological		4							
Combined		4				Lo	ng. Profile		
* Scoring system ranges from 1 to	o 5. where 1 = lowest replacemen	t priority and 5 = hi	ghest replacemer	nt priority		Dist. Hgh	t. Feat.	S	
**Adverse Impacts Evaluation sc	ores range from 1 to 5, where 1 =	high risk and 5 = lo	w risk	,		0 0.89	55 HC	(
						64 0.95	55 P		
Crossing	Cross Section and S	Stream Lon	gitudinal I	Profile		134 1.96	55 HC		
					*	139 1.74	55 P		
6	<u> </u>	-				148 2.13	55 GC		
2 5				HWI Wrack		152 1.92	55 1		
jų 4			-	HWI Stain		181 1.65	· 55 I		
8 3				Ava March I	Plain	185 1.00	55 60		
2	- Man					208 0.10			
				Low Tide		200 -0.10			
leigh					ile	232 -0.30	HS HC		
Ĭ _1						256 -0.70	145 HC		

-1

-2

-3 0

50

100

150

200

Distance from Upstream Hydraulic Control (feet)

250

300

281

*The road profile is centered over the inverts for graphical purposes; it does not necessarily
 reflect its true configuration along the longitudinal profile.

-1.2045

317 -1.6545

СВ

HC

G

G

Landing Road in Hampton crosses an unnamed tidal creek with a 4 by 2-foot concrete box culvert that was installed as a tidal restoration in 2010. Tides regularly fill the undersized culvert and threaten to flood the road (and do flood the road during storms). The crossing condition is fair, inundation risk is very high and erosion is evident. In addition, the structure is perched. The overall combined score of 4 indicates this is a high priority for replacement.



Stru	cture Characteristics			
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	2010
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstr</u>	<u>eam</u>	<u>Downstream</u>
Dimension A (width):	4		4
Dimension B ^{CB} (height):	2		2
Crossing Length (Invert to In	nvert):	30	

. .

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Rip Rap	Fair	Rip Rap	Fair	Wingwalls	Medium
	Downstream	Rip Rap	Poor	Rip Rap	Poor	Headwall	Medium

	Scour in Structure	Scour Severity in Structure	Road Surf	ace Condition	Utilities	at Crossing	Structure Condition Overall	
	Culvert	Low	(Good	OHE DS and US in marsh		Fair	
	Structure Conditio	n N/A						
	comments.		1					
Ecol	ogical Assessment	t:		<u>Upstream</u>		<u>D</u>	<u>ownstream</u>	
	Natural Communit	y Classification:		High Salt Marsh		Hi	gh Salt Marsh	
	Upstream Salt Mar	sh Migration Poten	tial (acres):	5.67				
Floo	d Hazard & Emerg	ency Access						
	Site Identified in H	azard Mitigation Pla	n: N	lo				
	Emergency Access or Evacuation Route:			N/A				
	History of Flooding	:	u	nknown				

Tidal	Crossing	g Summa	ary Sheet					
New Hampsh	ire's Tidal (rossing Ass	essment Proto	col				
Crossing ID:		21			T			
Observer(s) &			Date:		7/:	19/2018		
Organization: JB TS (NHDE	S Coastal)		Start Time:		12:4	45:00 PM		
Municipality: HAMPTON			End Time:		1:4	0:00 PM		
Stream Name: N/A			Tide Prediction		High		Low	
Road Name: Drakeside Rd			Ti	me:	5:40 PM	:	11:36 AM	
			Elevati	ion:	9.1		-0.2	
Crossing Condition Evaluation	<u>Score</u> *		Tide Chart Locatio	n:	Har	npton Har	bor	
Crossing Condition	2							
Tidal Restriction Evaluation		DS view	toward structur	e	US v	/iew abo	ove stru	cture
Tidal Range Ratio	5		S AN ANA			N. San	A. C.	2 2
Crossing Ratio	4				5			
Erosion Classification	3	1. 1				· Al		
Tidal Restriction Overall Score	4		and the second			Car and we	Aingi	
Tidal Aquatic Organism Passage		- Second	and the second second			1		
Tidal Range Ratio	5		Carlo Carlos			2		
Salt Marsh Migration Evaluation			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	R				F 7
Salt Marsh Migration Potential (Eval. Unit)	1							
Salt Marsh Migration Potential (Wshed.)	1	US view	toward structur	e	DS ۱	/iew abo	ove stru	cture
Vegetation Evaluation		Sec. 3						74
Vegetation Comparison Matrix	4						e.,	
Infrastructure Risk Evaluation			1. 9. PP		Sec.10			
Inundation Risk to the Roadway (US, DS)	1,1				Ale an			
Inun. Risk to the Crossing Structure (US, DS)	2,2			-			A	.
Adverse Impacts Evaluation**		AND		1		A Maria		4
Inundation Risk to Low-Lying Development	5	1997 - A	and the states	1		W. Sta		
Overall Scores								
Infrastructure	2							
Ecological	5							
Combined	4					Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replaceme **Adverse Impacts Evaluation scores range from 1 to 5, where 1	nt priority and 5 = I = high risk and 5 =	iighest replacement ow risk	priority		Dist.	<u>Hght.</u> 4 826	<u>Feat.</u> нс	Sub.

Crossing Cross Section and Stream Longitudinal Profile Road Profile*



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	4.826	HC	С
13	4.546	Р	С
19	5.076	HC	G
51	4.296	Р	G
54	4.426	I	С
135	4.256	Ι	С
135	3.096	CB	С
150	1.696	Р	C/S
162	2.986	HC	C/S
175	3.266	HC	C/S

A 3.5-foot round concrete culvert under Drakeside Road drains a small wetland and its freshwater sources that were disrupted by the construction of Route 101. The longitudinal profile and water height indicators show the system is perched, impounding water upstream and preventing all but the highest tides from passing upstream, interfering with organism passage and influencing the upstream vegetation. The overall combined score is 4 for this culvert, indicating a high priority for replacement.



Stru	Structure Characteristics:						
	Structure Type:	Round Culvert	Date of Last				
	Structure Material:	Concrete	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>	
Dimension A (width):	3	.5	3.	5
Dimension B ^{CB} (height):	3	.5	3.	5
Crossing Length (Invert to Ir	vert):	81		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	wall Material Wingwall S Condition St		Scour Severity
	Upstream	Masonry	Fair	Masonry	Fair	Wingwalls	Low
	Downstream	Masonry	Good	Masonry	Fair	Culvert	Low

		Structure	Road Surface Condition	Utilities at Crossin	g Overall	
	None	None	Good	OHE US	Good	
S	tructure Conditio Comments:	n N/A				
Ecolog	ical Assessment	:	Upstream		Downstream	
Ν	atural Communit	y Classification:	Freshwater Stream	Freshwater Stream Brack		
U	pstream Salt Mar	sh Migration Poten	tial (acres): 0.00			
Flood	Hazard & Emerg	ency Access				
Si	ite Identified in H	azard Mitigation Pla	in: No			
E	mergency Access	or Evacuation Route	e: N/A			
н	istory of Flooding	:	Unknown			

	Tidal (Trossing	5 Summ	ary Sheet			
	Now Hamach	u USSIIIE	'rossing As	ary Direct			
	Crossing ID:	ire's Tiaal C	rossing Ass	sessment Protoc	201		
	Crossing ID.			Date:		8/16/2018	
Observer(s) & Organization:	er(s) & IB TS (NHDES Coastal)			Start Time:		9:45:00 AM	1
Municipality:	HAMPTON			End Time:	1	L0:46:00 AN	Л
Stream Name:	Taylor River			Tide Prediction	Hig	h	Low
Road Name:	Lafayette Rd			Tin	ne: 4:12 F	PM	10:12 AM
				Elevatio	on: 9.3	3	-0.4
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Location	n: H	Hampton H	arbor
Crossing Condition	า	2					
Tidal Restriction Ev	aluation		DS view	v toward structure	e U	S view al	oove structure
Tidal Range Ratio		1				White states	and the second second second
Crossing Ratio		4					A DESCRIPTION OF THE OWNER OWNER OF THE OWNER OWNER OF THE OWNER
Erosion Classificat	ion	4			14 17 18 18 18 18 18 18 18 18 18 18 18 18 18		
Tidal Restriction C	overall Score	3				1	at the second
Tidal Aquatic Organ	nism Passage						
Tidal Range Ratio		1					
Salt Marsh Migratio	on Evaluation			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
Salt Marsh Migrat	ion Potential (Eval. Unit)	5					
Salt Marsh Migrat	ion Potential (Wshed.)	5	US viev	v toward structure	e_ D	S view al	oove structure
Vegetation Evaluat	ion				1		100
Vegetation Compa	arison Matrix	1			uli ta	en -	
Infrastructure Risk	Evaluation					>	2
Inundation Risk to	the Roadway (US, DS)	3,4	and the state			1-	
Inun. Risk to the C	crossing Structure (US, DS)	2,1					
Adverse Impacts Ev	valuation**		No.				
Inundation Risk to	Low-Lying Development	5				and the second	
Overall Scores							

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

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Infrastructure

Ecological

Combined



Long. Profile

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-9.3386

-14.039

-8.7886

-15.039

-7.4386

-8.1686

-10.439

-9.0586

-12.039

-9.8386

Dist.

0

95

245

384

424

475

529

559

664

739

N/A



Stru	cture Characteristics	K.		
	Structure Type:	Bridge with Abutments	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	3	0	30
Dimension B ^{CB} (height):	1	5	16.7
Crossing Length (Invert to Invert):		54	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Fair	Wingwalls	Low
	Downstream	None	N/A	Rip Rap	Good	Wingwalls	Low

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Abutment	Medium	Good	DS OHE	Fair

Structure Condition Comments:

ancioni	Some cracks inside structure RL
'S:	

Ecological Assessment:		Upstream		<u>Downstream</u>
	Natural Community Classification:		High Salt Marsh	High Salt Marsh
	Upstream Salt Marsh Migration Potential (acres):		137.43	

Flood Hazard & Emergency Access Site Identified in Hazard Mitigation Plan: Yes Emergency Access or Evacuation Route: Yes History of Flooding: Water rises from very high/storm tides

	Tidal (Crossing	z Summa	arv Sheet			
	New Hampshi	re's Tidal (Trossina Ass	essment Proto	col		
	Crossing ID:	ie o ituar e	23	esoment i roto	201	Ţ	
Observer(s) &				Date:		7/9/20	18
Organization:	TS, JB (NHDES	Coastal)		Start Time:		4:00:00	PM
Municipality:	HAMPTON			End Time:		5:24:00	PM
Stream Name:	N/A			Tide Prediction		High	Low
Road Name:	Merrill Industrial Dr			Ti	me:	8:38 PM	2:36 PM
				Elevat	ion:	9.4	0.5
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Locatio	n:	Hampto	n Harbor
Crossing Conditior	1	3					
Tidal Restriction Eva	aluation		DS view	toward structur	e	US view	above structure
Tidal Range Ratio		3	5. 4		they are	- Part Partie	
Crossing Ratio		1		X	***	18 19 510	
Erosion Classificat	ion	4	and the second	and the second		Viel 1	
Tidal Restriction O	verall Score	3				A PAL	气候的人们
Tidal Aquatic Organ	nism Passage				1		
Tidal Range Ratio		3	* #			TAN STA	
Salt Marsh Migratio	on Evaluation				1/2		CARLEN STREET
Salt Marsh Migrat	ion Potential (Eval. Unit)	1					
Salt Marsh Migrat	ion Potential (Wshed.)	1	US view	toward structur	e	DS view	above structure
Vegetation Evaluati	ion		T Allo			217	
Vegetation Compa	arison Matrix	3	1 min -		a se	XACA	-153
Infrastructure Risk	Evaluation		S of the		2		
Inundation Risk to	the Roadway (US, DS)	2,2	the second secon		Nel C	Ser Ser	S. M.
Inun. Risk to the Crossing Structure (US, DS)		3,3	4	I ST AT	alle.	NO.	
Adverse Impacts Evaluation**							
Inundation Risk to	Low-Lying Development	5					
Overall Scores							
Infrastructure		3					
Ecological		3					
Combined		3				Lo	ong. Profile

<u>Hght.</u>

4.9536

5.3436

4.7536

4.8136

5.3636

5.6736

5.4036

4.7136

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Dist.

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



N/A



Stru	cture Characteristics	:		
	Structure Type:	Embedded Round Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstre</u>	<u>eam</u>	<u>Downstream</u>
Dimension A (width):	6.8	5	6.6
Dimension B ^{CB} (height):	3.1		1.9
Crossing Length (Invert to Invert):		43	•

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Rip Rap	Poor	None	N/A	Culvert	Low
	Downstream	None	N/A	None	N/A	Culvert	Low

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall	
Channel	Medium	Good		Good	

Structure Condition Comments:

Two twin culverts, measured as one

Ecological Assessment:		<u>Upstream</u>	Downstream
	Natural Community Classification:	Freshwater Stream	Freshwater Stream
	Upstream Salt Marsh Migration Potent	ial (acres): 0.00	

Flood Hazard & Emergency Access Site Identified in Hazard Mitigation Plan: No Emergency Access or Evacuation Route: N/A History of Flooding: unknown

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:		24
Observer(s) &			
Organization:	JB	TS (NHDES Coastal)	
Municipality:	HAMPTON		
Stream Name:	Drakes River		
Road Name:	Nh Rt 101		

Date:	7/30/2018		
Start Time:	9:20:00 AM		
End Time:	10:45:00 AM		
Tide Prediction	High Low		Low
Ti	me:	2:00 PM	8:05 AM
Elevat	ation: 8.0 0.2		0.2
	cation: Hampton Harbor		

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	4
Crossing Ratio	3
Erosion Classification	5
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	4
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	0
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	3,3
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	1
Ecological	5
Combined	5

DS viev	w toward structure
Sec. Here	in the second
and the	
	the second secon

US view toward structure



US view above structure

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Sub.

Dist.

0	1.3152	HC	G
20	0.3752	Р	G
77	1.2552	HC	G
92	0.2752	Р	G
125	1.1452	GC	С
130	1.0752	I	С
243	0.6352	I	С
243.1	0.3052	СВ	С
251	0.4052	GC	С
271	-0.7048	Р	С
291	-0.3148	HC	G
331	-0.4348	HC	G

The upper crossing of Drakes River passes under Route 101 for over 100 feet and is a large concrete pipe alongside a rectangular culvert encased as a pair in concrete. The high water stain on the culvert structure indicates there is some tidal restriction and the culvert slope is about a foot and the low tide is more than 18 inches higher upstream, indicating impoundment. Along with high erosion, the perch (improperly high elevation of the culvert) leads to an overall combined score of 5: highest priority for replacement.



Structure Characteristics: Structure Type: Round Culvert Date of Last Structure Material: Concrete Known N/A Tide Gate Present: No Replacement: Replacement:

Crossing Dimensions (ft):	<u>Upstr</u>	<u>eam</u>	<u>Downstream</u>
Dimension A (width):	10	0	10
Dimension B ^{CB} (height):	5		5
Crossing Length (Invert to In	vert):	113	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Concrete	Good	None	None
	Downstream	Concrete	Good	Concrete	Good	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	None	Good

Structure Condition Comments:

Twin culverts surveyed as one structure. Box at inlet/outlet converts to round culvert

Ecological Assessment:	<u>Upstream</u>	<u>Downstream</u>
Natural Community Classification:	Brackish Riverbank Marsh	High Salt Marsh
Upstream Salt Marsh Migration Potent		
Flood Hazard & Emergency Access		
Site Identified in Hazard Mitigation Pla	n: No	
Emergency Access or Evacuation Route: Yes		
History of Flooding: unknown		
	1	

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol Crossing ID: 25

Observer(s) &	
Organization:	Burdick, Steckler, Flanagan, Lucey, Glode (TNC)
Municipality:	HAMPTON
Stream Name:	Drakes River
Road Name:	Drakeside Rd

Date:	5/30/2017		
Start Time:	9:36:00 AM		
End Time:	1:00:00 PM		
Tide Prediction	High Low		Low
Tiı	me:	4:10 PM	10:07 AM
Elevati	on:	9.0	-1.0
Tide Chart Location:		Hampton Harbor	

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	5
Tidal Restriction Evaluation	
Tidal Range Ratio	3
Crossing Ratio	4
Erosion Classification	4
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	3
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	4
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	3
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,4
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	5
Ecological	3
Combined	4

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US view toward structure



US view above structure

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-0.7319	HC	G
32	-0.7919	HC	С
50	-2.7819	Р	С
56	-1.5619	GC	С
69	-1.7319	I	В
116	-1.2319	I	В
130	-2.4819	GC	В
140	-5.3219	Р	С
156	-5.4019	Р	G
181	-1.3119	HC	С
227	-1.7519	HC	G

The lower tidal crossing of Drakes River passes under Drakeside Road through a 4 by 8 concrete culvert in Hampton. Despite restoration in 1996 tides are still restricted, with an overall combined score of 4 (high priority for replacement). This is due to reduced tidal range, interference with organism passage and poor crossing condition. *Phragmites*, which was overrunning the site in the mid-1990s, remains a visible feature in the marsh.



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	1996
Tide Gate Present:	Yes	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	8		8
Dimension B ^{CB} (height):	4	1	3.7
Crossing Length (Invert to Ir	vert):	47	

Crossing Condition:		Headwall Material	Headwall Condition Wingwall Mate		Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Other	Poor	Rip Rap	Fair	Headwall	High
	Downstream	Other	Fair	Rip Rap	Fair	Headwall	High

	Scour in Structure	Scour Severity in Structure	Road Surf	Surface Condition Utilities at Crossin Poor Telephone pole on US side		at Crossing	Structure Condition Overall
	None	None		Poor	Telephone	e pole on US side	Fair
	r	1					
	Structure Conditi Comments:	on N/A					
			-			-	
Ecol	ogical Assessmer	nt:		<u>Upstream</u>		<u>Downstream</u>	
	Natural Communi	ity Classification:		Low Salt Marsh		Low Salt Marsh	
	Upstream Salt Ma	arsh Migration Potent	ial (acres):	21.48			
Floo	d Hazard & Emei	gency Access					
	Site Identified in I	Hazard Mitigation Pla	n: N	lo			
	Emergency Access or Evacuation Route:			N/A			
History of Flooding: Uknown							
	<u> </u>						

	Tidal (Crossing	g Summ	ary Sheet				
	New Hampshi	ire's Tidal C) Crossina Ass	sessment Protoc	col			
	Crossing ID:		26					
Observer(s) &				Date:		8/15/2	018	
Organization:	TS, JB (NHDES	Coastal)		Start Time:		9:20:00	AM	
Municipality:	HAMPTON			End Time:		10:00:00	MA	
Stream Name:	Taylor River			Tide Prediction		High	Low	
Road Name:	N/A			Tin	ne: 4	:19 PM	9:20 AM	
				Elevatio	on:	9.5	-0.9	
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Location	:	Hampto	n Harbor	
Crossing Condition	1	5						
Tidal Restriction Ev	aluation		DS viev	v toward structure	<u> </u>	US view	v above stru	cture
Tidal Range Ratio		1						
Crossing Ratio		4		aller.				
Erosion Classificat	ion	4	PHK	HEMESTER			Party of the second sec	(THE OF
Tidal Restriction O	verall Score	3	1990 Lan					
Tidal Aquatic Organ	nism Passage					TO T		
Tidal Range Ratio		1	King 2				1 de la	
Salt Marsh Migratio	on Evaluation		and the second	act.		N A	- North -	CT2
Salt Marsh Migrat	ion Potential (Eval. Unit)	5						
Salt Marsh Migrat	ion Potential (Wshed.)	5	US viev	v toward structure	2	DS view	v above stru	cture
Vegetation Evaluation	ion							
Vegetation Compa	arison Matrix	1		. 100				
Infrastructure Risk	Evaluation				1	-		
Inundation Risk to	the Roadway (US, DS)	2,3		the second w		-	-	
Inun. Risk to the C	rossing Structure (US, DS)	3,3			1			- allerta
Adverse Impacts Ev	aluation**			*				
Inundation Risk to	Low-Lying Development	4		A.		Los Es		
Overall Scores								
Infrastructure		5						
Ecological		3						
Combined		4				Lo	ong. Profile	

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-11.173	HC	S
117	-11.273	HC	C/S
180	-16.173	Р	C/S
387	-16.173	СВ	С
402	-9.2734	I	В
417	-11.613	I	S
477	-9.5734	СВ	С
507	-14.073	Р	С
606	-10.123	HC	С
699	-13.873	Ρ	C/S
1167	-11.773	HC	C/S

A railroad trestle crossing the Taylor River creates a constriction, approximately 60 by 16 feet in size, in the largest tributary to the Estuary. This is one of four tidal river crossings by the abandoned railroad bed that bisect Hampton Seabrook Estuary (the others are 28, 29 and 30) where tides are large (> 10 feet) and flows are huge. The crossing condition is rated poor and the potential for salt marsh migration in the upstream watershed is high. With an overall combined score of 4, this ranking indicates high priority for replacement or removal.



Structure Characteristics: Structure Type: Bridge with Side Slopes and Abutments Date of Last Structure Material: Steel - Smooth Known N/A Tide Gate Present: No Replacement: N/A

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	58		59
Dimension B ^{CB} (height):	15	5.4	16.8
Crossing Length (Invert to Ir	vert):	15	•

Crossing Condition:		Headwall Material	Headwall Condition Wingwall Material		Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Dry Fit Stone	Poor	Wingwalls	Medium
	Downstream	None	N/A	Dry Fit Stone	Poor	Wingwalls	None

	Scour in	Scour Severity in	Road Sur	face Condition	Utilities	at Crossing	Structure Condition	
	Structure	Structure			Utilities at Crossing Overhead electric, tel poles in marsh n arsh arsh a result of very high/ storm tic		Overall	
	None	None		N/A	Overhead elect	ric, tel poles in marsh	Poor	
	Structure Conditi	on Duides is mustin						
	Comments:	Bridge is rusting	g out, rail i	ogs rotted				
Ecol	ogical Assessmei	nt:		<u>Upstream</u>		De	ownstream	
	Natural Commun	ity Classification:		High Salt Marsh High Salt Mars			sh Salt Marsh	
	Upstream Salt Ma	arsh Migration Potent	tial (acres)	: 149.30				
Floo	d Hazard & Emei	rgency Access						
	Site Identified in	Hazard Mitigation Pla	n:	Yes				
	Emergency Access or Evacuation Route:			N/A				
	History of Floodir	ıg:		Water rises as a r	esult of very l	nigh/ storm tides	5	

	Tidal (Crossing	g Summ	ary Sheet				
	New Hampshi	re's Tidal C	s Trossing Ass	sessment Proto	col			
	Crossing ID:		28			7		
Observer(s) &				Date:		8/17/2	018	7
Organization:	JB TS (NHDES	Coastal)		Start Time:		11:00:00) AM	
Municipality:	HAMPTON FALLS			End Time:		12:00:00	D PM	
Stream Name:	Hampton Falls River			Tide Prediction		High	Low	
Road Name:	N/A			Ti	me:	5:07 PM	11:05 AM	
				Elevat	ion:	9.0	0.1	_
Crossing Condition	Evaluation	Score*		Tide Chart Locatio	n:	Hampto	n Harbor	
Crossing Condition	n	5						
Tidal Restriction Ev	aluation		DS view	v toward structur	e	US view	v above struct	ure
Tidal Range Ratio		2	1					
Crossing Ratio		5		a second and a second	m	and the second se		
Erosion Classificat	ion	3			auren a		And Personnelle	
Tidal Restriction C	Verall Score	3	29 R				4	
Tidal Aquatic Organ	nism Passage		1	F				
Tidal Range Ratio		2						
Salt Marsh Migratio	on Evaluation				and a		17 15 15 16	
Salt Marsh Migrat	ion Potential (Eval. Unit)	5						
Salt Marsh Migrat	ion Potential (Wshed.)	5	US view	v toward structur	e	DS view	above struct	ure
Vegetation Evaluat	ion							
Vegetation Compa	arison Matrix	1	The	COLUMN H	1		and the second second	
Infrastructure Risk	Evaluation							
Inundation Risk to	the Roadway (US, DS)	5,4	172					
Inun. Risk to the C	crossing Structure (US, DS)	5,4	Tal	2 -	100-01			
Adverse Impacts Ev	valuation**		Alt of	A.K.				
Inundation Risk to	Low-Lying Development	4		and the second second				
Overall Scores								
Infrastructure		5						
Ecological		3						
Combined		5				Lo	ong. Profile	

<u>Hght.</u>

-5.0978

-5.1378

-3.7078

-16.268

-5.9178

-4.0978

-5.8178

-5.8178

-5.8678

-14.568

-8.5678

-11.918

-12.118

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* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



One of four tidal river crossings by the abandoned railroad bed that bisect Hampton Seabrook Estuary, this old granite bridge carries the flow of a major tidal creek. Despite its large size (16 feet by 10 feet), it constricts flow as shown by the very large plunge pools on either side of the crossing. The crossing condition is poor with high inundation risk and salt marsh migration potential in the upstream watershed, leading to an overall combined score of 5: highest priority for replacement (or removal).



Structure Characteristics:

Structure Type:	Bridge with Abutments	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft): Upsti		ream	<u>Downstream</u>
Dimension A (width):	16	5.5	15.7
Dimension B ^{CB} (height):	1	1	10.2
Crossing Length (Invert to Invert):		23	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Dry Fit Stone	Poor	Wingwalls	High
	Downstream	None	N/A	Dry Fit Stone	Fair	Abutment	High

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Abutment	High	N/A	OHE wires from power plant.	Poor
		1		

Structure Condition Comments:

Rusting out I beams. Stones falling out of structure

Ecological Assessment:			<u>Upstream</u>	<u>Downstream</u>
	Natural Community Classification:		High Salt Marsh	High Salt Marsh
	Upstream Salt Marsh Migration Potential (acres):		26.46	

Flood Hazard & Emergency Access Site Identified in Hazard Mitigation Plan: No Emergency Access or Evacuation Route: N/A History of Flooding: Unknown

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	2	9
Observer(s) &			
Organization:	JB	TS (NHDES Coastal)	
Municipality:	HAMPTON FALLS		
Stream Name:	Hampton Falls River		
Road Name:	N/A		

Date:	7/3/2018			
Start Time:	9:33:00 AM) AM
End Time:	11:06:00 AM			
Tide Prediction			High	Low
Ti	me:		3:48 PM	9:49 AM
Elevat	ion:		7.9	0.5
Tide Chart Locatio	on:		Hampto	on Harbor

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	5
Tidal Restriction Evaluation	
Tidal Range Ratio	2
Crossing Ratio	3
Erosion Classification	4
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	2
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	4
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	4,3
Inun. Risk to the Crossing Structure (US, DS)	2,2
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	5
Ecological	3
Combined	4





US view above structure

US view toward structure







Long. Profile

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* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



The granite structure conducts the Hampton Falls River, one of four tidal river crossings by the abandoned railroad bed that bisect Hampton Seabrook Estuary. The high water wrack line indicates tides in excess of 10 feet are not uncommon here and the large 27 foot by 11.5foot structure is still shown to restrict tides by the 5 to 7foot-deep plunge pools and over six inches of subsidence of the upstream marsh plain. The overall combined score of 4, high priority, is largely due to the poor structural condition of the crossing. Like crossings 26 and 28, this supports an abandoned railroad and could be removed.



Structure Characteristics:

Structure Type:	Bridge with Abutments	Date of Last			
Structure Material:	Stone	Known	N/A		
Tide Gate Present:	No	Replacement:			

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	2	7	27
Dimension B ^{CB} (height): 11		.45	11.57
Crossing Length (Invert to Invert):		26	

Cros Con	sing dition:	Headwall Material Headwall Wingwall Material Condition		Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Masonry	Fair	Abutment	High
	Downstream	None	N/A	Masonry	Poor	Culvert	High

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Culvert	High	N/A	OHE	Poor

Structure Condition Comments:

Masonry missing mortar. Shifting stones. Support stumps exposed underneath structure

Ecological Assessment:		<u>Upstream</u>	<u>Downstream</u>					
	Natural Community Classification:	High Salt Marsh	High Salt Marsh					
	Upstream Salt Marsh Migration Potent	ial (acres): 19.43						
Floc	d Hazard & Emergency Access							
	Site Identified in Hazard Mitigation Pla	n: No						
	Emergency Access or Evacuation Route	:: N/A						
History of Flooding:		Unknown						

	Tidal (Crossing	summ	ary Sheet		
	New Hampshi	ire's Tidal C	, 'rossina Ass	sessment Protoc	ol	
	Crossing ID:		30			
Observer(s) &	0			Date:	8/16/	2018
Organization:	TS, JB (NHDES	Coastal)		Start Time:	11:10:0	00 AM
Municipality:	HAMPTON FALLS			End Time:	1:00:0	0 PM
Stream Name:	Browns River			Tide Prediction	High	Low
Road Name:	N/A			Tim	e: 4:12 PM	10:12 AM
				Elevatio	n: 9.3	-0.4
Crossing Condition	Evaluation	Score*		Tide Chart Location:	: Hampt	on Harbor
Crossing Condition	ı	5				
Tidal Restriction Eva	aluation		DS view	v toward structure	US vie	w above structure
Tidal Range Ratio		2				Sec. 1
Crossing Ratio		5	a subtraite	and a subsection of		
Erosion Classificati	ion	1				and the second sec
Tidal Restriction O	verall Score	3				19
Tidal Aquatic Organ	iism Passage					
Tidal Range Ratio	-	2				
Salt Marsh Migratio	on Evaluation			1 to see	S 39.4	
Salt Marsh Migrati	ion Potential (Eval. Unit)	5				
Salt Marsh Migrati	ion Potential (Wshed.)	5	US view	v toward structure	DS vie	w above structure
Vegetation Evaluati	on		-	1000	and the second	
Vegetation Compa	rison Matrix	1				
Infrastructure Risk Evaluation			the state of the second	All shares	and the second second	
Inundation Risk to	the Roadway (US, DS)	1,1	State I			
Inun. Risk to the C	5,5	the second se	A STATE OF		-	
Adverse Impacts Ev	aluation**					
Inundation Risk to	Low-Lying Development	5			e and the second second	
Overall Scores	, , , , , , , , , , , , , , , , , , , ,					

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Infrastructure

Ecological

Combined



5

1

4

Long. Profile

Feat.

HC

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HC

CB

Ρ

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L

GC

Ρ

HC

Ρ

HC

Sub.

C/S

C/S

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S

S

В

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В

В

G

G

C/S

C/S

Hght.

Dist.

The crossing at Brown's River was under an inactive rail line and the 48-inch dimeter culvert was too small and perched too high, leading to tidal restriction and upstream marsh subsidence (about 5 inches) and invasion of exotic Phragmites. In addition, the ebb flow led to a greatly eroded channel, which is still evident (high crossing ratio score). In 2005, tidal flow was enhanced by the addition of a 4 by 6-foot culvert placed lower in the intertidal zone to support organism passage and reduce the tidal restriction. Although the marsh surface measurements were limited, the survey team found that the subsidence had decreased to only 1.5 inches in 2018. Despite the added benefits from the additional culvert, the crossing condition is poor, and the entire structure is regularly overfilled by tides, leading to an overall combined score of 4: high priority for replacement



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	2005
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	8	3	8
Dimension B ^{CB} (height):	6	5	6
Crossing Length (Invert to Ir	60		

Crossing Condition:		Headwall Material	Headwall Condition	Headwall Condition Wingwall Material		Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Fair	None	None
	Downstream	Concrete	Fair	Rip Rap	Good	Headwall	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Culvert	Low	N/A	Nuclear plant	Fair
	ι	-		

Structure Condition Comments:

Cracking at headwall/wingwall DS

Ecological Assessment:			<u>Upstream</u>	<u>Downstream</u>	
	Natural Community Classification:		High Salt Marsh	High Salt Marsh	
	Upstream Salt Marsh Migration Potential (acres)		15.81		

Flood Hazard & Emergency Access Site Identified in Hazard Mitigation Plan: No Emergency Access or Evacuation Route: N/A History of Flooding: Unknown

r	$T \cdot 1 \cdot 1 \cdot C = C \cdot C$	C C1 /		
	I idal Crossing	g Summary Sneet		
New Crossing ID	Hampshire's Tidal C	Crossing Assessment Proto	ocol	
	•	Data	10/1	/2018
Observer(s) &	B KI (NHDES Coastal)	Start Time:	9.30.1	72018 00 AM
Municipality: HAMPTON		End Time:	12:00	:00 PM
Stream Name: Taylor River		Tide Prediction	High	Low
Road Name: Interstate 95 N		т	ime: 4:26 PM	10:29 AM
		Eleva	tion: 9.1	0.7
Crossing Condition Evaluation	Score*	Tide Chart Location	on: Portsm	outh Harbor
Crossing Condition	1		1	
Tidal Restriction Evaluation		DS view toward structu	re US vie	ew above structur
Tidal Range Ratio	1	Webs days		More in
Crossing Ratio	1	and the second second		ALC: NOT
Erosion Classification	3		- And Annu	CHARLEN CLARKER AND MARKEN
Tidal Restriction Overall Score	2			and the second
Tidal Aquatic Organism Passage	_			
Tidal Range Ratio	1			
Salt Marsh Migration Evaluation	-			
Salt Marsh Migration Potential (Eva	d Unit) 5			
Salt Marsh Migration Potential (Ws	hed) 5	LIS view toward structu	re DS vie	w above structur
Vegetation Evaluation				
Vegetation Comparison Matrix	5			
	J			
Inundation Pick to the Poodway (11)				The stand
Inunuation Risk to the RoadWay (Us				
Inun. KISK to the Crossing Structure	(US, DS) 1,1			A CONTRACT OF A CONTRACT OF

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

5

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2

Long. Profile

Feat.

Sub.

N/A

В

В

C/S

C/S

С

G

С

G

G

С

В

В

В

S

C/S

C/S

Hght.

Dist.

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Combined

Inundation Risk to Low-Lying Development



N/A



Structure Characteristics:							
	Structure Type:	Bridge with Side Slopes and Abutments	Date of Last				
Structure Material:		Concrete	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	7	2	72
Dimension B ^{CB} (height):	14.11		13.73
Crossing Length (Invert to Ir	222		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	None	N/A	None	N/A	None	None

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities	at Crossing	Structure Condition Overall	
	None	None	Good	None		Good	
	Structure Condition Comments: N/A						
Ecol	ogical Assessmen	nt:	<u>Upstream</u>	<u>Upstream</u>		<u>vnstream</u>	
	Natural Communi	ty Classification:	Freshwater Mars	Freshwater Marsh		Riverbank Marsh	
	Upstream Salt Ma	rsh Migration Potent	ial (acres): 46.47				
Floo	d Hazard & Emer	gency Access					
	Site Identified in H	lazard Mitigation Pla	n: Yes	Yes			
	Emergency Access	or Evacuation Route	e: Yes	Yes			
	History of Flooding: US flooding in '06 and '09 prior to being updated						

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 32 Observer(s) & JB (NHDES Coastal) Organization: Municipality: HAMPTON FALLS

wunicipality:	HAIVIPTOIN FALLS	
Stream Name:	N/A	
Road Name:	Interstate 95 N	
sing Condition	Evaluation	Score*
ossing Conditio	า	2

Date:	10/16/2018			
Start Time:	10:05:00 AM			
End Time:	12:00:00 PM			
Tide Prediction		High	Low	
Time:		5:28 AM	11:42 AM	
Elevati	on:	7.5 1.7		
Tide Chart Location:		Hampton Harbor		

Crossing Condition Evaluation	Score
Crossing Condition	2
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	1
Erosion Classification	5
Tidal Restriction Overall Score	2
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	1
Salt Marsh Migration Potential (Wshed.)	1
Vegetation Evaluation	
Vegetation Comparison Matrix	3
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	0
Overall Scores	
Infrastructure	2
Ecological	3
Combined	2

DS view toward structure

US view toward structure



DS view above structure

US view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	2.9452	CB	C/S
11	1.7852	HC	C/S
18	1.7052	СВ	В
25	2.1552	I	В
283	1.5052	Ι	C/S
291	0.9452	Р	C/S
300	3.2552	HC	C/S
317	3.3752	СВ	C/S
345	2.7452	Ι	C/S

N/A



Stru	cture Characteristics	:		
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	5.8		5.8
Dimension B ^{CB} (height):	2.9		2.9
Crossing Length (Invert to Ir	258		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity	
	Upstream	Masonry	Fair	Masonry	Fair	Wingwalls	Low	
	Downstream	Masonry	Fair	Masonry	Fair	None	None	

	Scour in Structure	Scour Severity in Structure	Road Sur	face Condition	Utilities	at Crossing	Structure Condition Overall	
	None	None		Good		None	Fair	
	Structure Conditio Comments:	n N/A						
Ecol	ogical Assessment	•		<u>Upstream</u>			<u>Downstream</u>	
	Natural Communit [,]	y Classification:		Invasive Dominant Inv			sive Dominant	
	Upstream Salt Mar	sh Migration Potent	tial (acres)	: 0.00				
Floo	d Hazard & Emerg	ency Access						
	Site Identified in Hazard Mitigation Plan:			No				
Emergency Access or Evacuation Route: Yes								
	History of Flooding: unknown							

	Ti	dal Crossing	g Summa	ary Sheet				
	New Ha	mpshire's Tidal C	Trossing Ass	essment Proto	ocol			
	Crossing ID:		33			Τ		
Observer(s) &				Date:		7/16/20	018]
Organization:	TS, TN	/I (NHDES Coastal)		Start Time:		8:00:00	AM	
Municipality:	HAMPTON			End Time:		9:40:00	AM]
Stream Name:	N/A			Tide Prediction		High	Low	
Road Name:	Huckleberry Ln			Ti	ime:	2:50 PM	8:50 AM	
L				Elevat	ion:	9.5	-1.4	1
Crossing Condition I	Evaluation	<u>Score</u> *		Tide Chart Locatio	on:	Hampto	n Harbor	1
Crossing Condition	ı	5						-
Tidal Restriction Eva	aluation		DS view	toward structu	re	US view	<i>i</i> above structu	re
Tidal Range Ratio		1		New State				
Crossing Ratio		5	and the second				And the second se	
Erosion Classificati	ion	5		and the	RAN	and the second s	and the second	
Tidal Destriction O	vorall Score	4	A STATE	ALL PROPERTY		and the second	Mary Marine St	

Erosion Classification	5
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	4
Salt Marsh Migration Potential (Wshed.)	4
Vegetation Evaluation	
Vegetation Comparison Matrix	3
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,2
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	5
Ecological	3
Combined	4





* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist. Hght. Feat. Sub. 2.7527 0 HC S C/S 68 2.5227 HC Ρ C/S 98 2.5927 99 2.8927 C/S Т 150 2.0527 G T 204 1.8727 Р C/S C/S 244 1.3027 HC 1.3827 HC C/S 315

Huckleberry Lane crosses an unnamed tributary to the Little River and the tidal flow is supported by three small pipes that are underwater most of the time. The downstream area is eroded to a wider creek and erosion classification at the crossing is high for both upstream and downstream, leading to an overall combined score of 4, high priority for replacement.



Structure Characteristics:

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Plastic - Smooth	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	3.6		3.6
Dimension B ^{CB} (height):	1	.1	1.2
Crossing Length (Invert to Ir	51		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Rip Rap	Poor	None	N/A	None	None
	Downstream	Rip Rap	Poor	None	N/A	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Fair	Overhead electric	Poor

Structure Condition Comments:

Tree culverts, surveyed as one, completely submerged

Ecological Assessment:		<u>Upstream</u>	Downstream
	Natural Community Classification:	Low Salt Marsh	Low Salt Marsh
	Upstream Salt Marsh Migration Potent	ial (acres): 7.88	

Flood Hazard & Emergency Access Site Identified in Hazard Mitigation Plan: No Emergency Access or Evacuation Route: N/A History of Flooding: unknown

	Tidal	Crossing	g Summ	ary Sheet				
	New Hamps	hire's Tidal C	rossing Ass	essment Proto	ocol			
	Crossing ID:		34			T		
Observer(s) &				Date:		7/31/20)18	
Organization:	JB TS (NHD	ES Coastal)		Start Time:		8:30:00	AM	
Municipality:	HAMPTON			End Time:		9:43:00	AM	
Stream Name:	N/A			Tide Prediction		High	Low	
Road Name:	Ocean Blvd			т	ime:	2:35 PM	8:39 AM	
				Elevat	tion:	8.1	0.3	
Crossing Condition	Evaluation	Score*		Tide Chart Locatio	on:	Hampto	n Harbor	
Crossing Conditio	n	1						
Tidal Restriction Ev	aluation		DS view	toward structu	re	US view	above structu	re
Tidal Range Ratio		1				La Frankle	And Andrews	
Crossing Ratio		1			-			
Erosion Classificat	tion	5	A					
Tidal Restriction C	Overall Score	2	1200	No contraction of the second s	Z			
Tidal Aquatic Orga	nism Passage		and the second	h	1			
Tidal Range Ratio	0	1		L. L			An Sac	APR -
Salt Marsh Migrati	on Evaluation			N-A	>			The state
Salt Marsh Migrat	tion Potential (Eval 11nit)	1						
Salt March Migrat	tion Potential (Wshed)	1		toward structu	ro		above structu	ro
Vegetation Evel	tion Fotential (WSHEU.)	1						ie
vegetation Evaluat				1	1	ANA PARA	The Part of the Pa	as la

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

0

2,2

2,2

5

1

4

2

Vegetation Comparison Matrix **Infrastructure Risk Evaluation**

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Combined

Inundation Risk to the Roadway (US, DS)

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development



Long. Profile

Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	3.0414	СВ	C/S
14	2.4114	I	C/S
53	1.7614	I	C/S
65	1.9014	HC	C/S
77	2.0614	HC	C/S
107	0.1114	Р	C/S
141	2.3114	HC	C/S

N/A



Structure Characteristics:				
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	<u>ream</u>	<u>Downstream</u>
Dimension A (width):	8.	85	8.77
Dimension B ^{CB} (height):	4.91		5.71
Crossing Length (Invert to Ir	39		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Good		
	Downstream	None	N/A	Concrete	Good	None	None

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities	at Crossing	Structure Condition Overall	
	None	None	Fair	Overhead electric		Good	
	Structure Condition Comments: N/A						
Ecol	ogical Assessmen	nt:	<u>Upstream</u>	<u>Upstream</u>		<u>ownstream</u>	
	Natural Community Classification:		Invasive Domina	Invasive Dominant		Salt Marsh	
	Upstream Salt Ma	rsh Migration Potent	tial (acres): 0.00				
Floo	d Hazard & Emer	gency Access					
	Site Identified in H	lazard Mitigation Pla	n: Yes				
	Emergency Access	or Evacuation Route	e: N/A	N/A			
	History of Floodin	g:	'11 minor floodin	'11 minor flooding. prone to high flows.			

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:		35
Observer(s) &			
Organization:	JB	TS (NHDES Coastal)	
Municipality:	NORTH HAMPTON		
Stream Name:	Little River		
Road Name:	Appledore Ave		

Date:	7/9/2018			
Start Time:	2:24:00 PM			
End Time:	3:32:00 PM			
Tide Prediction		High	Low	
Tiı	ne:	8:38 PM	2:36 PM	
Elevati	on:	9.4	0.5	
Tide Chart Location:		Hampto	n Harbor	

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	3
Crossing Ratio	3
Erosion Classification	4
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	3
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	0
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,3
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	3
Ecological	4
Combined	3

DS view toward structure	US view above structure







Long. Profile

Feat.

Sub.

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Hght.

Dist.

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Appledore Avenue crosses creek running north to the Little River and the original structure was replaced in 1999 with a 4 by 8-foot box culvert to allow unrestricted tides to flow upstream. The overall combined score of 3 shows a moderate priority for replacement, largely based on crossing ratios and signs of erosion, some of which may remain from the previous structure. More information can be found for this and the Little River restoration in 2000 on the NRCS website:

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nh/te chnical/?cid=nrcs144p2_015688_



Stru	cture Characteristics			
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	2001
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	8		8
Dimension B ^{CB} (height):	3	.3	4
Crossing Length (Invert to Invert):		42	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Fair	Wingwalls	Medium
	Downstream	Concrete	Good	Rip Rap	Fair	Wingwalls	Medium

	Scour in Structure	Scour Severity in Structure	Road Su	rface Condition	Utilities	at Crossing	Structure Condition Overall
	None	None		Fair		OHE DS	Good
	Structure Condition Comments:	n N/A					
Eco	loaical Assessmen	t:		Upstream		ſ	Downstream
	Natural Community Classification:			High Salt Marsh		High Salt Marsh	
	Upstream Salt Mai	rsh Migration Poten	tial (acres)): 21.80			
Floc	od Hazard & Emerg	gency Access					
	Site Identified in H	azard Mitigation Pla	an:	No			
	Emergency Access or Evacuation Route:			N/A			
	History of Flooding:			Prior to replaceme	nt		

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:		36
Observer(s) &			
Organization:	JB	TS. (NHDES Coastal)	
Municipality:	NORTH HAMPTON		
Stream Name:	N/A		
Road Name:	Ocean Blvd		

Date:		7/11/2	018		
Start Time:	3:30:00 PM				
End Time:	5:10:00 PM				
Tide Prediction		High	Low		
ті	ime:	10:28 PM	2:29 PM		
Elevat	ion:	10.2	0.0		
Tide Chart Locatio		Hampto	n Harbor		

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	5
Crossing Ratio	3
Erosion Classification	4
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	5
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	4,5
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	3
Overall Scores	
Infrastructure	5
Ecological	5
Combined	5

	Tide Chart Location:	Hampton Harbor
DS view	toward structure	US view above structure
US view	toward structure	DS view above structure







* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile Feat Uaht

<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-2.9497	HC	G
75	-0.5297	HC	G
98	-5.2797	Р	S
127	-0.3497	GC	С
148	-0.9597	I	В
388	-1.8897	I	С
404	-2.0497	Р	С
419	-0.8397	HC	В
567	-5.1897	HC	С

Little River once flowed into the ocean through an inlet south of Appledore Road, but with the construction of Route 1A and the 'trunk' that drained the marsh system (once measured at 193 acres) at its north end, the inlet variably closed which led to dynamic shifts in water levels and marsh degradation. The trunk was drained by a 4-foot round pipe and was woefully inadequate to support tidal flow into the marsh. It was replaced by two 6 by 12-foot culverts, side by side, in 2000. The disparity of the up and downstream highwater stains shows the top two feet of regular high tides are still prevented from flooding the marsh, signs of strong erosion are found upstream and the crossing is likely to be inundated by storms. The overall combined score is 5: highest priority. It should be stated the culvert size chosen in 2000 was recognized not to be able to conduct the full tidal flow but was selected as a more economical solution than a larger bridge. More information can be found for the Little River restoration on the NRCS website:

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nh/technical/?cid=nrcs144p2_015688

and the NHDES website:

https://www.des.nh.gov/organization/divisions/water/wmb/coastal/restoration/saltmarsh_restoration. htm



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	2000
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	24		24
Dimension B ^{CB} (height):	6		6
Crossing Length (Invert to Invert):		240	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Good	None	None
	Downstream	None	N/A	Rip Rap	Good	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	OHE. Poles in marsh US	Good

Structure Condition Comments:

History of Flooding:

Two twin box culverts, surveyed as one structure

Ecological Assessment:		<u>Upstream</u>	Downstream		
	Natural Community Classification:	High Salt Marsh	Sparsely Vegetated Intertidal Habitat		
	Upstream Salt Marsh Migration Potent	tial (acres): 73.63			
Floo	d Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Pla	n: Yes			
	Emergency Access or Evacuation Route	e: N/A			

Past flooding has occurred.

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:		37
Observer(s) &			
Organization:	TS	, JB (NHDES Coastal)	
Municipality:	NORTH HAMPTON		
Stream Name:	Little River		
Road Name:	Atlantic Ave		

Date:	6/25/2018 3:58:00 PM 6:19:00 PM			
Start Time:				
End Time:				
Tide Prediction			High	Low
Tide Prediction Ti	ime:		High 10:38 PM	Low 4:40 PM
Tide Prediction Ti Elevat	ime: ion:		High 10:38 PM 9.1	Low 4:40 PM 0.8

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	3
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	4
Erosion Classification	5
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	1
Salt Marsh Migration Potential (Wshed.)	2
Vegetation Evaluation	
Vegetation Comparison Matrix	0
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,2
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	4
Overall Scores	
Infrastructure	3
Ecological	4
Combined	3

DS view toward structure US view above structure



DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	1.4986	HC	C/S
79	1.0286	Р	C/S
159	1.3486	HC	C/S
182	0.4186	Р	G
200	2.4186	GC	С
215	1.6286	I	С
251	2.2786	I	С
265	-0.5514	Р	С
300	-0.7514	HC	C/S
400	0.8586	HC	C/S

N/A



Stru	cture Characteristics	:		
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	<u>ream</u>	<u>Downstream</u>
Dimension A (width):	7.	72	8.8
Dimension B ^{CB} (height):	7.69		7.2
Crossing Length (Invert to Invert):		36	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Concrete	Fair	Culvert	High
	Downstream	Concrete	Good	Concrete	Fair	None	None

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing Overhead electric, sewer line downstream headwall		Structure Condition Overall
	Culvert	Low	Fair			Fair
	Structure Conditio Comments:	n N/A				
Ecol	ogical Assessment	:	Upstream		Dov	wnstream
	Natural Community	y Classification:	Brackish Riverbank	Brackish Riverbank Marsh Brackish		Riverbank Marsh
	Upstream Salt Mar	sh Migration Poten	tial (acres): 1.03			
Floo	d Hazard & Emerg	ency Access				
	Site Identified in Ha	azard Mitigation Pla	an: No			
	Emergency Access or Evacuation Route:		e: Yes			
	History of Flooding	:	Unknown			
			•			

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	3	8
Observer(s) &			
Organization:	TS	, JB (NHDES Coastal)	
Municipality:	NORTH HAMPTON		
Stream Name:	Little River		
Road Name:	Woodland Rd		

Date:	7/3/2018			
Start Time:	11:45:00 AM			
End Time:	1:00:00 PM			
Tide Prediction		High	Low	
Time:		3:48 PM	9:49 AM	
Elevation:		7.9 0.5		
Tide Chart Location:		Hampton Harbor		

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	3
Tidal Restriction Evaluation	
Tidal Range Ratio	5
Crossing Ratio	4
Erosion Classification	5
Tidal Restriction Overall Score	5
Tidal Aquatic Organism Passage	
Tidal Range Ratio	5
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	2
Salt Marsh Migration Potential (Wshed.)	2
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,2
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	4
Overall Scores	
Infrastructure	3
Ecological	5
Combined	3

DS view toward	structure

US view above structure

US view toward structure DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	1.5143	HC	C/S
72	2.8143	HC	G
74	2.7143	Р	G
82	4.0143	I	С
111	4.0143	I	С
140	-0.9357	Ρ	В
189	0.3043	HC	G

N/A



Stru	Structure Characteristics:				
	Structure Type:	Box Culvert	Date of Last		
	Structure Material:	Concrete	Known	N/A	
	Tide Gate Present:	No	Replacement:		

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>	
Dimension A (width):	8		8	
Dimension B ^{CB} (height):	4		4	
Crossing Length (Invert to Invert):		29		

Crossing Condition:		Headwall Material	adwall Material Headwall Wingwall Material Condition		Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Poor	Wingwalls	Medium
	Downstream	Concrete	Good	Concrete	Good	Wingwalls	Low

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities	at Crossing	Structure Condition Overall			
	None	None	Good	Overhead electric		Good			
	Structure Condition Comments: N/A								
Ecol	ogical Assessmen	nt:	<u>Upstream</u>	<u>Upstream</u> <u>Do</u>		wnstream			
	Natural Communi	ty Classification:	Freshwater Swan	Freshwater Swamp Fresh		vater Swamp			
	Upstream Salt Marsh Migration Potential (acres): 1.03								
Floo	d Hazard & Emer	gency Access							
	Site Identified in H	lazard Mitigation Pla	n: Yes	Yes					
	Emergency Access	or Evacuation Route	e: N/A	N/A					
	History of Floodin	Past flooding with	h potential fo	r erosion					
	History of Floodin	g:	Past flooding with	h potential fo	r erosion				
Tidal (Crossing	g Summa	ry Sheet						
---	-----------------------	--	---------------------------	-----------------	--	----------	-----------		
New Hampsh	ire's Tidal C	rossing Asses	ssment Proto	col					
Crossing ID:		39							
Observer(s) &			Date:		7/20/2018				
Organization: TS, JB, PS, KL (NH	DES Coastal)		Start Time:	-	L1:45:00 AM				
Municipality: NORTH HAMPTON			End Time:		1:44:00 PM				
Stream Name: Chapel Brook			Tide Prediction	Hig	h	Low			
Road Name: Ocean Blvd			Ti	me: 6:38	PM	12:34 PM			
	~ *	-	Elevat	ion: 8.9)	0.3			
Crossing Condition Evaluation	Score*	Ĺ	Tide Chart Locatio	on:	Hampton Ha	rbor			
Crossing Condition	2								
Tidal Restriction Evaluation		DS view t	oward structu	re U	S view ab	ove stru	ctur		
Tidal Range Ratio	5	12/234		C. Land	in the	1			
Crossing Ratio	5								
Erosion Classification	2				- Andrew				
Tidal Restriction Overall Score	4		A BAR						
Tidal Aquatic Organism Passage			P. Contra						
Tidal Range Ratio	5				· Sta	1 4			
Salt Marsh Migration Evaluation				STO	A Carlos				
Salt Marsh Migration Potential (Eval. Unit)	3								
Salt Marsh Migration Potential (Wshed.)	5	US view t	oward structu	re D	S view ab	ove stru	ctur		
Vegetation Evaluation									
Vegetation Comparison Matrix	1	and the second s			and the second sec	-			
Infrastructure Risk Evaluation		Carl and a second	Statute and		and the second				
Inundation Risk to the Roadway (US, DS)	1,5				1.4				
Inun. Risk to the Crossing Structure (US, DS)	4,5	Start &	Contraction of the second		the		A.		
Adverse Impacts Evaluation**		age of the	27 M		AN				
Inundation Risk to Low-Lying Development	2	June 10 th			2				
Overall Scores									
Infrastructure	5								
Ecological	5								
Combined	5				Long.	Profile			
* Scoring system ranges from 1 to 5, where 1 = lowest replacement	nt priority and 5 = h	ighest replacement pr	riority	Dis	t. <u>Hght.</u>	Feat.	<u>Sı</u>		
**Adverse Impacts Evaluation scores range from 1 to 5, where 1 =	high risk and 5 = 1	ow risk		0	1.4657	HC	C		
Crossing Cross Section and	Stroom Lor	aitudinal Pr	ofilo	24	-1.3643	Р	(
		igituullai Pro	Unie	40	0.3657	GC	E		
			- Road Brofile	* 15	0 27/2				



Tidal flow supporting the salt marsh at Philbrick's Pond has been restricted by the trolley berm of the early 1900s as well as Route 1A (reported here). A recent investigation into the hydrodynamic flows and how they may be restored to rejuvenate the degraded salt marsh showed that the small clay pipe under the trolley berm was intact, but restricted tides, while the culvert under Route 1A was less restrictive (CMA Engineers 2018). The overall combined score of 4 indicates high priority for replacement.



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	ц,	5	4
Dimension B ^{CB} (height):	2	1	4
Crossing Length (Invert to Invert):		150	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Masonry	Fair	Rip Rap	Fair	Wingwalls	Medium
	Downstream	Rip Rap	Fair	None	N/A	None	None

	Structure Condition Overall	
None None Fair Overhead electric Fair		

Structure Condition Comments:

Converts to concrete pipe halfway downstream

Ecol	ogical Assessment:		<u>Upstream</u>	Downstream	
	Natural Community Classification:	Low Salt Marsh		Sparsely Vegetated Intertidal Habitat	
Upstream Salt Marsh Migration Potential (acres): 34.64					
Floo	Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan	ion Plan: No			
	Emergency Access or Evacuation Route:	ite: Yes			
	History of Flooding:		flooding due to trolly line restriction		

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 40 Date: 7/24/2018 Observer(s) & Start Time: 3:10:00 PM Organization: JB TS (NHDES Coastal) Municipality: RYE End Time: 4:00:00 PM **Tide Prediction** High Low Stream Name: N/A Road Name: Ocean Blvd 10:13 PM 4:15 PM Time: Elevation 8.8 1.2 **Crossing Condition Evaluation** Score* Tide Chart Location: Hampton Harbor **Crossing Condition** 2 **Tidal Restriction Evaluation** DS view toward structure US view above structure **Tidal Range Ratio** 5 **Crossing Ratio** 5 **Erosion Classification** 3 **Tidal Restriction Overall Score** 4

Tidal Aquatic Organism Passage	
Tidal Range Ratio	5
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	3
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,4
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	2
Overall Scores	
Infrastructure	4
Ecological	5
Combined	5





DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	0.1184	HC	C/S
35	0.1684	HC	G
125	-0.1816	GC	G
133	-1.0116	I	С
383	-2.2816	I	В
391	-2.6316	HC	В
398	-3.8016	СВ	В
420	-4.9216	HC	С

The inlet to Bass Beach Marsh is crossed by Route 1A (Ocean Boulevard) that uses a 2.4-foot circular culvert that is over 250 feet in length to conduct the tides. Although the marsh is perched about 5 feet above the downstream low tide, the culvert still restricts the upper portion of the tide as evidenced by the high crossing ratio. The marsh is being invaded by exotic common reed. The overall combined score of 5 indicates highest priority for replacement.



Structure Characteristics: Structure Type: Round Culvert Date of Last Structure Material: Plastic - Smooth N/A Tide Gate Present: No Replacement:

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	2	.4	2.4
Dimension B ^{CB} (height):	2	.4	2.4
Crossing Length (Invert to Invert):		250	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Fair	None	N/A	Headwall	Medium
	Downstream	None	N/A	None	N/A	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Fair	None	Fair

Structure Condition Comments:

Large boulder blocking DS outlet. Restricting flow and AOP.

Есо	logical Assessment:	Upstream	Downstream		
	Natural Community Classification:	Low Salt Marsh	Sparsely Vegetated Intertidal Habitat		
Upstream Salt Marsh Migration Potential (acres): 11.66					
Flo	Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan	i: Yes			
	Emergency Access or Evacuation Routes	on Route: Yes			
	History of Flooding:	culvert gets clogged, floods during heavy rain.			



N/A



Stru	Structure Characteristics:						
	Structure Type:	Round Culvert	Date of Last				
	Structure Material:	Plastic - Smooth	Known	N/A			
	Tide Gate Present:	Yes	Replacement:				

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	2	.7	2.8
Dimension B ^{CB} (height):	2.7		2.5
Crossing Length (Invert to Invert):		47.5	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Good	Dry Fit Stone	Good	None	None
	Downstream	Masonry	Poor	None	N/A	Headwall	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	OHE US	Fair

Structure Condition Comments:

US well taken care of. DS neglected and overrun with invasives. Minimal observed flow likely due to tide gate.

Есо	logical Assessment:	<u>Upstream</u>	<u>Downstream</u>	
	Natural Community Classification:	Brackish Marsh	Invasive Dominant	
	Upstream Salt Marsh Migration Potent	ial (acres): 8.37		
Floo	od Hazard & Emergency Access			
	Site Identified in Hazard Mitigation Plan	n: No		
	Emergency Access or Evacuation Route: N/A			
History of Flooding: unknown				
		*		

	Tidal	Crossing	g Summ	ary Sheet				
	New Hampsh	ire's Tidal C	Crossing As	sessment Proto	ocol			
Cro	ssing ID:		42			7		
Observer(s) &				Date:		7/18/20)18]
Organization:	TS, JB (NHDE	S Coastal)		Start Time:		10:45:00	AM	1
Municipality: NORTH H	AMPTON			End Time:		11:35:00	AM	
Stream Name: N/A				Tide Prediction		High	Low	
Road Name: Old Locke	Rd			Т	ime:	4:43 PM	10:40 AM	
				Elevat	tion:	9.3	-0.7	
Crossing Condition Evaluati	on	<u>Score</u> *		Tide Chart Locatio	on:	Hampto	n Harbor	
Crossing Condition		4						_
Tidal Restriction Evaluation	l		DS viev	v toward structu	re	US view	above structu	ure
Tidal Range Ratio		1		A State of the		Share and the second		
Crossing Ratio		5		AMONTON TON	D'	1 Danielie	S. 1. 1.	. **
Erosion Classification		4		A AND	10			
Tidal Restriction Overall So	core	3		19.07	2017 1-2017		4804	
Tidal Aquatic Organism Pas	sage		No X	11		3 4 2	-Actor	K
Tidal Range Ratio	-	1		ALT AT				
Salt Marsh Migration Evalu	ation		Carlo Martin	Killer 🧹			and the second	
Salt Marsh Migration Pote	ntial (Eval. Unit)	4						
Salt Marsh Migration Pote	ntial (Wshed.)	4	US viev	w toward structu	re	DS view	above structu	ıre

dezen	
ASC.	
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4

4,4

5,5

5

4

4

**Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Vegetation Evaluation

Overall Scores Infrastructure

Ecological

Vegetation Comparison Matrix

Inundation Risk to the Roadway (US, DS)

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development

Infrastructure Risk Evaluation

Adverse Impacts Evaluation**



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	2.2748	СВ	C/S
10	2.2548	I	S
88	2.5648	I	S
94	2.2048	Р	G
100	2.7348	СВ	S

A small culvert (1-foot round pipe) runs from the golf course, under Old Locke Road and into the upper portion of Philbrick's Pond. The overall combined score for restriction is 4, high priority, because of erosion and inundation risk to road and the undersized culvert is submerged even at low tide.



Structure Characteristics:

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	-	L	2.5
Dimension B ^{CB} (height):	1		0.9
Crossing Length (Invert to Ir	78		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	None	None
	Downstream	Dry Fit Stone	Poor	None	N/A	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Fair	Overhead electric	Poor
				•

Structure Condition Comments:

Culvert flooded both sides, no culvert DS, open "box" where pipe should be

Ecological According to	l la stars and	Devue et ere e ere
Ecological Assessment:	Upstream	Downstream
Natural Community Classification:	Freshwater Marsh	Brackish Marsh
Upstream Salt Marsh Migration Potenti		
Flood Hazard & Emergency Access		
Site Identified in Hazard Mitigation Plan	n: Yes	
Emergency Access or Evacuation Route: N/A		
History of Flooding: flood prone, culvert in need of repair or replace		
	· · ·	

Tidal (Troccine	Summ	any Shoot				
		5 Juiiiii		1			
Crossing ID:	ires Tiadi C	rossing Ass	essment Proto	COI	Т		
		45	Date:		7/25/20	118	
Observer(s) & Organization: IB TS (NHDES	Coastal)		Start Time:		3:44:00	PM	_
Municipality: NORTH HAMPTON	,		End Time:		4:20:00	PM	
Stream Name: N/A			Tide Prediction		High	Low	
Road Name: Old Locke Rd			Ti	me:	10:57 PM	5:00 PM	
			Elevat	ion:	8.8	1.1	
Crossing Condition Evaluation	Score*		Tide Chart Locatio	n:	Hampto	n Harbor	
Crossing Condition	4						
Tidal Restriction Evaluation		DS view	v toward structur	е	US view	above strue	cture
Tidal Range Ratio	3		and the second second	Ser and	TON I		
Crossing Ratio	4					10002	
Erosion Classification	4			1:			
Tidal Restriction Overall Score	4		- 5.8 		and the	TRANS-	
Tidal Aquatic Organism Passage		2 KAN					
Tidal Range Ratio	3		1.5 M	No.			
Salt Marsh Migration Evaluation		and the		36	-		
Salt Marsh Migration Potential (Eval. Unit)	3						
Salt Marsh Migration Potential (Wshed.)	3	US view	v toward structur	e	DS view	above strue	cture
Vegetation Evaluation							
Vegetation Comparison Matrix	3	1. 200		a l			
Infrastructure Risk Evaluation			2	1			
Inundation Risk to the Roadway (US, DS)	3,3						
Inun. Risk to the Crossing Structure (US, DS)	4,4						
Adverse Impacts Evaluation**			N.S.				
Inundation Risk to Low-Lying Development	5	* * *				the fair of	
Overall Scores							
Infrastructure	4						
Ecological	3						
Combined	3				Lo	ong. Profile	
					Diet He	ht Faat	Ch

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	2.7407	HC	C/S
29	2.6307	СВ	C/S
33	2.7407	I	C/S
80	2.5807	I	G
87	1.7007	Ρ	S
106	3.1307	HC	G
113	2.7807	CB	S
118	3.0807	HC	S

An unnamed creek under Old Locke Road conducts brackish tides to and from Philbrick's Pond through a 2foot round culvert, but it serves mostly as upland drainage to the Pond. It has an overall combined score of 3, moderate priority, because of signs of erosion, crossing condition and potential ecological impacts.



Structure Characteristics:

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	<u>ream</u>	<u>Downstream</u>
Dimension A (width):	2	.2	2
Dimension B ^{CB} (height):	1	.6	2
Crossing Length (Invert to Ir	47		

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Poor	None	N/A	None	None
	Downstream	Dry Fit Stone	Poor	None	N/A	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	US OHE	Fair

Structure Condition Comments: Slightly squashed inlet. Loose granite on US Headwall

Ecological Assessment:		<u>Upstream</u>		<u>Downstream</u>		
	Natural Community Classification:	Freshwater Swamp		Brackish Riverbank Marsh		
Upstream Salt Marsh Migration Potential (acres): 4.59						
Flo	od Hazard & Emergency Access					
	Site Identified in Hazard Mitigation Pla	n:	Yes			
	Emergency Access or Evacuation Route	: 1	N/A			
	History of Flooding: Past flooding reported, culvert damaged.			damaged.		

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 44 6/19/2018 Date: Observer(s) & Start Time: 10:00:00 AM Organization: JB PS (NHDES Coastal) Municipality: RYE End Time: 12:05:00 PM **Tide Prediction** High Low Stream Name: Bailey Brook Road Name: Ocean Blvd 12:00 AM 10:49 AM Time: Elevation 0.0 0.0 **Crossing Condition Evaluation** Tide Chart Location: Portsmouth Harbor Score* **Crossing Condition** 2 **Tidal Restriction Evaluation** DS view toward structure US view above structure **Tidal Range Ratio** 5 **Crossing Ratio** 5 **Erosion Classification** 0

Tidal Restriction Overall Score	5
Tidal Aquatic Organism Passage	
Tidal Range Ratio	5
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,5
Inun. Risk to the Crossing Structure (US, DS)	3,3
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	5
Ecological	5
Combined	5



US view toward structure

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile Feat.

HC

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HC

CB

HC

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N/A

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<u>Hght.</u>

Dist.

The inlet to Eel Pond is controlled by a double 4 by 4-foot cement culvert running under Route 1A in Rye. The tides are prevented from entering by two sets of stop logs at the downstream end, which is perched above a beach facing the Atlantic Ocean. Stoplogs are removed seasonally to release freshwater and a limited flow of salt water enters the pond. Recognizing the current policy of maintaining a low-salinity pond and surrounding marsh, the overall combined score for the crossing is 5, highest priority for consideration of replacement.



Date of Last

Structure Characteristics: Structure Type: Round Culvert Structure Material: Concrete

Structure Material:	Concrete	Known	N/A
Tide Gate Present:	Yes	Replacement:	

Crossing Dimensions (ft):	<u>Upstre</u>	<u>am</u>	<u>Downstream</u>
Dimension A (width):	4		4
Dimension B ^{CB} (height):	4		4
Crossing Length (Invert to Invert):		175	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Concrete	Good	None	None
	Downstream	Concrete	Fair	Concrete	Fair	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	N/A	Fair

Structure Condition Comments:

Twin 48"""" c pipes. DS blocked by stop logs. US one side blocked by sheet. One side grated.

Ecological Assessme	nt:	<u>Upstream</u>	Downstream			
Natural Commun	ity Classification:	Coastal Salt Pond Marsh/Meadow	Sparsely Vegetated Intertidal Habitat			
Upstream Salt Marsh Migration Potential (acres): 43.90						
Flood Hazard & Eme	rgency Access					
Site Identified in	Hazard Mitigation Plan	i: Yes				
Emergency Acces	s or Evacuation Route:	Yes				
History of Flooding: floods regularaly under high/king tide condtions			ing tide condtions			

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 45 6/19/2018 Date: Observer(s) & 9:50:00 AM Organization: KL, ts (NHDES Coastal) Start Time: Municipality: RYE End Time: 11:30:00 AM **Tide Prediction** High Stream Name: N/A Low Road Name: Ocean Blvd 3:15 PM 10:48 AM Time: Elevation 8.5 -0.6 rossing Condition Evaluation Score* Tide Chart Location: Portsmouth Harbor

Crossing Condition Evaluation	30016
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	1
Erosion Classification	4
Tidal Restriction Overall Score	2
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	4
Salt Marsh Migration Potential (Wshed.)	4
Vegetation Evaluation	
Vegetation Comparison Matrix	4
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,2
Inun. Risk to the Crossing Structure (US, DS)	4,4
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	1
Ecological	4
Combined	2

DS view toward structure



US view toward structure

US view above structure



DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist. Hght. Feat. Sub. 0 3.9764 HC C/S 15 4.0864 СВ C/S 21 4.0964 HC C/S C/S 27 3.4664 HC HC C/S 32 2.9864 2.4364 Ρ C/S 35 C/S 39 2.6264 Т C/S 107 2.7864 Т Ρ C/S 117 1.9364 135 3.0864 HC C/S 153 3.4164 HC C/S C/S 163 3.3264 CB 170 3.2364 HC C/S

The southernmost upper reach of the salt marsh at Rye Harbor passes back under Route 1A into a brackish marsh surrounded by a residential neighborhood. A pair of 3foot round culverts recently replaced or fortified conducts the tide. Although erosion is evident upstream and downstream of the culverts, restriction appears minor and the overall combined score is 2: low priority.



Structure Characteristics:

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Plastic - Smooth	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	(5	6
Dimension B ^{CB} (height):		3	3
Crossing Length (Invert to Invert):		68	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Rip Rap	Good	Rip Rap	Good	None	None
	Downstream	Rip Rap	Good	Rip Rap	Good	None	None

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities	at Crossing	Structure Condition Overall	
	None None Structure Condition New culvert. Re Comments: New culvert. Re		Good	Overhead electric		Good	
			eplaced 2018				
Ecol	ogical Assessmen	t:	<u>Upstream</u>		Do	wnstream	
	Natural Communit	y Classification:	High Salt Mars	h	Hig	h Salt Marsh	

		-
Upstream Salt Marsh Migration Potenti	ial (acres):	9.37

Floo	Flood Hazard & Emergency Access					
	Site Identified in Hazard Mitigation Plan:	Yes				
	Emergency Access or Evacuation Route:	Yes				
	History of Flooding:	flooding in surrounding area prior to replacement				

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 46 5/25/2018 Date: Observer(s) & Start Time: 1:30:00 PM Organization: JB TS KL (NHDES Coastal) Municipality: RYE End Time: 4:30:00 AM Stream Name: N/A **Tide Prediction** High Low Road Name: Ocean Blvd 9:35 AM 2:47 AM Time: Elevation 8.7 0.3 Tide Chart Location: Portsmouth Harbor **Crossing Condition Evaluation** Score* **Crossing Condition** 4 **Tidal Restriction Evaluation** DS view toward structure US view above structure **Tidal Range Ratio** 1 **Crossing Ratio** 4 **Erosion Classification** 4 Tidal Restriction Overall Score 3 **Tidal Aquatic Organism Passage Tidal Range Ratio** 1

Salt Marsh Migration Evaluation Salt Marsh Migration Potential (Eval. Unit) 1 Salt Marsh Migration Potential (Wshed.) 5 **Vegetation Evaluation** Vegetation Comparison Matrix 3 **Infrastructure Risk Evaluation** Inundation Risk to the Roadway (US, DS) 2,2 Inun. Risk to the Crossing Structure (US, DS) 4,3 Adverse Impacts Evaluation** Inundation Risk to Low-Lying Development 1 **Overall Scores** Infrastructure 4 Ecological 3 Combined 3







* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist. Hght. Feat. Sub. 0 0.76 HC C/S 72 -0.09 Ρ C/S 112 0.76 HC S 174 0.26 G Т 236 0.26 G Т 244 1.06 GC С 0.26 278 Ρ G 0.96 304 HC G 331 0.19 Ρ G 361 0.86 HC G

One of two crossings of Rye Harbor Marsh as it passes across Route 1A from east to west, this branch conducts the tide to the Locke Road area through an old granite structure capped by concrete. The unfavorable crossing ratio and high erosion indicators lead to a moderate priority for replacement, with an overall combined score of 3. Tidal restriction here influences three more crossings upstream that limit flow to a significant marsh area.



Structure Characteristics:

Structure Type:	Bridge with Abutments	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	3	.9	4
Dimension B ^{CB} (height):	5.35		5.9
Crossing Length (Invert to Invert):		62	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Masonry	Good	Wingwalls	Medium
	Downstream	Concrete	Good	Masonry	Poor	Wingwalls	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	Ohe US	Poor
Structure Condi	tion			

Comments: 20 inch section of masonry collapse in structure

Ecol	ogical Assessment:	<u>Upstream</u>	<u>Downstream</u>
	Natural Community Classification:	High Salt Marsh	Low Salt Marsh
	Upstream Salt Marsh Migration Potent	ial (acres): 36.40	

Floo	Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan:	Yes			
	Emergency Access or Evacuation Route:	Yes			
	History of Flooding:	higher tides flood US Marsh. 6" harbor rd 1/4/18			

Creating	Cummany Cha	at		
Crossing	Summary Sne	et		
ire's Tidal Cr	ossing Assessment P 47	rotocol		
	Date:		5/31/20	018
NHDES Coastal)	Start Time:		7:30:00	AM
	End Time:		11:22:00	AM
	Tide Predict	on	High	Low
		Time:	1:47 PM	7:28 AM
		levation:	7.7	-0.1
<u>Score</u> *	Tide Chart L	ocation:	Portsmou	ith Harbor
1				
	DS view toward stru	ucture	US view	above structu
1		All and	State States	Alterna
2		all and the	a.a. 202	C. M. C. S. C. S.
4				Marca To
2				N
	- 1 - 1 - 1		and the second	1 miles
1	A THE	30070	1 march	
	1	$C = A_{1}$		
5				
5	US view toward stru	ucture	DS view	above structu
1	A PART DE MORE	the state with	toos ile on the	
-				
44		allen and		7 6
.,. 4 4		Te.	S. A.	
	Crossing ire's Tidal Cro NHDES Coastal) Score* 1 1 2 4 2 1 5 5 5 1 1 4,4 4,4 4,4	Crossing Summary She ire's Tidal Crossing Assessment P 47 NHDES Coastal) Date: Start Time: End Time: Tide Prediction End Time: Tide Chart Lo DS view toward struction 1 DS view toward struction 1 2 4 2 1 US view toward struction 5 US view toward struction 1 4,4 4,4 4,4 4,4	Summary Sheet ire's Tidal Crossing Assessment Protocol 47 HDES Coastal) End Time: End Time: Tide Prediction Time: Elevation: 1 DS view toward structure 1 2 4 2 1 DS view toward structure 1 5 5 5 5 1 4,4 4,4 4,4 4,4 4,4 4,4 4,4	Crossing Summary Sheet ire's Tidal Crossing Assessment Protocol 47 NHDES Coastal) End Time: 1 Score* 1 DS view toward structure 1 DS view toward structure 1 Score* 1 DS view toward structure 1 DS view toward structure 1 Score* 1 DS view toward structure 1 Score* 1 DS view toward structure DS view toward structure DS view toward structure 1 2 4 2 1 2 3 4 2 4 2 4 2 4 2 4 5 5 5 5 5 5

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

1

4

1

3

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Combined

Inundation Risk to Low-Lying Development



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	1.5901	US HC	S
15	1.0001	US HC	S
27	1.2901	US HC	S
80	0.7901	US P	S
85	0.6201	US I	S
87	-0.1099	US P	G
122	-0.9599	DS P	S
124	-0.3799	DS I	S
128	0.3001	DS P	S
158	1.2901	DS HC	S
173	0.9901	DS P	S
238	0.8701	DS HC	G

The main tidal creek that conducts the tides to all marsh areas west of Locke Road passes through a 5 by 9 foot box culvert. In 1996 the Town of Rye replaced a smaller culvert here and on the upstream drive (#48, private). however, the high water stain indicates the culvert capacity is regularly exceeded, signs of erosion were evident and the flooding risk to the structure and roadway is high. The overall score for this crossing is 3, indicating moderate priority for replacement.



Stru	cture Characteristics			
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	1997
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft): Up		ream	<u>Downstream</u>
Dimension A (width):	9		9
Dimension B ^{CB} (height):	4.	86	5.94
Crossing Length (Invert to Invert):		39	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Fair	None	None
	Downstream	Concrete	Good	Rip Rap	Good	Wingwalls	Medium

Scour Struct	in s ure	Scour Severity in Structure	Road Su	face Condition	Utilities	at Crossing	Structure Condition Overall
N	one	None		Fair	Overh	ead electric	Fair
Structu Cor	re Condition nments:	N/A					
Ecological A	ssessment:			Upstream		<u>[</u>	<u>)ownstream</u>
Natural	Natural Community Classification:			High Salt Marsh		н	igh Salt Marsh
Upstrea	m Salt Marsl	h Migration Poten	tial (acres)	: 35.71			
Flood Hazar	d & Emerge	ncy Access					
Site Ide	Site Identified in Hazard Mitigation Plan:		in:	Yes			
Emerger	Emergency Access or Evacuation Route:		e:	N/A			
History	History of Flooding:			prone during very	high tides w	hen marsh floo	ds.

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

Score*

	Crossing ID:	48
Observer(s) &		
Organization:	JB	TS (NHDES Coastal)
Municipality:	RYE	
Stream Name:	N/A	
Road Name:	DRIVEWAY	

Crossing Condition Evaluation

Overall Scores Infrastructure

Ecological

Combined

Date:		6/18/2018		
Start Time:	9:31:00 AM			
End Time:	10:30:00 AM			
Tide Prediction		High	Low	
Ті	me:	4:15 PM	9:49 AM	
Elevat	ion:	8.7	-1.0	
Tide Chart Locatio	on:	Portsmou	uth Harbor	

Crossing Condition	5	
Tidal Restriction Evaluation		
Tidal Range Ratio	5	
Crossing Ratio	4	
Erosion Classification	4	
Tidal Restriction Overall Score	4	
Tidal Aquatic Organism Passage		
Tidal Range Ratio	5	
Salt Marsh Migration Evaluation		
Salt Marsh Migration Potential (Eval. Unit)	5	
Salt Marsh Migration Potential (Wshed.)	5	
Vegetation Evaluation		
Vegetation Comparison Matrix	1	
Infrastructure Risk Evaluation		
Inundation Risk to the Roadway (US, DS)	4,4	
Inun. Risk to the Crossing Structure (US, DS)	3,4	
Adverse Impacts Evaluation**		
Inundation Risk to Low-Lying Development	1	

DS view toward structure



US view toward structure



US view above structure

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



5

5

5

Long. Profile

Dist. Hght. Feat. Sub. 0 1.6648 HC C/S 13 1.3548 Ρ S 19 1.8548 HC C/S 40 1.6848 CB C/S HC G 48 1.8348 1.2548 Р G 53 1.4848 G 62 Т 99 1.1148 G Т Р G 109 1.2748 140 1.3748 HC C/S C/S 163 1.5348 Р C/S 194 1.2748 HC S 224 1.3848 HC

The culvert under this private drive was replaced circa 1996, with a round 4-foot culvert, but the effective crosssectional area has been reduced by sediment fill or crushing. The observations of poor crossing condition, erosion, flood risk and high water stain all suggest this crossing severely restricts tidal flow and is in need of an upgrade. The overall combined score is 5, highest priority for replacement.



Stru	Structure Characteristics:						
	Structure Type:	Round Culvert	Date of Last				
	Structure Material:	Steel - Corrugated	Known	1995			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	ension A (width):		4.2
Dimension B ^{CB} (height): 3.		.3	3.4
Crossing Length (Invert to Ir	37		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Rip Rap	Poor	Rip Rap	Fair	Culvert	High
	Downstream	Rip Rap	Poor	Rip Rap	Fair	Culvert	High

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Culvert	High	Good	OHE	Poor

Structure Condition Comments:

US Severe wing wall scour, DS moderate wing wall scour

Ecological Assessment:		<u>Upstream</u>		<u>Downstream</u>		
	Natural Community Classification:	High Salt Marsh		High Salt Marsh		
Upstream Salt Marsh Migration Potential (a		al (acres): 24.28				
Floo	Flood Hazard & Emergency Access					

Site Identified in Hazard Mitigation Plan:	Yes
Emergency Access or Evacuation Route:	N/A
History of Flooding:	Prone during high tide events when DS marsh floods

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 49 Date: 8/11/2016 Observer(s) & Start Time: 12:30:00 PM Organization: Lucey, Burdick, Becker, Flanagan (TNC) Municipality: RYE End Time: 3:20:00 PM **Tide Prediction** High Low Stream Name: N/A Road Name: Harbor Rd 12:00 AM 12:27 PM Time: Elevation 0.0 0.0 **Crossing Condition Evaluation** Tide Chart Location: Hampton Harbor Score* **Crossing Condition** 2 **Tidal Restriction Evaluation** DS view toward structure US view above structure **Tidal Range Ratio** 1 **Crossing Ratio** 4 **Erosion Classification** 4 Tidal Restriction Overall Score С

Inda Restriction Overall Score	5
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,4
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	4
Ecological	3
Combined	3





DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-5.7043	HC	S
46	-5.8543	Ρ	S
114	-5.4843	HC	S
157	-9.1543	Ρ	S
229	-5.8043	GC	Shell
244	-6.9943	I	В
265	-6.7943	I	В
300	-6.3143	GC	В
326	-9.6843	Ρ	С
458	-8.1543	HC	С
490	-8.4543	СВ	С

The bridge on Harbor Road conducts all the tidal waters into Rye Harbor Marsh, which is extensive. It is wide (19 feet) and tall (13 feet) and does not appear to restrict the tide, though there is a large erosional pool on the upstream side. It has an overall combined priority of 3 (moderate) for replacement.



Structure Characteristics:

Structure Type:	Bridge with Abutments	Date of Last	
Structure Material:	Steel - Corrugated	Known	N/A
Tide Gate Present:	Yes	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):		8.8	18.9	
Dimension B ^{CB} (height):)	0	
Crossing Length (Invert to Ir	21			

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A			None	None
	Downstream	None	N/A			None	None

	Scour in Scour Severity in Structure Structure		Road	Surface Condition	Utilities	at Crossing	Structure Condition Overall		
				None		None			
	Structure Condition Underside of bridge deck spalling, road surface jo Comments: Underside of bridge deck spalling, road surface jo								
_			1			_			
ECO	ogical Assessmer	nt:		<u>Upstream</u>		Downstream			
	Natural Communi	ty Classification:		High Salt Marsh					
	Upstream Salt Ma	arsh Migration Poten	tial (acr	es): 61.01					
Floc	od Hazard & Emer	gency Access							
	Site Identified in I	Hazard Mitigation Pla	n:	Yes					
	Emergency Access	s or Evacuation Rout	e:	N/A					
	History of Floodin	g:		6" over road on 1/4/18					

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 50 8/2/2018 Date: Observer(s) & Start Time: 8:50:00 AM Organization: JB TS (NHDES Coastal) Municipality: RYE End Time: 10:35:00 AM **Tide Prediction** High Stream Name: N/A Low Road Name: Ocean Blvd 3:39 PM 9:38 AM Time: Elevation 7.8 0.4 **Crossing Condition Evaluation** Score* **Tide Chart Location:** Portsmouth Harbor **Crossing Condition** 1 **Tidal Restriction Evaluation** DS view toward structure US view above structure **Tidal Range Ratio** 1 **Crossing Ratio** 3 **Erosion Classification** 4

Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,2
Inun. Risk to the Crossing Structure (US, DS]	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	2
Overall Scores	
Infrastructure	3
Ecological	1
Combined	3





DS view above structure



Long. Profile

Feat.

HC

СВ

Ρ

HC

Ρ

CB

Ρ

Т

Т

GC

Р

HC

Ρ

СВ

HC

Sub.

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В

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G

<u>Hght.</u>

Dist.

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



This crossing is a large bridge on Route 1A over a manmade inlet that supplies all of Awcomin Marsh with tides. The original inlet along with large portions of the marsh was filled in 1941 and 1962 when Rye Harbor was dredged. In the 1990s and 2000s several projects were undertaken to remove dredge spoil and restore hydrology to the marsh, which had been overrun with common reed. The overall combined score is 3, indicating moderate priority for replacement because of erosion on the upstream side. Information on the restoration actions can be found at:

https://www.des.nh.gov/organization/divisions/water/w mb/coastal/restoration/saltmarsh_restoration.htm_



Structure Characteristics:

Structure Type:	Bridge with Side Slopes and Abutments	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	8	8	88
Dimension B ^{CB} (height): 14		.05	12.9
Crossing Length (Invert to Invert):		48	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Good	None	None
	Downstream	None	N/A	Concrete	Good	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	OHE US	Good
Structure Condition Comments: N/A				

Ecological Assessment:			<u>Upstream</u>	<u>Downstream</u>
	Natural Community Classification:		High Salt Marsh	Sparsely Vegetated Intertidal Habitat
	Upstream Salt Marsh Migration Potent	ial (acres):	38.71	
Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan	n: Yo	es	
	Emorgoncy Accors or Evacuation Pouto	• v	20	

Emergency Access or Evacuation Route:	Yes
History of Flooding:	Flooding in harbour and some in US marsh

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol Crossing ID: Date: 8/22/2018 Observer(s) & Organization: Date: 8/22/2018 Municipality: RYE End Time: 5:05:00 PM Stream Name: N/A Tide Prediction High Low

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	2
Erosion Classification	1
Tidal Restriction Overall Score	1
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,2
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	3
Ecological	1
Combined	3

Road Name: Ocean Blvd

	Start Time:	Start Time: 3:00:00 PM End Time: 5:05:00 PM			
	End Time:				
	Tide Prediction	High	Low		
	Time	9:53 PM	3:32 PM		
	Elevation	8.0	1.3		
	Tide Chart Location:	Portsmou	ith Harbor		
DS vie	w toward structure	US view	v above structure		





US view toward structure

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-0.0767	HC	S
57	-0.1967	СВ	S
125	-0.4467	HC	S
147	-0.7167	Ρ	S
168	-0.4567	HC	S
214	-1.3567	I	S
256	-0.7467	I	В
298	-1.5967	Р	С
390	-0.3467	HC	G
760	-2.7567	HC	G

N/A



Stru	Structure Characteristics:			
	Structure Type:	Bridge with Abutments	Date of Last	
	Structure Material:	Stone	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	4	0	40
Dimension B ^{CB} (height):	1	0	9.6
Crossing Length (Invert to Ir	42		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	None	N/A	None	N/A	None	None

	Scour in Structure	Scour Severity in Structure	Road Surf	Surface Condition Utilities a		at Crossing	Structure Condition Overall
	Abutment	Low	(Good of		OHE RR	Good
	Structure Condition Comments: N/A						
Ecol	ogical Assessmen	it:		<u>Upstream</u>		Dov	<u>wnstream</u>
	Natural Communi	ty Classification:		High Salt Marsh		Low Salt Marsh	
	Upstream Salt Ma	rsh Migration Potent	ial (acres):	166.05			
Floo	d Hazard & Emer	gency Access					
	Site Identified in Hazard Mitigation Plan:			No			
	Emergency Access or Evacuation Route: Yes			'es			
	History of Floodin	g:	unknown				

Tidal	Crossing	Summary Sheet			
New Hamps	hire's Tidal C	rossing Assessment Prot	ocol		
Crossing ID:		52		T	
Observer(s) &		Date:		6/15/2	018
Organization: TS, JB (NHD	DES Coastal)	Start Time:		6:34:00	AM
Municipality: RYE		End Time:		7:28:00	AM
Stream Name: N/A		Tide Prediction		High	Low
Road Name: Brackett Rd		1	Time:	1:25 PM	7:07 AM
		Eleva	tion:	8.7	-1.4
Crossing Condition Evaluation	<u>Score</u> *	Tide Chart Locati	on:	Portsmou	ith Harbor
Crossing Condition	1				
Tidal Restriction Evaluation		DS view toward structu	ire	US view	<i>i</i> above structure
Tidal Range Ratio	1		Y	Vie Ist	Stand B
Crossing Ratio	1			and the second	A standard and a standard and a standard a st
Erosion Classification	4		A A A A A A A A A A A A A A A A A A A	Carlos Co	
Tidal Restriction Overall Score	2		C. S. A.		C C CALLARS
Tidal Aquatic Organism Passage				3 30 M S	计 一种问题
Tidal Range Ratio	1		A CONTRACT		
Salt Marsh Migration Evaluation			44.6	a series	
Salt Marsh Migration Potential (Eval. Unit)	4				
Salt Marsh Migration Potential (Wshed.)	4	US view toward structu	ire	DS view	v above structure
Vegetation Evaluation			s. I	the set of	
Vegetation Comparison Matrix	3	and a state of the		S Part	The second se
Infrastructure Risk Evaluation				ALL TO T	- A-

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

4,4

4,4

5

4

3

3

Inundation Risk to the Roadway (US, DS)

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Combined

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	1.4019	HC	C/S
36	1.8119	СВ	C/S
65	1.7119	HC	S
71	1.6519	Р	S
111	2.4119	I	G
147	2.2119	I	S
152	2.4619	GC	С
173	1.6619	Ρ	С
184	1.9619	HC	G
217	1.6119	Ρ	С
229	1.7619	HC	С

N/A



Stru	cture Characteristics	:		
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	(5	6
Dimension B ^{CB} (height):	3		3
Crossing Length (Invert to Ir	36		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Good	Wingwalls	Low
	Downstream	Concrete	Good	Rip Rap	Good	Wingwalls	Low

	Scour in Structure	Scour Severity in Structure	Road S	Surface Condition	ion Utilities at Crossin		Structure Condition Overall	
	None	None		Good	Overhead electric		Good	
	Structure Condition Comments:	N/A						
Ecol	ogical Assessmen	t:		<u>Upstream</u>		<u>Do</u>	<u>Downstream</u>	
	Natural Communit	y Classification:		High Salt Marsh		High	n Salt Marsh	
	Upstream Salt Ma	rsh Migration Poten	tial (acre	es): 5.04				
Floo	d Hazard & Emerg	gency Access						
	Site Identified in H	azard Mitigation Pla	in:	Yes				
	Emergency Access or Evacuation Route:			N/A				
	History of Flooding: Road sometimes flooded from tidal influence							

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 53 6/6/2018 Date: Observer(s) & Start Time: 10:28:00 AM Organization: TS, NY TNC (NHDES Coastal) Municipality: RYE End Time: 1:31:00 PM **Tide Prediction** High Low Stream Name: N/A Road Name: Wallis Rd 6:05 PM 11:38 AM Time: Elevation 7.3 0.9 **Crossing Condition Evaluation** Tide Chart Location: Portsmouth Harbor Score* **Crossing Condition** 1 DS view toward structure

US view toward structure

1 2 5 3
1 2 5 3
2 5 3
5 3
3
1
0
5
1
4,5
4,3
1
5
1
3

US view above structure



DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

<u>Hght.</u> Dist. Feat. Sub. 0 3.8302 HC C/S 37 2.2402 Ρ C/S 59 3.4802 HC C/S 94 2.0302 Ρ C/S GC С 125 3.2002 145 2.1902 С Т 1.6902 G 180 L Р 187 2.2602 G C/S 198 2.7702 HC Ρ C/S 243 2.0602 C/S 273 2.0702 HC C/S 1.5202 299 Ρ

The Parsons Creek Marsh has an inlet under Route 1A and the north branch of the main tidal creek passes under Wallis Road where a 4 by 10-foot box culvert was installed by the Town of Rye in 1998 to relieve the previous tidal restriction. This eastern crossing (western crossing is #54) conducts minor amounts of tidal flow and is partially filled with sediment but becomes important for higher and storm tides. It has an overall combined score replacement priority of moderate: 3, mostly due to high flooding risk. Information on restoration can be found at:

https://www.des.nh.gov/organization/divisions/water/w mb/coastal/restoration/saltmarsh_restoration.htm



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	9.	17	9.91
Dimension B ^{CB} (height):	3.14		3.43
Crossing Length (Invert to Ir	35		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Good	None	None
	Downstream	Concrete	Good	Rip Rap	Good	None	None

	Scour in Structure	Scour Severity in Structure	Road Su	face Condition	Utilities	at Crossing	Structure Condition Overall
	None None			Good		werlines	Good
	Structure Conditi Comments:	on N/A					
Ecol	ogical Assessmer	nt:		<u>Upstream</u>		D	<u>ownstream</u>
	Natural Communi	ity Classification:		High Salt Marsh		Hig	gh Salt Marsh
	Upstream Salt Ma	arsh Migration Potent	tial (acres)	: 128.43			
Floo	d Hazard & Emer	gency Access					
	Site Identified in I	Hazard Mitigation Pla	in:	Yes			
	Emergency Access	s or Evacuation Route	e:	Yes			
	History of Floodin	ig:		king tide causes pr	olonged hig	hwater. flood 1/	4/18

	Tidal	Crossing S	Summa	rv Sheet				
	New Hampsl	hire's Tidal Cro	ssing Asses	sment Protoco	1			
	Crossing ID:		54					
Observer(s) &				Date:		6/6/2018		
Organization:	JB PS SM (NH	DES Coastal)		Start Time:	10):30:00 AM		
Municipality: RYE				End Time:	1	:36:00 AM		
Stream Name: N/A				Tide Prediction	High		Low	
Road Name: Wallis R	₹d			Ti	me: 12:00 A	M	11:38 AM	
Crossing Condition Evalua	ation	Score*		Elevati Tide Chart Locatio	on: 7.3 n: Po	rtsmouth Ha	0.9 arbor	_
Crossing Condition		1						
Tidal Restriction Evaluation	on	-	DS view	toward structur	e U9	view abo	ove stru	rture
Tidal Range Ratio		1	Donew	toward structur		A the way		
Crossing Patio		1						ALL CALL
		1		0		- Andrews	and the second s	
	~	2			and Carl		1 the	Chan I.
Tidal Restriction Overall	Score	1		per le ser la ser la ser				the second
Tidal Aquatic Organism P	assage	4	and the second			Alterna St.	216	
Tidal Range Ratio		1					0 0	and a constraints
Salt Marsh Migration Eva	luation						0	Concerning Cond
Salt Marsh Migration Po	tential (Eval. Unit)	5						
Salt Marsh Migration Po	tential (Wshed.)	5	US view	v toward structur	e DS	view abo	ove strue	cture
Vegetation Evaluation			10 ALS					
Vegetation Comparison	Matrix	1	The state	March 1	and the second se			
Infrastructure Risk Evalua	ation		10	-	2 Martin	100	and the second second	and the
Inundation Risk to the R	oadway (US, DS)	4,4	Star -	- Harrison		-		00000
Inun. Risk to the Crossin	g Structure (US, DS)	3,4					HERE'S	
Adverse Impacts Evaluati	on**			17		I A SA ANA ANA ANA ANA ANA ANA ANA ANA AN	The Desite of the	
Inundation Risk to Low-L	ving Development	1		a staller	Manager.	The states		
Overall Scores	, 6							
Infrastructure		4						
Fcological		1						
Combined		3				Long	Profile	
		5			Dict	Long.	East	Sub
* Scoring system ranges from 1 to 5 **Adverse Impacts Evaluation score	5, where 1 = lowest replacement es range from 1 to 5, where 1 = h	priority and 5 = highest r high risk and 5 = low risk	eplacement priori	ty	<u>Dist.</u>	<u>ngni.</u>		<u>sub.</u>
						0.9299	HC	5
Crossing	Cross Section and	Stream Longi	tudinal Pro	ofile	28	-0.7701	P	S
8					50	0.1299	HC	G
7				Road Profile*	74	-0.4901	Р	S
6				HWI Wrack	102	-0.4701	I	C
5				HW/I Stain	126	-0.8201	I	S
8 4				III Stan	131	-1.5701	Р	S
Q 3				Avg. Marsh P	lain 206	0.2299	HC	S
				Low Tide	256	0.6299	HC	S
			_	Stream Profil	<u>م</u>			
₽ 0				• Stream From				
-1				*The road profile is centered over the inve	rts			
-2				for graphical purposes	; it			
-5 0 50	100 150	200 250	300	reflect its true				
Distan	ce from Upstream Hydra	ulic Control (feet)	500	configuration along th longitudinal profile.	e			
Distant								

The Parsons Creek Marsh has an inlet under Route 1A and the north branch of the main tidal creek passes under Wallis Road where two 6 by 12-foot box culverts were installed by the Town of Rye in 1998 to relieve the previous tidal restriction. This is the western crossing (eastern crossing is #53) that conducts most of the tidal flow, but it shows little evidence of erosion. It has an overall combined score of 3, indicating moderate replacement priority, only because the road is vulnerable to inundation.Information on restoration can be found at:

https://www.des.nh.gov/organization/divisions/water/wmb/ coastal/restoration/saltmarsh_restoration.htm



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	1998
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	<u>ream</u>	<u>Downstream</u>
Dimension A (width):	2	4	24
Dimension B ^{CB} (height):	6	5	6
Crossing Length (Invert to Invert	:):	23	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Good	None	None
	Downstream	Concrete	Good	Rip Rap	Good	None	None

	Scour Severity in		Decid Curf			at Casasia a	Structure Condition		
	Scour in Structure	Structure	Road Surf	ace Condition	Utilities	at Crossing	Overall		
	None None			Fair		OHE	Good		
	Structure Condition Twin 12 ft box culverts assessed as one structure Comments: Twin 12 ft box culverts assessed as one structure								
Ecol	ogical Assessment:			<u>Upstream</u>		Dov	<u>vnstream</u>		
	Natural Community Cl	assification:		High Salt Mars	h	High	Salt Marsh		
	Upstream Salt Marsh I	Migration Potential (a	acres):	: 128.43					
Floo	d Hazard & Emergen	cy Access							
	Site Identified in Hazar	Y	Yes						
	Emergency Access or E	vacuation Route:	Y	Yes					
	History of Flooding:			ing tide causes	prolonged hig	1/4/	/18		

	Tidal	Crossing	Summa	ry Shoot		
	Naw Hampsh	ira's Tidal (s Summa	ry Sileet		
	Crossing ID:		55	ssment r rotocor		
Observer(s) &				Date:	6/11/20	018
Organization:	JB TS (NHDE	S Coastal)		Start Time:	2:04:00	PM
Municipality:	RYE			End Time:	4:07:00	PM
Stream Name:	N/A			Tide Prediction	High	Low
Road Name:	Ocean Blvd			Time:	10:11 PM	3:49 PM
L				Elevation:	9.1	0.3
Crossing Condition I	Evaluation	Score*		Tide Chart Location:	Portsmou	ith Harbor
Crossing Condition	ı	1				
Tidal Restriction Eva	aluation		DS view t	oward structure	US view	v above structur
Tidal Range Ratio		1		at the	1. As	the state
Crossing Ratio		3			A state of the sta	
Erosion Classificati	ion	3		the second second	Martin C	Sector Sector Sector
Tidal Restriction O	verall Score	2		A CONTRACT	Shi le	and the state of the state of the
Tidal Aquatic Organ	ism Passage			A PARAMA	and the second	Constant Constant
Tidal Range Ratio	Ū	1	The second			No.
Salt Marsh Migratio	on Evaluation	-	ALLE .	P PAR AN	jest and	The All C
Salt Marsh Migrati	ion Potential (Eval 11nit)	1	0.044			
Salt March Migrati	ion Potential (Webod)	1		oward structure		
Salt Marsh Migrati	ion Potential (Wshed.)	1	US view	oward structure	DS view	above structur

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

1

3,2

3,4

2

3

1

3

Vegetation Evaluation

Overall Scores Infrastructure

Ecological

Combined

Vegetation Comparison Matrix

Inundation Risk to the Roadway (US, DS)

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development

Infrastructure Risk Evaluation

Adverse Impacts Evaluation**



	Long.	Profile	
Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	1.88	HC	C/S
24	1.93	HC	C/S
40	1.63	СВ	C/S
46	1	Р	C/S
51	1.41	I	C/S
129	1.88	HC	C/S
132	1.93	HC	C/S
146	1.63	СВ	C/S
268	1	Р	C/S
441	1.41	I	C/S

A small portion of the Parsons Creek Marsh is crossed again by Route 1A and extends eastward up to the private residences on the barrier beach. In 1999 a 3 foot round corrugated metal pipe was replaced with a 3 by 6foot concrete box culvert by the Town of Rye. The current restriction, if any, appears to be minor and the overall combined score is 3, moderate priority for replacement. Information on the 1999 restoration can be found at:

https://www.des.nh.gov/organization/divisions/water/w mb/coastal/restoration/saltmarsh_restoration.htm



Structure Characteristics:						
	Structure Type:	Box Culvert	Date of Last			
	Structure Material:	Concrete	Known	1999		
	Tide Gate Present:	No	Replacement:			

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	(5	6
Dimension B ^{CB} (height):	3.1		3.1
Crossing Length (Invert to Ir	vert):	78	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	None	N/A	None	None
	Downstream	Concrete	Good	Rip Rap	Good	None	None

	Scour inScour Severity inStructureStructure		Road Sur	Road Surface Condition Utilities Good		at Crossing	Structure Condition Overall		
	None	None None				None	Good		
	Structure Condition Comments: N/A								
Ecol	ogical Assessmen	t:		<u>Upstream</u>		<u>D</u>	<u>Downstream</u>		
	Natural Community Classification:			High Salt Marsh		Hi	High Salt Marsh		
	Upstream Salt Mar	rsh Migration Poten	tial (acres)	: 0.44					
Floo	d Hazard & Emer	gency Access							
	Site Identified in Hazard Mitigation Plan:			No					
	Emergency Access or Evacuation Route:			Yes					
	History of Flooding:			Flooding along this portion of 1A					

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol **Crossing ID:** 56 Date: 6/8/2018 Observer(s) & TS, JB (NHDES Coastal) Start Time: 12:01:00 PM Organization: Municipality: RYE End Time: 1:48:00 PM **Tide Prediction** High Low Stream Name: N/A Road Name: Marsh Rd 7:44 PM 1:17 AM Time: Elevation 7.8 1.4 Tide Chart Location: Portsmouth Harbor **Crossing Condition Evaluation** Score*

Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	3
Erosion Classification	4
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	3
Salt Marsh Migration Potential (Wshed.)	3
Vegetation Evaluation	
Vegetation Comparison Matrix	3
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	4,4
Inun. Risk to the Crossing Structure (US, DS]	4,4
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	2
Overall Scores	
Infrastructure	4
Ecological	3
Combined	3

DS view toward structure

US view toward structure





DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	0.8262	HC	C/S
27	0.6762	СВ	C/S
41	0.8962	Ρ	C/S
54	1.0762	I	G
93	0.9062	I	G
103	0.1262	Ρ	C/S
116	0.0562	CB	C/S
158 -0.1738		СВ	C/S

N/A



Structure Characteristics:					
	Structure Type:	Box Culvert	Date of Last		
	Structure Material:	Concrete	Known	N/A	
	Tide Gate Present:	No	Replacement:		

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	5		5	
Dimension B ^{CB} (height):	3		3	
Crossing Length (Invert to In	nvert):	39		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Dry Fit Stone	Good	Wingwalls	Low
	Downstream	Concrete	Good	Rip Rap	Good	None	None

	Scour in Structure	Scour in StructureScour Severity in StructureNoneNone		Road Surface Condition Utilities Good Overh		at Crossing	Structure Condition Overall	
1	None					lead electric	Good	
	Structure Condition Comments: N/A							
Ecol	cological Assessment:			<u>Upstream</u>		<u>Downstream</u>		
1	Natural Communi		High Salt Marsh		High Salt Marsh			
I	Upstream Salt Marsh Migration Potential (a			3.73				
Floo	d Hazard & Emer	gency Access						
	Site Identified in Hazard Mitigation Plan:			No				
I	Emergency Access or Evacuation Route:			Yes				
I	History of Flooding:			unknown				
Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:		57
Observer(s) &			
Organization:	JB	TS (NHDES Coastal)	
Municipality:	RYE		
Stream Name:	N/A		
Road Name:	Parsons Rd		

Date:	6/7/2018				
Start Time:	11:30:00 AM				
End Time:	1:26:00 PM				
Tide Prediction		High	Low		
ті	ime:	6:54 PM	12:26 PM		
Elevat	ion:	7.5	0.9		

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	2
Tidal Restriction Evaluation	
Tidal Range Ratio	5
Crossing Ratio	5
Erosion Classification	2
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	5
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	5
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	4,3
Inun. Risk to the Crossing Structure (US, DS)	4,3
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	4
Ecological	5
Combined	5

DS v	iew to	ward s	tructu	re
		A DE AS	No and A	
Wird	and the second			MPC .
with the second			and the	
		TEL PH		



US view above structure

US view toward structure DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	3.108	CB	C/S
10	1.148	Р	C/S
15	4.058	I	C/S
56	3.678	I	С
58	3.108	GC	С
64	1.958	Р	G
73	2.978	HC	C/S
86	2.608	Р	C/S
96	2.718	HC	S
106	2.458	СВ	S

The upper section of Parsons Creek Marsh drains from a freshwater impoundment caused by an undersized crossing (1-foot diameter pipe) running under Parsons Road in Rye. Although the crossing condition is good, the undersized pipe results in a poor crossing ratio, restricted tidal range, poor organism passage and an impediment to salt marsh migration. The result is a fresh to brackish pond rather than a continuation of the salt marsh that is found below Parsons Road. The overall combined score is a 5, indicating highest priority for replacement.



Stru	cture Characteristics	:		
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Plastic - Corrugated	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):		L	1
Dimension B ^{CB} (height):		L	1
Crossing Length (Invert to Ir	41		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity	
	Upstream	None	N/A	None	N/A	None	None	
	Downstream	None	N/A	Rip Rap	Fair	Culvert	Medium	

	Scour in Structure	Scour Severity in Structure	Road S	urface Condition	Utilities	at Crossing	Structure Condition Overall	
	None	None		Good	OHE. Utility box DS RR		Fair	
	Structure Conditi Comments:	i on Scour at wingw	alls					
			1					
Eco	logical Assessmer	ıt:		<u>Upstream</u>			<u>Downstream</u>	
	Natural Communi	ity Classification:		Brackish Marsh Hig			gh Salt Marsh	
	Upstream Salt Ma	arsh Migration Poten	tial (acre	es): 100.68				
Floc	od Hazard & Emei	rgency Access						
	Site Identified in Hazard Mitigation Plan: No							
	Emergency Acces	s or Evacuation Route	Yes					
	History of Floodir	ıg:		unknown				

Tidal	Crossing	g Summa	ary Sheet				
New Hampsh	ire's Tidal C	rossing Ass	essment Protocol				
Crossing ID:		59					
Observer(s) &			Date:	7,	/5/2018		
Organization: JB TS (NHDE	S Coastal)		Start Time:	10:	40:00 AM		
Municipality: RYE			End Time:	12:	30:00 PM		
Stream Name: Berrys Brook			Tide Prediction	High		Low	
Road Name: Pioneer Rd			Time:	5:21 PN	1 1	L0:56 AM	
Crossing Condition Evaluation	Score*		Elevation: Tide Chart Location:	7.6 Port	smouth Ha	0.6 arbor	_
Crossing Condition	1						
Fidal Restriction Evaluation		DS view	toward structure	US	view abo	ove stru	cture
Tidal Range Ratio	1						
Crossing Ratio	1						
Erosion Classification	3	THE OWNER WHEN		the sure			And and a sub-
Tidal Restriction Overall Score	2			a series of			
۲idal Aquatic Organism Passage							
Tidal Range Ratio	1						
Salt Marsh Migration Evaluation							14
Salt Marsh Migration Potential (Eval. Unit)	3						
Salt Marsh Migration Potential (Wshed.)	5	US view	toward structure	DS	view abo	ove stru	cture
/egetation Evaluation							
Vegetation Comparison Matrix	1						
nfrastructure Risk Evaluation					The second second		
Inundation Risk to the Roadway (US, DS)	4,4		1 Hard Manufactor				
Inun. Risk to the Crossing Structure (US, DS)	1,1			and a second	- Martin		
Adverse Impacts Evaluation**				1	alay a later	Washington	
Inundation Risk to Low-Lying Development	4		and the state	18	F ra		1
Overall Scores							
Infrastructure	4						
Ecological	1						
Combined	3				Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replacement	nt priority and 5 = h	ighest replacement	priority	Dist.	<u>Hght.</u>	Feat.	<u>Su</u>
**Adverse Impacts Evaluation scores range from 1 to 5, where 1 =	high risk and 5 = 10	ow risk		0	-6.8592	HC	S
Crossing Cross Section and	Stroom Lor	aitudinal D	Profile	241	-6.5192	HC	S
		BILUUIIIAIP	TOTILE	417	-9.8492	I	S
		-	Road Profile*	460	-8.8392	I	G

HC

Ρ

HC

СВ

-8.1292

-10.479

-7.1492

-9.8492

С

G

С

С



N/A



Stru	cture Characteristics	:		
	Structure Type:	Bridge with Abutments	Date of Last	
	Structure Material:	Wood	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	153		153	
Dimension B ^{CB} (height):	19	.02	17.84	
Crossing Length (Invert to Ir	43			

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	None	N/A	None	N/A	None	None

	Scour in Structure	Scour Severity in Structure	Road Surface Condit	ion	Utilities at Crossing	Structure Condition Overall		
	None	None	Good		OHE DS	Good		
	Structure Condition Wood ceiling. Concrete abutments. Metal pillars.							
Ecol	ogical Assessmei	nt:	Upstre	Upstream Downstrea		<u>wnstream</u>		
	Natural Community Classification:		High Salt	High Salt Marsh High Salt Marsh		n Salt Marsh		
	Upstream Salt Marsh Migration Potential (acres)		tial (acres): 153.86					

Floo	d Hazard & Emergency Access	
	Site Identified in Hazard Mitigation Plan:	No
	Emergency Access or Evacuation Route:	Yes
	History of Flooding:	No

	Tidal	Crossing	g Summa	ary Sheet			
	New Hampsh	ire's Tidal C	rossing Ass	essment Protoco	ol		
	Crossing ID:		60				
Observer(s) &				Date:	6/1	12/2018	
Organization:	TS, JB (NHDE	S Coastal)		Start Time:	3:3	0:00 PM	
Municipality:	RYE			End Time:	5:1	2:00 PM	
Stream Name:	Berrys Brook			Tide Prediction	High	Low	
Road Name:	Brackett Rd			Tim	e: 12:00 AM	12:00 AM	
				Elevatio	n: 0.0	0.0	
Crossing Condition	Evaluation	Score*		Tide Chart Location:	Ports	mouth Harbor	
Crossing Condition	n	1					
Tidal Restriction Ev	aluation		DS view	toward structure	US v	view above structu	re
Tidal Range Ratio		1		199 N	Photo Sector	C. Althered	4
Crossing Ratio		4	CONTRACT OF				5.0
Erosion Classificat	ion	3					
Tidal Restriction C	Verall Score	3	and the				- 4
Tidal Aquatic Organ	nism Passage		time to				A New
Tidal Range Ratio		1		Same and the	- Frank		1
Salt Marsh Migratio	on Evaluation						
Salt Marsh Migrat	ion Potential (Eval. Unit)	5					

5

1

2,2

1,1

5

1

1

2

US view toward structure





* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Salt Marsh Migration Potential (Wshed.)

Inundation Risk to the Roadway (US, DS)

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development

Vegetation Comparison Matrix

Infrastructure Risk Evaluation

Adverse Impacts Evaluation**

Vegetation Evaluation

Overall Scores Infrastructure

Ecological

Combined



Long. Profile

Hght. Dist. Feat. Sub. 0 -1.6597 HC C/S 206 -2.2297 Ρ G 262 0.4703 СВ С 273 0.6703 GC В 303 -1.1997 С Т -0.7497 G 334 Т -0.6597 GC G 349 382 -1.9697 Р G HC G 400 -1.5497 Ρ 435 -2.2197 G G 634 -2.8297 HC

N/A



Structure Characteristics:					
	Structure Type:	Bridge with Abutments	Date of Last		
	Structure Material:	Concrete	Known	N/A	
	Tide Gate Present:	No	Replacement:		

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	31	.35	31.5
Dimension B ^{CB} (height):	11	5	11.75
Crossing Length (Invert to Ir	36		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Good	None	None
	Downstream	None	N/A	Rip Rap	Good	None	None

	Scour in Structure	Scour Severity in Structure	Road Su	rface Condition	Utilities	at Crossing	Structure Condition Overall
	None	None		Good	Overh	nead electric	Good
	Structure Condition Comments:	n N/A					
			-				
Есо	logical Assessmen	t:		<u>Upstream</u>		<u>D</u>	<u>ownstream</u>
	Natural Communit	ty Classification:		High Salt Marsh		High Salt Marsh	
	Upstream Salt Ma	rsh Migration Poten	tial (acres)	: 21.97			
Floc	od Hazard & Emer	gency Access					
	Site Identified in Hazard Mitigation Plan:			Yes			
	Emergency Access or Evacuation Route:			Yes			
	History of Flooding:			Flooding on Brackett Rd and 1A			

Tidal	Crossing	Summary Sheet			
New Hamps	hire's Tidal (rossina Assessment Prot	ocol		
Crossing ID:	ini e o riuur e	61	0001	Т	
Observer(s) &		Date:		6/1/20)18
Organization: TS, JB (NHD	ES Coastal)	Start Time:		8:00:00	AM
Municipality: NEW CASTLE		End Time:		9:31:00	AM
Stream Name: N/A		Tide Prediction		High	Low
Road Name: Wild Rose Ln		·	Time:	2:26 PM	8:07 AM
		Eleva	ation:	7.6	1.2
Crossing Condition Evaluation	Score*	Tide Chart Locat	ion:	Portsmou	uth Harbor
Crossing Condition	2				
Tidal Restriction Evaluation		DS view toward structu	ure	US view	v above structure
Tidal Range Ratio	1				
Crossing Ratio	5	Var Carlos I	<i>₩</i> -#	VIII A LA	
Erosion Classification	4			a fai date	
Tidal Restriction Overall Score	3		\mathcal{A}		
Tidal Aquatic Organism Passage					h and have
Tidal Range Ratio	1	X Z ala		NBWA	
Salt Marsh Migration Evaluation			42		山瓜茶盒
Salt Marsh Migration Potential (Eval. Unit)	5				
Salt Marsh Migration Potential (Wshed.)	5	US view toward structu	ıre	DS view	v above structure
Vegetation Evaluation					
Vegetation Comparison Matrix	0		那大	And .	
Infrastructure Risk Evaluation	-				
Inundation Risk to the Roadway (US_DS)	3.3				
Inun, Risk to the Crossing Structure (US, DS)	5.5			A Sector	

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

5

2

4

3

Long. Profile

Feat.

US HC

US HC

US P

USI

DS I

DS P

DS HC

DS HC

Sub.

C/S C/S

C/S

C/S

C/S

C/S

C/S

C/S

Hght.

2.9701

3.3201

2.9701

1.8201

0.5701

1.8201

2.7201

2.8701

Dist.

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Combined

Inundation Risk to Low-Lying Development



A small back-barrier wetland landward of Fort Stark has a central ditch that is crossed by Wild Rose Lane and has a 3-foot round culvert. The wetland appears fresh to brackish, with exotic common reed and cattail, and is cut off from tidal flooding by gravel barrier beaches to the east and south. The crossing is an undersized culvert that is continually and entirely under water. It has an overall combined score of 3, indicating moderate priority for replacement.



Structure C	haracteristics:
-------------	-----------------

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>	<u>Downstream</u>
Dimension A (width):	3	3
Dimension B ^{CB} (height):	3	3
Crossing Length (Invert to Ir	vert): 32	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Masonry	Fair	Masonry	Fair	None	None
	Downstream	Masonry	Fair	Masonry	Fair	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Fair	Overhead electric	Fair
	1			

Structure Condition Comments:

Structure completely flooded. Difficult to get structure measurements

Eco	logical Assessment:	Upstream	<u>Downstream</u>
	Natural Community Classification:	Invasive Dominant	Invasive Dominant
	Upstream Salt Marsh Migration Potent	ial (acres): 13.66	
Floc	od Hazard & Emergency Access		
	Site Identified in Hazard Mitigation Pla	n: No	
	Emergency Access or Evacuation Route	: N/A	
History of Flooding:		unknown	
		+	

	Tidal Crossing Su	Immary Sheet			
	New Hampshire's Tidal Cross	sina Assessment Protocol			
Crossir	ng ID:	63			
Observer(s) &	5	Date:	6/5,	/2018	
Organization:	JB TS (NHDES Coastal)	Start Time:	9:26:	00 AM	
Municipality: NEW CASTLE		End Time:	10:17	:00 AM	
Stream Name: N/A		Tide Prediction	High	Low	
Road Name: Pit Ln		Time:	5:18 PM	10:52 AI	М
		Elevation:	7.2	1.6	
Crossing Condition Evaluation	<u>Score</u> *	Tide Chart Location:	Portsm	nouth Harbor	
Crossing Condition	4				
Tidal Restriction Evaluation	_	DS view toward structure	US vi	ew above str	uctur
Tidal Range Ratio	3	公报人 竹/ 小田		APT SE	No.
Crossing Ratio	3			ANV/A	NI.
Erosion Classification	3			L BERK MAR	112
Tidal Restriction Overall Score	3				Δ / c
Tidal Aquatic Organism Passage	e 📲				
Tidal Range Ratio	3			N. AND NO.	
Salt Marsh Migration Evaluatio	n E			A Carlos	The second
Salt Marsh Migration Potentia	l (Eval. Unit) 3				
Salt Marsh Migration Potentia	l (Wshed.) 3	US view toward structure	DS vie	ew above str	uctur
Vegetation Evaluation	· · ·				
Vegetation Comparison Matrix	x 0	《公下》 (1988年)			
Infrastructure Risk Evaluation			No.		12
Inundation Risk to the Roadwa	av (US, DS) 3.3		1-24		
Inun. Risk to the Crossing Stru	cture (US, DS) 4.4				
Adverse Impacts Evaluation**		AND BREAK			
Inundation Risk to Low-Lying)evelopment 4		A DECEMBER OF		all.
Overall Scores	sevelopment 4				N /87
Infrastructure	4				
Ecological	4				
Combined	4			Long Drofil	-
combined	5			Long. Prom	e
* Scoring system ranges from 1 to 5, where **Adverse Impacts Evaluation scores range	1 = lowest replacement priority and 5 = highest r	replacement priority	Dist.	Hght. Feat.	<u>Su</u>
			0	5.3201 HC	C/
Crossing Cross	Section and Stream Longitu	udinal Profile	7	5.1701 P	C/
10			14	5.0401 I	C/
9	00	Road Profile*	93	5.3401 I	C/
8		—— HWI Wrack	100	5.2501 P	C/
7			109	5.2901 HC	C/
8 6	_		126	5.2401 P	C/
		Avg. Marsh Plai	n 131	5.3901 HC	C/
N) 4		Low Tide			
gg pt		Character Day Of			
, Hei		Stream Profile			

Distance from Upstream Hydraulic Control (feet)

*The road profile is centered over the inverts for graphical purposes; it does not necessarily
 reflect its true configuration along the longitudinal profile.

N/A



Structure Characteristics:				
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Steel - Corrugated	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):		2	2
Dimension B ^{CB} (height):	1	.9	1.7
Crossing Length (Invert to Invert):		79	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	Dry Fit Stone	Fair	None	N/A	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	Utility box and OHE DS	Poor

Structure Condition Comments:

Bottom of culvert rusted out. Water flow under culvert. No observed flow during assessment.

Ecological Assessment:	<u>Upstream</u>	Downstream
Natural Community Classification:	Freshwater Marsh	Freshwater Marsh
Upstream Salt Marsh Migration Potent	ial (acres): 4.82	
Flood Hazard & Emergency Access		
Site Identified in Hazard Mitigation Pla	n: No	
Emergency Access or Evacuation Route	:: N/A	
History of Flooding:	unknown	

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol Crossing ID: 64

Observer(s) &	
Organization:	TS, JB (NHDES Coastal)
Municipality:	NEW CASTLE
Stream Name:	N/A
Road Name:	Quarterdeck Ln

Date:	6/5/2018			
Start Time:	10:36:00 AM			
End Time:	11:50:00 AM			
Tide Prediction		High	Low	
Ti	me:	5:18 PM	10:52 AM	
Elevat	ion:	7.2	1.6	
	-			

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	3
Crossing Ratio	2
Erosion Classification	5
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	3
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	4
Salt Marsh Migration Potential (Wshed.)	4
Vegetation Evaluation	
Vegetation Comparison Matrix	4
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,3
Inun. Risk to the Crossing Structure (US, DS)	5,4
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	3
Overall Scores	
Infrastructure	3
Ecological	4
Combined	3

DS view toward structure	US view above structure
US view toward structure	DS view above structure





* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	3.5102	HC	C/S
11	3.2302	HC	C/S
19	2.6702	Ρ	C/S
26	3.0302	HC	C/S
36	1.7802	Ρ	C/S
39	1.6702	I	C/S
81	1.8802	I	C/S
101	2.6102	HC	C/S
133	2.5702	HC	C/S

A small marsh extends west of Lavenger Creek in New Castle and its tidal creek runs under Quarterdeck Lane through a concrete box culvert 4 feet wide by 3 feet tall. This culvert replaced a 3-foot pipe in 2008 that was restricting flow and impounding water. Although the crossing condition is very good, erosion is evident, the tidal flow appear restricted and tides regularly overfill the culvert. The upstream marsh is cattail while the downstream marsh is dominated by salt marsh grasses. The overall combined score is 3, indicating moderate priority for replacement.



Stru	cture Characteristics	::		
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	2008
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	2	1	4
Dimension B ^{CB} (height):	~~,	3	3
Crossing Length (Invert to Ir	vert):	42	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Good	Dry Fit Stone	Good	None	None
	Downstream	Dry Fit Stone	Good	Dry Fit Stone	Good	None	None

	Scour in Structure	Scour Severity in Structure Road Surface Condition Utilities at Crossing				Structure Condition Overall
	None	None	Good	Sewer, ove	rhead electric	Good
	Structure Conditio	n N/A				
Есо	loaical Assessment	t:	Upstream		Г	Downstream
	Natural Communit	y Classification:	Freshwater Marsh		<u>-</u> н	igh Salt Marsh
	Upstream Salt Mai	sh Migration Poten	tial (acres): 8.51			
Floc	od Hazard & Emerg	gency Access				
	Site Identified in H	azard Mitigation Pla	an: Yes			
	Emergency Access	or Evacuation Rout	e: N/A			
	History of Flooding	:	flooding from heav	/vrain/storm	surge	

	Tidal (Crossing	g Summa	ary Sheet			
	New Hampshi	ire's Tidal C	, rossing Ass	essment Protocol			
Ci	rossing ID:		65				
Observer(s) &				Date:	6/20/	/2018	
Organization:	TS, JB (NHDES	Coastal)		Start Time:	11:10:	00 AM	
Municipality: RYE				End Time:	11:52:	00 AM	
Stream Name: N/A				Tide Prediction	High	Low	
Road Name: N/A				Time:	6:16 PM	11:47 AM	
Crossing Condition Evolua	tion	Scoro*		Elevation:	8.5 Portsm	-0.3	_
Crossing Condition Evalua	luon	<u>30018</u>		The chart Location.	FUITSIII		
Tidel Destriction Function		4		towerd atmost		uu ahaya ataa	
	on	-	DS VIEW	toward structure	US VIE	ew above strue	cture I
lidal Range Ratio		5	in the second			A State	
		4				12	
Erosion Classification	-	3		At any the	2 1		
Tidal Restriction Overall	Score	4	4	and the second	3		
Tidal Aquatic Organism Pa	assage					20 Alere	
Tidal Range Ratio		5		NS T	1		
Salt Marsh Migration Eval	luation			A CARACTER			I
Salt Marsh Migration Pot	tential (Eval. Unit)	2					
Salt Marsh Migration Pot	tential (Wshed.)	2	US view	toward structure	DS vie	w above strue	cture 1
Vegetation Evaluation				Sec. 1			
Vegetation Comparison	Matrix	5				Contraction of the second	
Infrastructure Risk Evalua	tion					and the second second	
Inundation Risk to the Ro	oadway (US, DS)	2,2		200			
Inun. Risk to the Crossing	g Structure (US, DS)	5,5					
Adverse Impacts Evaluation	on**					Station -	
Inundation Risk to Low-L	ying Development	5					1
Overall Scores							
Infrastructure		4					
Ecological		5					
Combined		5				Long. Profile	
* Scoring system ranges from 1 to 5	where 1 = lowest replacemen	t priority and 5 - bi	ighest replacement	priority	Dist.	Hght. Feat.	Sut

ng sys ıgr ient p ority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



1.2618 HC

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1.1118

1.1718

0.7718

-0.3782

-0.2282

-1.6782

-2.1282

The tiny culvert that runs under Route 1B is a 1-foot diameter pipe that restricts tides from Sagamore Creek to a small upstream marsh. The tidal range is restricted and erosion occurs on the upstream side, but an intensive study found that mummichogs (salt marsh minnows) regularly navigated the culvert (Eberhardt et al. 2011). It has an overall combined score of 5, indicating highest priority for replacement. The high water stain suggests that an immediate expansion of salt marsh would be supported by a larger culvert. The link for cited text can be found below:

https://scholars.unh.edu/jel/36/



Stru	cture Characteristics			
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstr</u>	eam	<u>Downstream</u>
Dimension A (width):	1		1
Dimension B ^{CB} (height):	1		1
Crossing Length (Invert to Ir	vert):	84	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	Poor	None	N/A	Culvert	Medium
	Downstream	None	N/A	None	N/A	Culvert	Low

Structure Structure O	Verall
None None Good OHE at crossing US and utility pole DS RR	Poor

Structure Condition Comments:

Culvert chipped at invert both sides.

Ecological Assessment:			<u>Upstream</u>	Downstream
	Natural Community Classification:		High Salt Marsh	Sparsely Vegetated Intertidal Habitat
	Upstream Salt Marsh Migration Potential (acres):		1.03	

Floo	d Hazard & Emergency Access	
	Site Identified in Hazard Mitigation Plan:	No
	Emergency Access or Evacuation Route:	Yes
	History of Flooding:	unknown

	Tidal	Crossing	g Summ	ary Sheet				
	New Hamps	hire's Tidal C	, Trossing Ass	sessment Proto	ocol			
	Crossing ID:		67			7		
Observer(s) &				Date:		7/2/20)18]
Organization:	TS, JB (NHD	ES Coastal)		Start Time:		8:45:00	AM]
Municipality:	PORTSMOUTH			End Time:		10:30:00) AM	
Stream Name:	Sagamore Creek			Tide Prediction		High	Low	
Road Name:	Lafayette Rd			т	ime:	3:17 PM	8:56 AM	
				Elevat	tion:	7.4	0.4	
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Locatio	on:	Portsmou	uth Harbor	
Crossing Conditio	n	1						
Tidal Restriction Ev	valuation		DS view	v toward structu	re	US view	v above structi	ıre
Tidal Range Ratio		3						
Crossing Ratio		3					Barney and	
Erosion Classificat	tion	3			LCare.		Contraction of the second	
Tidal Restriction C	Overall Score	3	and the second second					And the second
Tidal Aquatic Orga	nism Passage			A PARTICIPATION OF				
Tidal Range Ratio		3		a still be			i i	
Salt Marsh Migratio	on Evaluation		Carles 24				and the second	
Salt Marsh Migrat	tion Potential (Eval. Unit)	5						
Salt Marsh Migrat	tion Potential (Wshed.)	5	US viev	v toward structu	re	DS view	/ above structu	ıre
-								

U	IS	view	toward	l st	tru	ctur	6



view above structure

Long. Profile

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* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Vegetation Evaluation

Overall Scores Infrastructure

Ecological

Combined

Vegetation Comparison Matrix

Inundation Risk to the Roadway (US, DS)

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development

Infrastructure Risk Evaluation

Adverse Impacts Evaluation**



1

2,2

1,1

3

1

3

3

N/A



Stru	cture Characteristics	:		
	Structure Type:	Bridge with Abutments	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	39.2		39.3
Dimension B ^{CB} (height):	11	.03	11.93
Crossing Length (Invert to Ir	79		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Good	None	None
	Downstream	None	N/A	Rip Rap	Good	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None None		Good	Overhead electric	Good

Structure Condition Comments:

May be bridge with abutments and side slopes, took C and D measurement (see photo 5) ts:

Ecol	ogical Assessment:	<u>Upstream</u>	<u>Downstream</u>		
	Natural Community Classification:	High Salt Marsh	High Salt Marsh		
	Upstream Salt Marsh Migration Potent	al (acres): 13.37			
Floo	d Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan	n: Yes			
	Emergency Access or Evacuation Route	: Yes	Yes		
History of Flooding: flooding of adjacent l			parking lot		

	Tidal	Crossing	Summa	ary Sheet				
	New Hamps	hire's Tidal Cro	ossing Asso	essment Proto	col			
	Crossing ID:		68	1				
Observer(s) & Date:				9/13/2018				
	Organization: IS, JB, KL (NH	DES Coastal)		Start Time:		8:57:00 AM		
				End Time:		10:30:00 AM	Low	
3	Pood Name: Pollo Ido Pd			The Frediction	mo: 2:56		8:36 AM	_
	Delle Isle Ku			Flevati	ion: 9		-0.5	
Crossing	Condition Evaluation	Score*		Tide Chart Locatio	n:	Portsmouth H	arbor	
Crossir	ng Condition	4						
Tidal Re	striction Evaluation		DS view	toward structur	e	US view ab	ove stru	cture
Tidal R	ange Ratio	1			1.00			
Crossir	ng Ratio	1						1
Erosio	n Classification	1				Mada and	-	- ST
Tidal R	estriction Overall Score	1			-			
Tidal Aq	uatic Organism Passage			- Consequences			the	
Tidal R	ange Ratio	1	Contraction of the	ALL STREET		and a set		
Salt Mai	sh Migration Evaluation		Sel Treas		1.2			
Salt M	arsh Migration Potential (Eval. Unit)	4						
Salt M	arsh Migration Potential (Wshed.)	4	US view	toward structur	e	DS view ab	ove stru	cture
Vegetat	ion Evaluation					Sec. Sec.		
Vegeta	ition Comparison Matrix	1						1000
Infrastru	icture Risk Evaluation			ALA FOR		Contraction of the local division of the loc		
Inunda	tion Risk to the Roadway (US. DS)	Null.Null	interest					California and
Inun. F	Risk to the Crossing Structure (US, DS)	3.2			and the second s			
Adverse	Impacts Evaluation**	0)=	L'E		144	A.		
Inunda	tion Risk to Low-Lying Development	5				· ·		a comment
Overal	I Scores	5						
Infras	tructure	Δ						
Fcolor	vical	1						
Comb	ined	3				Long	Profile	
comb	ineu -	5				LUIIg.	FIOINE	Cb
* Scoring **Advers	system ranges from 1 to 5, where 1 = lowest replacem e Impacts Evaluation scores range from 1 to 5, where 1	ent priority and 5 = high L = high risk and 5 = low	est replacement risk	priority	<u>Di</u>	<u>ist. Hgnt.</u>	Feat.	<u>Sub.</u>
						0 -2.4086	HC	C/S
	Crossing Cross Section and	Stream Long	itudinal P	rofile	/	-2.9186	CB	Snell
10	_	_			3.	25 -2.5186	GC	Snell
0			_	—— HWI Wrack	3	83 -3.0986		Shell
÷		_		HWI Stain	4	UI -2.5786	I	Shell
6 fe				invi Stain	4	21 -2.5886	GC	Shell
88			-	Avg. Marsh I	Plain 4	37 -3.1586	СВ	Shell
Q, ⁴					6	62 -3.2986	HC	S
Ž 2				Low Tide	7.	26 -3.3186	CB	S
leight 0				Stream Profi	ile			
±2				*The road profile is				
-2				centered over the inve for graphical purposes	rts ;; it			
-4				does not necessarily				
	0 200 400 Distance from Upstream Hydra	600 aulic Control (feet)	800	configuration along th longitudinal profile.	e			

N/A



Stru	cture Characteristics	:		
	Structure Type:	Bridge with Side Slopes and Abutments	Date of Last	
Structure Material:		Steel - Smooth	Known	N/A
	Tide Gate Present:	Yes	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	91		91
Dimension B ^{CB} (height):	1	2	11.5
Crossing Length (Invert to Ir	18		

Crossing Condition:		Headwall Material Headwall Win		Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Poor	Wingwalls	Medium
	Downstream	None	N/A	Concrete	Poor	Wingwalls	Medium

	Scour in Structure	Scour Severity in Structure	Road S	urface Condition	Utilities	at Crossing	Structure Condition Overall
	Abutment	Medium		N/A	None		Fair
							
	Structure Conditio Comments:	n N/A					
Ecol	ogical Assessment	:		<u>Upstream</u>		Do	<u>wnstream</u>
	Natural Community	y Classification:	Spar	rsely Vegetated Intertidal Habitat Sparsely Vegeta			ated Intertidal Habitat
	Upstream Salt Mar	sh Migration Poten	tial (acre	es): 9.35			
Floo	d Hazard & Emerg	ency Access					
	Site Identified in Ha	azard Mitigation Pla	n:	No			
	Emergency Access	or Evacuation Route	e:	N/A			
	History of Flooding	:		unknown			

	Tidal	Crossing	g Summ	ary Sheet			
	New Hampsh	ire's Tidal C	rossing Ass	sessment Proto	col		
	Crossing ID:		69			Ţ	
Observer(s) &				Date:		9/4/20)18
Organization:	JB TS (NHDE	S Coastal)		Start Time:		12:30:00) PM
Municipality:	PORTSMOUTH			End Time:		1:40:00	PM
Stream Name:	South mill pond			Tide Prediction		High	Low
Road Name:	Marcy St			Ti	me:	6:55 PM	12:31 PM
				Elevat	ion:	8.6	0.7
Crossing Condition	Evaluation	Score*		Tide Chart Locatio	n:	Portsmou	ith Harbor
Crossing Condition	n	3					
Tidal Restriction Ev	aluation		DS view	v toward structu	re	US view	above structure
Tidal Range Ratio		1	Call States				
Crossing Ratio		5			7		
Erosion Classificat	ion	1			100	and the second	
Tidal Restriction C	Overall Score	2			1	and the second	
Tidal Aquatic Organ	nism Passage		- martin				a 2 /4
Tidal Range Ratio		1	and the second				(- p
Salt Marsh Migratio	on Evaluation		Ser.			and the second second	
Salt Marsh Migrat	ion Potential (Eval. Unit)	4					
Salt Marsh Migrat	ion Potential (Wshed.)	5	US viev	v toward structu	re	DS view	v above structure
Vegetation Evaluat	ion				· · · · ·		
Vegetation Compa	arison Matrix	1	Line I				
Infrastructure Risk	Evaluation		Nilletannin pa			and the second s	the manual filling
Inundation Risk to	the Roadway (US, DS)	2,3			1.0	1/2	

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Combined



1,1

1

3

1

3

<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-1.2069	HC	G
56	-1.6269	СВ	G
95	-1.8169	HC	G
130	-3.3169	СВ	С
157	-6.4869	Р	С
186	-4.3169	СВ	В
198	-2.5669	GC	В
204	-2.8169	I	В
214	-2.7669	СВ	Shell
274	-2.6669	I	Shell
284	-3.8069	СВ	Shell
312	-4.9669	Ρ	G
379	-3.1169	HC	С
418	-4.5469	СВ	G
512	-6.1669	Р	G
612	-5.2169	HC	С

The crossing over the inlet to South Mill Pond at Marcy Street is a tide gate that was regularly closed before 2000 on occasions when combined sewer overflows (CSO) produced a stench. The closures resulted anoxia in the water and death of aquatic animals, but policy change with restoration of shellfish and salt marsh coupled with sewer upgrades and reductions in CSO events has allowed the gate to remain open (McDermott et al. 2005). This crossing has an overall combined score of 3, indicating moderate priority for replacement. The link for cited text can be found below: https://scholars.unh.edu/jel/33/



Structure Characteristics: Structure Type: Box Culvert Date of Last Structure Material: Concrete Known N/A Tide Gate Present: Yes Replacement: N/A

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	2	0	20
Dimension B ^{CB} (height):	10.95		11.35
Crossing Length (Invert to Ir	70		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Concrete	Good	None	None
	Downstream	Concrete	Good	Concrete	Good	None	None

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities	at Crossing	Structure Condition Overall	
	None	None	Fair	Gas line, sewer line, other pipes. E mtr, OHE		Good	
	Structure Condition US Dim C is tide gate opening.						
Ecol	ogical Assessmeı	nt:	<u>Upstream</u>		Do	<u>wnstream</u>	
	Natural Commun	ity Classification:	Sparsely Vegetated Inter	tidal Habitat	Sparsely Veget	ated Intertidal Habitat	
	Upstream Salt Ma	arsh Migration Potent	tial (acres): 27.82				
			Ľ				
Floo	d Hazard & Emei	gency Access					

 a nazara a Emergency Access	
Site Identified in Hazard Mitigation Plan:	Yes
Emergency Access or Evacuation Route:	Yes
History of Flooding:	identified as past, present, and future hazard

	TT: 1 1 /	- ·	C	<u> </u>			
	Tidal	rossing	g Summ	ary Sheet			
	New Hampshi	ire's Tidal C	rossing Ass	essment Proto	col	-	
	Crossing ID:		70				
Observer(s) &				Date:		6/21/20	018
Organization:	JB TS (NHDES	Coastal)		Start Time:		12:14:00	PM
Municipality:	PORTSMOUTH			End Time:	_	1:00:00	PM
Stream Name:	N/A			Tide Prediction		High	Low
Road Name:	Junkins Ave			Ti	me:	5:16 PM	12:48 PM
		C *		Elevat	ion:	8.5 Beatsau	0.0
Crossing Condition	Evaluation	Score*		Tide Chart Locatio	n:	Portsmou	th Harbor
Crossing Condition	n	5					
Tidal Restriction Ev	aluation		DS view	v toward structur	e	US view	above structure
Tidal Range Ratio		2			-		and the second second
Crossing Ratio		5	and south a	and the second distance of the local distanc			1 1 1 1 1
Erosion Classificat	tion	4	Section 200	House and and			and the second
Tidal Restriction C	Overall Score	4		- And		2.76	The second second
Tidal Aquatic Organ	nism Passage		Sel Sand				- Ma
Tidal Range Ratio		2		- A Carton			
Salt Marsh Migratio	on Evaluation		1			10 B	
Salt Marsh Migrat	ion Potential (Eval. Unit)	5					
Salt Marsh Migrat	ion Potential (Wshed.)	5	US view	v toward structur	re	DS view	above structure
Vegetation Evaluat	ion			1			Statement of the
Vegetation Compa	arison Matrix	1		- And the second se		a gran	
Infrastructure Risk	Evaluation						The -
Inundation Risk to	the Roadway (US, DS)	2,2					STATES &
Inun. Risk to the C	Crossing Structure (US, DS)	5,5	-				
Adverse Impacts Ev	valuation**	·					
Inundation Risk to	Low-Lying Development	5		Constant Constant		Sel for	
Overall Scores							

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

5

3

4

Long. Profile

Feat.

Ρ

СВ

ΗС

Т

L

СВ

HC

Р

HC

<u>Sub.</u>

G

С

С

С

Shell

G

G

G

C/S

Hght.

-0.6647

0.4253

0.5053

0.3553

0.3653

-0.6447

-1.0247

-1.3347

-1.0947

Dist.

0

12

19

23

Infrastructure

Ecological

Combined



The crossing on Junkins Avenue provides tides to the inner portion of South Mill Pond through a pair of 3 by 8foot concrete box culverts (#71 is the other culvert). Salt marsh and shellfish have been restored in parts of the pond following opening of the tide gate (see crossing #69), but erosion and tidal restriction indicate replacement is needed. The crossing has an overall combined score of 4, indicating high priority for replacement.



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	5	3	8
Dimension B ^{CB} (height):		.8	2.6
Crossing Length (Invert to Ir	82		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	Culvert	Medium
	Downstream	None	N/A	None	N/A	Culvert	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Culvert	Medium	Fair	OHE	Poor

Structure Condition Comments:

Concrete falling off structure. Exposed rebar DS

Ecological Assessment:		Upstream Downstream		
	Natural Community Classification: Sparsely		Vegetated Intertidal Habitat	Sparsely Vegetated Intertidal Habitat
	Upstream Salt Marsh Migration Potential (acres):		18.93	

Floc	lood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan:	Yes			
	Emergency Access or Evacuation Route:	N/A			
	History of Flooding:	Past and future hazard			

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	-	71
Observer(s) &			
Organization:	TS	, JB (NHDES Coastal)	
Municipality:	PORTSMOUTH		
Stream Name:	N/A		
Road Name:	Junkins Ave		

Date:		6/21/2	018	
Start Time:	1:22:00 PM			
End Time:	2:30:00 PM			
Tide Prediction		High	Low	
ті	me:	7:16 PM	12:48 PM	
Elevat	ion:	8.5	0.0	
	-			

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	5
Tidal Restriction Evaluation	
Tidal Range Ratio	4
Crossing Ratio	5
Erosion Classification	4
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	4
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,3
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	5
Ecological	5
Combined	5

DS view toward structure	US view above structure
	Marine Marine Marine
	and the second se
	1
and the second sec	
US view toward structure	DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist. Hght. Feat. Sub. 0 -1.346 Ρ S 0.004 4 HC G С 10 0.084 СВ -0.516 Ρ G 13 0.104 HC G 18 25 -0.266 T С G -0.406 СВ 26 174 0.104 Т Shell GC В 177 0.404 189 -1.796 Ρ G 194 -1.016 HC В G 210 -1.946 СВ 242 -2.256 Ρ G 278 -1.996 C/S HC

The crossing on Junkins Avenue provides tides to the inner portion of South Mill Pond through a pair of 3 by 8foot concrete box culverts (#70 is the other culvert). This culvert appears to be partially filled with sediment (cobble sized). Salt marsh and shellfish have been restored in parts of the pond following opening of the tide gate (see crossing #69), but erosion and tidal restriction indicate replacement is needed. The crossing has an overall combined score of 5, indicating highest priority for replacement.



Stru	Structure Characteristics:						
	Structure Type:	Box Culvert	Date of Last				
	Structure Material:	Concrete	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):		3	8
Dimension B ^{CB} (height):	3	.2	2.85
Crossing Length (Invert to Ir	149		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	Culvert	Medium
	Downstream	None	N/A	None	N/A	Culvert	Low

	Scour inScour Severity inStructureStructure		Road Surface Condition	d Surface Condition Utilities		Structure Condition Overall
	Culvert	Medium	Fair	Overh	lead electric	Poor
	Structure Conditio Comments:	n N/A				
Ecological Assessment:		Upstream		Do	wnstream	

	Natural Community Classification:	Sparsel	Vegetated Intertidal Habitat	Sparsely Vegetated Intertidal Habitat
	Upstream Salt Marsh Migration Potential (acres):		18.93	
Floo	d Hazard & Emergency Access			
	Site Identified in Hazard Mitigation Pla	n: ۱	′es	
	Emergency Access or Evacuation Route	: 1	N/A	
	History of Flooding:	Ŗ	bast and future hazard	

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

2

	Crossing ID:		7
Observer(s) &			
Organization:	JB	TS (NHDES Coastal)	
Municipality:	PORTSMOUTH		
Stream Name:	Hodgson Brook		
Road Name:	Bartlett St		

Date:	7/23/2018			
Start Time:	1:30:00 PM			
End Time:	3:22:00 PM			
Tide Duediction				
Tide Prediction		High	Low	
Tide Prediction	me:	9:33 PM	3:09 PM	
Tide Prediction Ti Elevat	me: ion:	9:33 PM 8.3	3:09 PM 1.0	

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	2
Tidal Restriction Evaluation	
Tidal Range Ratio	5
Crossing Ratio	4
Erosion Classification	3
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	5
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	1
Salt Marsh Migration Potential (Wshed.)	1
Vegetation Evaluation	
Vegetation Comparison Matrix	5
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,2
Inun. Risk to the Crossing Structure (US, DS)	1,3
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	2
Ecological	5
Combined	5

DS view toward structure

US view toward structure



US view above structure

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	4.5466	HC	В
128	2.4066	HC	В
151	1.7266	I	В
626	-1.3634	I	В
649	-1.3334	GC	В
654	-2.7734	Ρ	С
721	-1.7634	HC	С
736	-3.4634	Ρ	С
743	-2.4534	HC	С
779	-3.8934	СВ	С

Bartlett Street and upstream development covers Hodgson Brook almost 500 linear feet: from an artificially straightened freshwater stream to the southern terminus of North Mill Pond, which is a salt water pond. Spring tides can push salt water into the stream, but the gradient rises more than three feet over the length of the structure and upstream tides are, for the most part, fresh. The overall combined score for replacement is 5, highest priority, due to restriction in tidal range, stream width and erosion.



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	<u>ream</u>	<u>Downstream</u>
Dimension A (width):	11	.28	9
Dimension B ^{CB} (height):	6	.4	5.45
Crossing Length (Invert to Invert):		475	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Metal	Fair	Wingwalls	Low
	Downstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	Wingwalls	Low

	Scour in Structure	Scour Severity in Structure	Road Sur	face Condition	Utilities	at Crossing	Structure Condition Overall
	Culvert	Low		Good DS sewer line parallel to road. DS OHE		Good	
	Structure Condition	n N/A					
Fco	loaical Assessmen	t:		Unstream		D	ownstream
	Natural Communit	y Classification:		Freshwater Strea	m	Sparsely Vege	etated Intertidal Habitat
	Upstream Salt Ma	rsh Migration Poten	tial (acres)	: 0.00			
Flo	od Hazard & Emer	gency Access					
	Site Identified in H	azard Mitigation Pla	an: `	Yes			
	Emergency Access	or Evacuation Rout	e: `	Yes			
	History of Flooding:			River right area p	rone to flood	ing	

Tidal Crossing Summary Sheet New Hampshire's Tidal Crossing Assessment Protocol Crossing ID: 73

	Crossing ID:	
Observer(s) &		
Organization:	TS, JB (NHDES Coastal)	
Municipality:	PORTSMOUTH	
Stream Name:	N/A	
Road Name:	Maplewood Ave	

Date:		9/5/20	018	
Start Time:	1:24:00 PM			
End Time:	2:30:00 PM			
Tide Prediction		High	Low	
Ті	me:	2:07 PM	7:48 AM	
Elevat	ion:	9.3	-0.9	

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	5
Tidal Restriction Evaluation	
Tidal Range Ratio	3
Crossing Ratio	5
Erosion Classification	0
Tidal Restriction Overall Score	4
Tidal Aquatic Organism Passage	
Tidal Range Ratio	3
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,2
Inun. Risk to the Crossing Structure (US, DS)	2,2
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	5
Ecological	5
Combined	5

DS view toward structure	US view above structure

US view toward structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-15.966	HC	G
120	-23.276	Р	С
230	-15.766	СВ	В
255	-12.186	GC	В
270	-13.006	T	В
320	-13.966	T	В
335	-14.226	GC	В
375	-15.026	СВ	С
400	-16.626	Р	С
570	-15.326	СВ	С

The bridge on Maplewood Avenue conducts all the tides to the North Mill Pond through a large arch (about 12 by 25 feet) supported by courses of granite blocks. A tide gate that resulted in a non-tidal fresh pond was destroyed in a truck accident on the road in the 1950s. The crossing is very old and is in need of repair; it restricts larger tides. Although almost all of the shoreline has been filled, little in the way of new structures or infrastructure has been built so inundation risk to development is small. The overall combined score is a 5: highest priority for replacement.



Stru	Structure Characteristics:						
	Structure Type:	Arch Bridge	Date of Last				
	Structure Material:	Steel - Corrugated	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	2	5	25	
Dimension B ^{CB} (height):	11	.3	13	
Crossing Length (Invert to Invert):		50		

Crossing Condition: Headwall Material		Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity	
	Upstream	None	N/A	Masonry	Fair	Wingwalls	Medium
	Downstream	None	N/A	Masonry	Poor	Wingwalls	High

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Abutment	Medium	Fair	Overhead electric, sewer/water through crossing	Poor

Structure Condition Comments:

Sewer pipe running under crossing, severe spalling and loss of material for DS wingwall

			E		
Ecological Assessment:		<u>Upstream</u>	<u>Downstream</u>		
N	atural Community Classification:	Sparsely Vegetated Intertidal Habit	at Sparsely Vegetated Intertidal Habitat		
U	Upstream Salt Marsh Migration Potential (acres): 37.76				
Flood	Hazard & Emergency Access				
Si	ite Identified in Hazard Mitigation Pla	n: Yes			
Er	mergency Access or Evacuation Route	e: Yes			
H	istory of Flooding:	No			

	Tidal (Crossing	g Summ	ary Sheet				
	New Hampsh	ire's Tidal C	, Trossing Ass	essment Protoc	ol			
	Crossing ID:		74			T		
Observer(s) &	U			Date:		8/14/	2018	
Organization:	JB TS (NHDES	6 Coastal)		Start Time:		8:35:0	0 AM	
Municipality:	PORTSMOUTH			End Time:		10:00:0	00 AM	
Stream Name:	N/A			Tide Prediction		High	Low	
Road Name:	N/A			Tim	ne:	2:35 PM	8:13 AN	1
				Elevatio	on:	9.1	-1.2	
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Location	:	Portsmo	outh Harbor	
Crossing Condition	1	2						
Tidal Restriction Eva	aluation		DS view	v toward structure	<u>.</u>	US vie	w above str	ucture
Tidal Range Ratio		1			1	and	Į	
Crossing Ratio		2		A REAL PROPERTY AND INCOME.		and the state of	and and	Mar Bana
Erosion Classificati	ion	3					Tes	ANT.
Tidal Restriction O	verall Score	2						
Tidal Aquatic Organ	ism Passage							a star
Tidal Range Ratio		1					1 1	
Salt Marsh Migratio	on Evaluation			ind his				AND .
Salt Marsh Migrati	on Potential (Eval. Unit)	3						
Salt Marsh Migrati	on Potential (Wshed.)	3	US view	v toward structure	2	DS vie	w above str	ucture
Vegetation Evaluati	on							
Vegetation Compa	rison Matrix	1	THE REAL				and the second second	
Infrastructure Risk I	Evaluation			NAME OF TAXABLE	A. C.			Margare 19 and
Inundation Risk to	the Roadway (US, DS)	2,2				C. A.		
Inun. Risk to the C	rossing Structure (US, DS)	2,2			1	The second		
Adverse Impacts Ev	aluation**		-			Sale-		
Inundation Risk to	Low-Lying Development	5		1	100	· ·	*	
Overall Scores								
Infrastructure		2						
Ecological		3						
Combined		2				I	ong. Profil	е
* Scoring system ranges fro	om 1 to 5, where 1 = lowest replacemer	nt priority and 5 = h	ighest replacement	t priority		Dist. H	ight. Feat.	<u>Sub.</u>

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* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



This crossing was built for access to the Albacore Sub Museum and conducts tides through a rip-rap canal into a small intertidal embayment formed by the construction of Market Street Extension. The canal had a sill that created a subtidal salt pond with the intention to reduce odors from undocumented sewage. In the 1990s the sill was removed and sewage sources were identified and corrected. The crossing does not impede flow and the structure is in good shape, leading to an overall combined score of 2, indicating low priority for replacement.



Structure	Characteristics	:

Structure Type: Bridge with Side Slopes and Abutments		Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	4	2	42	
Dimension B ^{CB} (height):	9	.4	9.5	
Crossing Length (Invert to Invert):		55		

Cros Con	Crossing Condition: Headwall Material Cond		Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Fair	None	None
	Downstream	None	N/A	Concrete	Fair	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	OHE. Pump station	Good

Structure Condition Comments:

Old retaining wall/dam coming into DS channel from banks

Ecological Assessment:		<u>Upstream</u>		<u>Downstream</u>	
	Natural Community Classification:	Sparsely Vegetated Intert	idal Habitat	Sparsely Vegetated Intertidal Habitat	
	Upstream Salt Marsh Migration Potent	al (acres): 4.31			
Floo	d Hazard & Emergency Access				

	you nazuru a Emergency Adeess				
	Site Identified in Hazard Mitigation Plan:	No			
	Emergency Access or Evacuation Route:	N/A			
	History of Flooding:	No			

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	75
Observer(s) &		
Organization:	TS	, JB (NHDES Coastal)
Municipality:	PORTSMOUTH	
Stream Name:	N/A	
Road Name:	Market St	

Date:		8/7/20)18	
Start Time:		2:10:00	PM	
End Time:	e: 2:45:00 PN			
Tide Prediction		High	Low	
Ti	me:	8:18 PM	1:53 PM	
Elevation:		on: 8.9 0		
Tide Chart Location:		Portsmou	uth Harbor	

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	3
Erosion Classification	3
Tidal Restriction Overall Score	2
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	1
Ecological	1
Combined	2



US view toward structure





* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
50	-16.37	Ι	В
143	-15.57	Ι	В

Market Street Extension is built over the inlet to the North Mill Pond system and the crossing is very large (23 by 130 feet) that carries the tides without restriction. The structure is in very good shape and the overall combined score is 2, low priority for replacement.



ucture Characteristics	s:					
Structure Type:	Bridge	e with Side Slo	Date of Last	N/A		
Structure Material:	Concr	crete			Known	
Tide Gate Present:	No				Replacement:	
Crossing Dimensior	ns (ft):	<u>Upstream</u>	<u>Downstream</u>			
Dimension A (middle)		100	122			

			<u></u>
Dimension A (width):	12	29	132
Dimension B ^{CB} (height):	22.8		24.9
Crossing Length (Invert to Invert):		93	

Crossing Condition:		Headwall Material	Headwall Condition	adwall Wingwall Material Wing ndition Cond		Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Good	None	None
	Downstream	None	N/A	Rip Rap	Good	None	None

	Scour in Structure	Scour Severity in Structure	Road Su	rface Condition	Utilities	at Crossing	Structure Condition Overall
	None	None		Good	Overh	nead electric	Good
	Structure Condition Comments:	N/A					
			1				
Ecol	ogical Assessmen	t:		<u>Upstream</u>		<u>[</u>	<u>Downstream</u>
	Natural Community Classification:		Sparse	barsely Vegetated Intertidal Habitat S		Sparsely Veg	etated Intertidal Habitat
	Upstream Salt Mai	rsh Migration Poten	tial (acres): 53.01			
Floc	d Hazard & Emerg	gency Access					
	Site Identified in H	azard Mitigation Pla	an:	No			
	Emergency Access or Evacuation Route:			Yes			
	History of Flooding	g:		No			

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	78	8
Observer(s) &			
Organization:	TS	, JB (NHDES Coastal)	
Municipality:	PORTSMOUTH		
Stream Name:	N/A		
Road Name:	N/A		
	•		_

Date:	8/7/2018				
Start Time:	1:30:00 PM				
End Time:	2:00:00 PM				
Tide Prediction		High	Low		
Ti	me:	8:18 PM	1:53 PM		
	Elevation:				
Elevat	ion:	8.9	0.5		

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	2
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	3
Erosion Classification	3
Tidal Restriction Overall Score	2
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	1
Overall Scores	
Infrastructure	2
Ecological	1
Combined	2



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



	. 0		
Dist.	Hght.	Feat.	<u>Sub.</u>
50	-26.709	I	В
62	-26.309	T	В

This is the railroad bridge for a spur line that was built out upon Cutts Cove to connect a gypsum plant that makes wallboard. The crossing is somewhat restrictive in that it increases current speed through the opening, but it likely doesn't affect high tides upstream of the 96-foot span. The overall combined score is 2, indicating low priority for replacement.



N/A

Stru	Structure Characteristics:					
	Structure Type:	Bridge with Side Slopes	Date of Last			
	Structure Material:	Wood	Known			
	Tide Gate Present:	No	Replacement:			

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	9	6	96	
Dimension B ^{CB} (height):	28.25		28	
Crossing Length (Invert to Invert):		12		

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Fair	None	None
	Downstream	None	N/A	Rip Rap	Fair	None	None

	Scour in Structure	Scour Severity in Structure	Road Su	rface Condition	Utilities	at Crossing	Structure Condition Overall
	None	None		N/A		None	Fair
	Structure Conditio Comments:	n N/A					
Eco	logical Assessment			<u>Upstream</u>		<u></u>	<u>Downstream</u>
	Natural Community Classification: Spa		Sparse	sely Vegetated Intertidal Habitat Spa		Sparsely Veg	etated Intertidal Habitat
	Upstream Salt Mar	sh Migration Poten	tial (acres): 66.26			
Floc	od Hazard & Emerg	ency Access					
	Site Identified in H	azard Mitigation Pla	an:	No			
	Emergency Access	or Evacuation Rout	e:	N/A			
	History of Flooding	:		Unknown			

	TT: 1 1 /	. .	0	<u></u>				
	Tidal (rossing	g Summ	ary Sheet				
	New <u>Hampshi</u>	ire's Tidal C	rossing Ass	essment Proto	col	-		
	Crossing ID:		81					_
Observer(s) &				Date:		10/15/2	018	
Organization:	JB kl (NHDES	Coastal)		Start Time:		12:04:00) PM	
Municipality:	NEWINGTON			End Time:		1:30:00	PM .	_
Stream Name:	N/A			Tide Prediction		High	Low	-
Road Name:	N/A			Tir	ne:	4:49 PM	10:31 AM	_
	T l	Ceere*		Elevati	on:	7.8 De ritere eu	1.3	_
Crossing Condition	Evaluation	Score*		Tide Chart Location	n:	Portsmou	th Harbor	
Crossing Condition	1	5						
Tidal Restriction Ev	aluation		DS view	v toward structur	e	US view	above struct	ure
Tidal Range Ratio		2				Mark Star		A
Crossing Ratio		3	and a	- A Second Second			STATES IN	
Erosion Classificat	ion	5	and and a second				Marchine Street	
Tidal Restriction O	overall Score	3					and the second	
Tidal Aquatic Organ	nism Passage				and	The seals	51/2	
Tidal Range Ratio		2	a de la companya de l		Sal		-	
Salt Marsh Migratio	on Evaluation							
Salt Marsh Migrat	ion Potential (Eval. Unit)	1						
Salt Marsh Migrat	ion Potential (Wshed.)	1	US view	v toward structur	e	DS view	above struct	ure
Vegetation Evaluation	ion			Contraction of the second				
Vegetation Compa	arison Matrix	5				- Sector		
Infrastructure Risk	Evaluation		1				- Andrew	
Inundation Risk to	the Roadway (US, DS)	0,1		the states			A LAND	
Inun. Risk to the C	rossing Structure (US, DS)	5,5		12 and			1	
Adverse Impacts Ev	aluation**			Walk was			ARD I	
Inundation Risk to	Low-Lying Development	5	1/2	100 C 20			1 a mart	
Overall Scores								

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Infrastructure

Ecological

Combined



5

4

4

Dist.	Hght.	Feat.	<u>Sub.</u>
0	0.1748	HC	C/S
23	0.0748	Ρ	C/S
58	0.1248	HC	C/S
110	-1.4252	I	C/S
180	-0.0752	I	C/S
194	-1.0752	HC	С
218	-2.0752	СВ	G
275	-2.5752	СВ	C/S

An unnamed tidal creek supplying a salt marsh with tidal flow is crossed by Boston and Maine Corporation rail line by a 3-foot-wide by 4-foot-tall granite culvert that connects the wetland to the Piscataqua River. The crossing condition is poor, erosion is evident, and the entire culvert is underwater on a daily basis. In addition, the culvert is perched and the upstream plant community is different. All these deficiencies and vulnerabilities make this a high priority for replacement with an overall combined score of 4.



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft): Up		ream	<u>Downstream</u>
Dimension A (width):		3	3
Dimension B ^{CB} (height):	3.7		2.2
Crossing Length (Invert to Ir	vert):	70	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Poor	None	N/A	Headwall	High
	Downstream	Dry Fit Stone	Poor	None	N/A	Culvert	High

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Culvert	High	N/A	None	Poor

Structure Condition Comments:

Highly scoured. DS structure destroyed

Ecological Assessment:		Upstream		Downstream	
	Natural Community Classification:	Low Salt Marsh		Sparsely Vegetated Intertidal Habitat	
	Upstream Salt Marsh Migration Potent	ial (acres): 0.02			

Flood Hazard & Emergency Access Site Identified in Hazard Mitigation Plan: No Emergency Access or Evacuation Route: N/A History of Flooding: damaged culvert




С

С

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С

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С

Sligo Road in Rollinsford crosses the Sligo Brook and provides drainage through a 6 by 6-foot stone culvert with a crossing condition rated as poor. The potential for tidal flow through a restored culvert is low until sea level rise occurs because the crossing is perched at the head of tide. The overall combined score is 4: high priority for replacement.



Stru	cture	Characteristic	cs:	

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	6	.4	6.11
Dimension B ^{CB} (height):	6.11		5.9
Crossing Length (Invert to Ir	40		

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Poor	Rip Rap	Poor	Wingwalls	High
	Downstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	Wingwalls	Medium

High N/A	i	Fair	G)HE	Poor	
N/A						
N/A						
		<u>Upstream</u>		Dov	<u>wnstream</u>	
ssification:		Freshwater Strea	m	Freshv	water Stream	
ligration Potent	tial (acres):	0.00				
y Access						
d Mitigation Pla	i n: Ni	No				
vacuation Route	e: N,	/A				
History of Flooding:			Unknown			
d va	Mitigation Pla cuation Route	Mitigation Plan: No cuation Route: N; U	Mitigation Plan:Nocuation Route:N/AUnknown	Mitigation Plan: No cuation Route: N/A Unknown	Mitigation Plan: No cuation Route: N/A Unknown	

Tidal	Crossin	g Summa	ary Sheet					
New Hampsh	ire's Tidal (Crossing Ass	essment Proto	ocol				
Crossing ID:		85						
Observer(s) &			Date:		6,	/1/2018		
Organization: TS, JB (NHDES	S Coastal)		Start Time:		10:	10:00 AM		
Municipality: ROLLINSFORD			End Time:		12:	00:00 PM		
Stream Name: N/A			Tide Prediction		High		Low	
Road Name: Sligo Rd			Ті	ime:	3:37 PM	ı	9:17 AM	
			Elevat	tion:	6.1		1.0	
Crossing Condition Evaluation	Score*		Tide Chart Locatio	on:	[Jover Poin	it	
Crossing Condition	5							
Tidal Restriction Evaluation		DS view	toward structu	re	US	view abo	ove stru	ctur
Tidal Range Ratio	3		a draffy			10	and the second	-
Crossing Ratio	5		Contractor -	-			a k me	
Erosion Classification	4			1	ala a	1	- 16	
Tidal Restriction Overall Score	4			1		SEV		ie-t
Tidal Aquatic Organism Passage				1		442		
Tidal Range Ratio	3		2	Sel?		Williams		
Salt Marsh Migration Evaluation		State of		AN ANY	- The sal	1 W	1. 2	
Salt Marsh Migration Potential (Eval. Unit)	1							
Salt Marsh Migration Potential (Wshed.)	1	US view	toward structu	re	DS	view abo	ove strue	ctu
Vegetation Evaluation				1		1.294		
Vegetation Comparison Matrix	0					1 A.		
Infrastructure Risk Evaluation			M.S.					
Inundation Risk to the Roadway (US, DS)	1,1	a dia	PAN AND AND AND AND AND AND AND AND AND A			1 SAM	100	
Inun. Risk to the Crossing Structure (US, DS)	3,4	and the second sec		5			126	
Adverse Impacts Evaluation**				1/2	4			
Inundation Risk to Low-Lying Development	5			in fr	and the second			-
Overall Scores								
Infrastructure	5							
Ecological	4							
Combined	4					Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replacement **Adverse Impacts Evaluation scores range from 1 to 5, where 1 =	nt priority and 5 = I • high risk and 5 =	highest replacement Iow risk	priority		<u>Dist.</u> 0	<u>Hght.</u> 4.2243	<u>Feat.</u> US HC	<u>s</u>

Crossing Cross Section and Stream Longitudinal Profile 16 — Road Profile* 14 HWI Wrack Height (NAVD 88 feet) 10 8 9 4 HWI Stain - Avg. Marsh Plain ---- Low Tide Stream Profile *The road profile is centered over the inverts for graphical purposes; it does not necessarily
 reflect its true configuration along the longitudinal profile. ----2 0 0 20 100 120 40 60 80 Distance from Upstream Hydraulic Control (feet)

Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	4.2243	US HC	C/S
19	4.4843	US I	G
64	4.1243	DS I	G
74	2.7743	DS P	G
86	5.0043	DS HC	S
100	4.5243	DS HC	S
108	4.3243	DS P	S
116	4.5743	DS HC	S

Sligo Road crosses an unnamed creek just north of crossing #84 through a 6 by 2-foot stone culvert. The crossing condition is poor with erosion and tidal restriction observed, including a plunge pool downstream and an impoundment upstream. The overall combined score is 4: high priority for replacement. The roadway was washed out in 2011 and a pipe was added above the failing culvert to prevent another washout, highlighting the need for replacement.



Structure Characteristics: Structure Type: Box Culvert Date of Last Structure Material: Stone Known N/A Tide Gate Present: No Replacement: N/A

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	(5	3.5
Dimension B ^{CB} (height):	2		1.8
Crossing Length (Invert to Ir	45		

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Poor	Dry Fit Stone	Fair	None	None
	Downstream	Dry Fit Stone	Poor	None	N/A	None	None

	Scour inScour Severity inStructureStructure		Road Surf	Surface Condition Utilities		at Crossing	Structure Condition Overall		
	None	None		Fair		OHE	Poor		
	Structure Condition Comments: N/A								
Ecol	ogical Assessmer	nt:		<u>Upstream</u>		<u>Downstream</u>			
	Natural Communi	ity Classification:		Freshwater Marsh		Freshwater Marsh			
	Upstream Salt Ma	arsh Migration Potent	ial (acres):	0.00					
Floo	d Hazard & Emei	gency Access							
	Site Identified in !	Hazard Mitigation Pla	n: Y	Yes					
	Emergency Acces	s or Evacuation Route	:: N	N/A					
	History of Flooding:			culvert washed out in '11. Since been upgraded.					
	Emergency Access or Evacuation Route: History of Flooding:			I/A ulvert washed o	out in '11. Sinc	e been upgraded.			

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	86
Observer(s) &		
Organization:	TS,	Jab (NHDES Coastal)
Municipality:	DOVER	
Stream Name:	Fresh Creek	
Road Name:	Atlantic Ave	

Date:		18	
Start Time:		12:20:00) PM
End Time:	3:50:00 PM		
Tide Prediction	Tide Prediction		Low
Time:		6:42 PM	12:26 PM
Elevat	ion:	6.4	0.6

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	5
Crossing Ratio	5
Erosion Classification	0
Tidal Restriction Overall Score	5
Tidal Aquatic Organism Passage	
Tidal Range Ratio	5
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	5
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	1
Ecological	5
Combined	5



US view toward structure



DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist. Hght. Feat. Sub. 0 3.2002 HC G Ρ 24 2.6702 G 35 4.2102 GC В 43 4.7502 В Т В 121 1.5702 Т -1.9798 GC В 127 -4.7598 Ρ В 143 171 -0.9898 GC В В 223 -3.8598 HC 280 -4.5098 Ρ В C/S 379 -4.1298 HC

The crossing over Fresh Creek is a 6 by 20-foot culvert that is relatively new and in good shape, but it is perched just above the high water line. The overall combined score is a 5, highest priority for replacement because it cuts off the entire watershed from tidal waters and prevents organism passage, including anadromous fish. It has been considered as a possible restoration site.



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	2	0	20
Dimension B ^{CB} (height):	6		6
Crossing Length (Invert to Ir	78		

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Fair	Culvert	Low
	Downstream	Concrete	Good	Rip Rap	Good	Culvert	Low

	Scour in	Scour Severity in	Road Surface Condition	Utilities at Crossing		Structure Condition
	Structure	Structure		e tilles		Overall
	Culvert	Low	Good		OHE	Good
	Structure Condition	on Good shape				
	Comments:	Good shape				
Ecol	ogical Assessmen	t:	<u>Upstream</u>		Dov	<u>vnstream</u>
	Natural Community Classification:		Freshwater Stream		Sparsely Vegetated Intertidal Habitat	
	Upstream Salt Ma	rsh Migration Potent	tial (acres): 18.73			
			·			
Floo	d Hazard & Emerg	gency Access				

Site Identified in Hazard Mitigation Plan:	No
Emergency Access or Evacuation Route:	N/A
History of Flooding:	post replacement flooding unknown

	Tidal (Crossing	g Summ	ary Sheet		
	New Hampshi	ire's Tidal C	rossing Ass	sessment Protoco	ol	
	Crossing ID:		89			
Observer(s) &				Date:	6/8/2	2018
Organization:	TS, JB (NHDES	Coastal)		Start Time:	2:20:0	0 PM
Municipality:	DOVER			End Time:	4:10:0	0 PM
Stream Name:	Varney Brook			Tide Prediction	High	Low
Road Name:	Spur Rd			Tim	e: 8:55 PM	2:27 PM
				Elevatio	n: 6.4	0.7
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Location:	: Dov	er Point
Crossing Condition	1	4				
Tidal Restriction Eva	aluation		DS view	v toward structure	US vie	w above structure
Tidal Range Ratio		5				1997 March 1997
Crossing Ratio		4	Real L	and the second		Contract of the
Erosion Classificat	ion	4				
Tidal Restriction O	verall Score	4				a pro- st
Tidal Aquatic Organ	nism Passage		200			to aller
Tidal Range Ratio		5		Real Proversion		
Salt Marsh Migratic	on Evaluation					112 - FR
Salt Marsh Migrati	ion Potential (Eval. Unit)	1				
Salt Marsh Migrati	ion Potential (Wshed.)	3	US viev	v toward structure	DS vie	w above structure
Vegetation Evaluati	ion		7.18 6(9) 7.18 6(9)	AND		
Vegetation Compa	arison Matrix	5	-			Contraction of the second
Infrastructure Risk	Evaluation		a milie	Land Contraction	NU.5	
Inundation Risk to	the Roadway (US, DS)	1,1		E Carlos and Anna	and the second	
Inun. Risk to the C	rossing Structure (US, DS)	1,1				A STATE
Adverse Impacts Ev	aluation**	·	1			
Inundation Risk to	Low-Lying Development	5	A State			
Overall Scores						

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

4

5

5

Infrastructure

Ecological

Combined



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-1.0867	HC	G
7	-1.4667	Ρ	G
19	-1.4467	GC	С
29	-2.2667	I	С
109	-3.4067	I	С
130	-4.6867	Ρ	С
149	-3.0167	CB	С
160	-3.8667	Ρ	С
181	-3.2767	HC	G
201	-4.1567	Ρ	C/S
237	-3.8067	CB	C/S

Spur road in Dover crosses Varney Brook with a 7 by 8foot granite culvert. Just 80 feet upstream of this crossing Route 16 crosses the Brook (#90) with double 6foot diameter round culverts. The upstream area is heavily shaded and is not likely to support tidal marsh plants. The overall combined score for this crossing is 5, highest priority for replacement based upon crossing conditions, erosion and tidal restriction.



Structure Characteristics:

Structure Type:	Bridge with Abutments	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstr</u>	<u>eam</u>	<u>Downstr</u>	<u>eam</u>
Dimension A (width):	7.	2	7.1	
Dimension B ^{CB} (height):	7.03		8.65	
Crossing Length (Invert to Ir	80			

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Good	Dry Fit Stone	Poor	Wingwalls	Low
	Downstream	Dry Fit Stone	Fair	Dry Fit Stone	Poor	Wingwalls	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Abutment	Medium	Fair	OHE and US sewer line	Fair
Abutment	weatum	Fair	OHE and US sewer line	Fall

Structure Condition Comments:

Overall not bad. Collapsing wing walls.

Ecological Assessment:			<u>Upstream</u>	<u>Downstream</u>	
	Natural Community Classification:	Bra	ackish Riverbank Marsh	Sparsely Vegetated Intertidal Habitat	
	Upstream Salt Marsh Migration Potential (acres		4.59		

Floo	Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan:	Yes			
	Emergency Access or Evacuation Route:	N/A			
	History of Flooding:	Past flooding has occurred			

	Tidal	Crossing	summ	ary Sheet			
	New Hampsh	ire's Tidal C	, rossing As	sessment Proto	col		
	Crossing ID:		90				
Observer(s) &				Date:		8/2/20	018
Organization:	TS, JB (NHDE	S Coastal)		Start Time:		11:15:00) AM
Municipality:	DOVER			End Time:		1:05:00	PM
Stream Name:	Varney Brook			Tide Prediction		High	Low
Road Name:	Spaulding Tpke N			Ti	me:	5:10 PM	10:48 AM
				Elevat	ion:	6.4	0.3
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Locatio	n:	Dove	r Point
Crossing Conditior	ı	2					
Tidal Restriction Eva	aluation		DS viev	w toward structur	e	US view	v above structure
Tidal Range Ratio		3	A Carl	NO TO	14	Same and	C. S. S.
Crossing Ratio		3	St. A.	- CARLES			
Erosion Classificat	ion	4			9	1 1 10	
Tidal Restriction O	verall Score	3		A Starter	1-	C.W.	
Tidal Aquatic Organ	nism Passage		- / ·		1		
Tidal Range Ratio	-	3			37		
Salt Marsh Migratic	on Evaluation						
Salt Marsh Migrati	ion Potential (Eval. Unit)	1					

US view toward structure

3

0

1,1

2,3

5

2

4

3

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Salt Marsh Migration Potential (Wshed.)

Inundation Risk to the Roadway (US, DS)

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development

Vegetation Comparison Matrix **Infrastructure Risk Evaluation**

Adverse Impacts Evaluation**

Vegetation Evaluation

Overall Scores Infrastructure

Ecological

Combined



Long. Profile

Dist. Hght. Feat. Sub. 0 0.5852 HC C/S 41 0.1452 СВ C/S 54 -0.7948 Ρ G 70 -0.0248 ΗС В Ρ G 93 -1.2848 160 -1.1548 CB S 189 0.2652 HC G 228 0.5552 HC в Р G 247 -0.8448 С 267 0.2052 L В 451 -0.7948 L С 462 -1.4148 Ρ 467 -1.4748 HC В В 477 -1.1048 HC

N/A



Structure Characteristics:						
	Structure Type:	Round Culvert	Date of Last			
	Structure Material:	Plastic - Smooth	Known	N/A		
	Tide Gate Present:	Νο	Replacement:			

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	5.	85	6
Dimension B ^{CB} (height):	6.	02	5.58
Crossing Length (Invert to Invert):		184	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	Armoring	Medium
	Downstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	Armoring	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	Sewer, runs through crossing	Fair
				L.

Structure Condition Comments:

Outer/old structure rotting, inner new culvert okay

Ecological Assessment:	<u>Upstream</u>	<u>Downstream</u>			
Natural Community Classification:	Low Salt Marsh	Sparsely Vegetated Intertidal Habitat			
Upstream Salt Marsh Migration Potent	ial (acres): 4.59				
Flood Hazard & Emergency Access					
Site Identified in Hazard Mitigation Pla	n: Yes				
Emergency Access or Evacuation Route	: N/A				
History of Flooding:	Past flooding has occurred				

	Т	idal Crossing	g Summa	ary Sheet				
	New H	ampshire's Tidal C	rossing Asse	essment Proto	col			
	Crossing ID:		91					
Observer(s) &				Date:		6/18/2	018	
Organization:	TS	, JB (NHDES Coastal)		Start Time:		11:15:00	5:00 AM	
Municipality:	ipality: DOVER			End Time:		12:30:00 PM		
Stream Name:	Varney Brook			Tide Prediction		High	Low	
Road Name:	Dover Point Rd			Ti	me:	5:26 PM	10:59 AM	
				Elevat	ion:	7.0	-0.8	
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Locatio	n:	Dove	r Point	
Crossing Conditio	n	2						
Tidal Restriction Evaluation			DS view	toward structu	re	US view	v above structure	
Tidal Range Ratio		1	المرجع في	and the second	1		A THE REAL PROPERTY IN	

Tidal Range Ratio	1
Crossing Ratio	5
Erosion Classification	3
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	3
Salt Marsh Migration Potential (Wshed.)	3
Vegetation Evaluation	
Vegetation Comparison Matrix	0
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	2,2
Inun. Risk to the Crossing Structure (US, DS)	1,2
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	2
Ecological	4
Combined	2

US view toward structure



DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	0.7918	HC	G
20	0.7818	Р	С
31	1.5218	I	G
75	2.2118	I	С
78	2.3618	Р	G
85	3.2518	СВ	С
97	2.7618	HC	С
116	1.0518	Ρ	G
179	1.9318	HC	S

N/A



Stru	Structure Characteristics:							
	Structure Type:	Bridge with Abutments	Date of Last					
	Structure Material:	Concrete	Known	N/A				
	Tide Gate Present:	No	Replacement:					

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	9.	35	8.8
Dimension B ^{CB} (height):	6.5		5.55
Crossing Length (Invert to Invert):		44	

Crossing Condition:		Headwall Material	Headwall Condition Wingwall Material Condition		Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Dry Fit Stone	Fair	Footer	Low
	Downstream	None	N/A	Concrete	Good	Footer	Low

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities a	at Crossing	Structure Condition Overall
	Footer	Medium	Fair	Overhead electric, pipe	e upstream over crossing	Fair
	Structure Conditio Comments:	N/A				
Ecol	ogical Assessment	t:	<u>Upstream</u>		<u>Dov</u>	<u>wnstream</u>
	Natural Community Classification:		Freshwater Ma	Freshwater Marsh		Riverbank Marsh
	Upstream Salt Mar	rsh Migration Poten	tial (acres): 3.99			
Floo	d Hazard & Emerg	gency Access				
	Site Identified in H	azard Mitigation Pla	an: Yes			
	Emergency Access	or Evacuation Rout	e: N/A			
	History of Flooding	3:	Past flooding has occurred.			

Tidal (Crossing	Summarv	Sheet		
New Hampsh	irø's Tidal (rossing Assessm	ent Protoco	J	
Crossing ID:		97			
Observer/s) &		Date	:	7/16/20	018
Organization: TS (NHDES (Coastal)	Start	Time:	10:20:00) AM
Municipality: MADBURY		End 1	Гime:	11:26:00) AM
Stream Name: N/A		Tide	Prediction	High	Low
Road Name: Piscataqua Bridge Rd			Time	e: 4:09 PM	9:45 AM
			Elevation	n: 7.3	-1.1
Crossing Condition Evaluation	Score*	Tide	Chart Location:	Dover	r Point
Crossing Condition	5				
Tidal Restriction Evaluation		DS view towa	rd structure	US view	above structure
Tidal Range Ratio	5	CALLENT?			
Crossing Ratio	4	A States	alex pe		
Erosion Classification	5	2762	12	and a second	- An
Tidal Restriction Overall Score	5	-	4 280		
Tidal Aquatic Organism Passage			-	Carlos Color	
Tidal Range Ratio	5				
Salt Marsh Migration Evaluation					
Salt Marsh Migration Potential (Eval. Unit)	1				
Salt Marsh Migration Potential (Wshed.)	1	US view towa	rd structure	DS view	above structure
Vegetation Evaluation			- AM		
Vegetation Comparison Matrix	1	· All	a manual of		
Infrastructure Risk Evaluation			* The		
Inundation Risk to the Roadway (US, DS)	1,1			(Start-P	
Inun. Risk to the Crossing Structure (US, DS)	1,1				
Adverse Impacts Evaluation**		the state			100 mary
Inundation Risk to Low-Lying Development	5	a subset			
Overall Scores					
Infrastructure	5				
Ecological	5				
Combined	4			Lo	ong. Profile

<u>Hght.</u>

5.8574

5.2074

5.4074

5.3674

5.1874

3.8574

2.7574

1.7074

2.4574

2.5474

1.8574

2.3274

Feat.

HC

Ρ

HC

GC

Т

L

СВ

Ρ

HC

HC

Ρ

HC

Sub.

G

C/S

S

С

G

С

С

S

С

С

С

С

Dist.

0

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



N/A



Stru	cture Characteristics			
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Steel - Corrugated	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	4	.4	4.5
Dimension B ^{CB} (height):	4.4		4.3
Crossing Length (Invert to In	vert):	80.5	

Crossing Condition:		Headwall Material	Headwall Condition Wingwall Material Conditio		Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Poor	Culvert	Low
	Downstream	Dry Fit Stone	Poor	Dry Fit Stone	Poor	Culvert	Low

	Scour in Structure	Scour Severity in Structure	Road Surf	ace Condition	Utilities	at Crossing	Structure Condition Overall
	None	None	(Good Overhead electric		Fair	
_							
S	itructure Conditio Comments:	n N/A					
Ecolog	ological Assessment:			<u>Upstream</u>		<u>Downstream</u>	
N	Natural Community Classification:			Freshwater Stream		Freshwater Stream	
U	Jpstream Salt Ma	rsh Migration Poten	tial (acres):	0.00			
Flood	Hazard & Emerg	gency Access					
S	Site Identified in Hazard Mitigation Plan: No						
E	mergency Access	ergency Access or Evacuation Route: N/A					
Н	listory of Flooding	z:	U	Unknown			

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:		93
Observer(s) &			
Organization:	TS	5,JB (NHDES Coastal)	
Municipality:	DURHAM		
Stream Name:	Bunker Creek		
Road Name:	Piscataqua Rd		
			-

Date:		8/3/2018			
Start Time:	10:00:00 AM				
End Time:	11:45:00 AM				
Tide Prediction		High	Low		
ті	ime:	5:53 PM	11:29 AM		
Elevat	ion:	6.5	0.4		
Tide Chart Location:		Dove	er Point		

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	5
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	2
Erosion Classification	5
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	4
Salt Marsh Migration Potential (Wshed.)	4
Vegetation Evaluation	
Vegetation Comparison Matrix	5
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,3
Inun. Risk to the Crossing Structure (US, DS)	1,2
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	5
Ecological	4
Combined	4

....

DS view toward structure

US view toward structure



DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



<u>Dist.</u>	Hght.	Feat.	<u>Sub.</u>
0	0.3191	HC	C/S
107	0.1091	HC	C/S
152	-2.8509	Р	G
224	0.2991	GC	Shell
235	0.4191	I	Shell
268	0.1491	T	Shell
274	-0.0709	GC	Shell
284	-3.3809	Р	G
416	-0.9309	HC	C/S

The crossing of Bunker Creek at Route 4 in Durham is a 10.5 by 13-foot concrete structure showing multiple signs of wear and erosion. It features plunge pools on either side and restricts tidal flow to an upstream marsh that is largely tall form cordgrass (in contrast, almost all marshes in the State are dominated by salt hay). The upstream marsh is managed by NH Fish and Game and is a sentinel site with long term monitoring for the Great Bay National Estuarine Research Reserve. The combined overall combined score is 4, a high priority for replacement.



Structure Characteristics:

Structure Type:	Bridge with Abutments	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft): Up		ream	<u>Downstream</u>
Dimension A (width):	13	.88	12.7
Dimension B ^{CB} (height):	10.54		10.46
Crossing Length (Invert to Invert):		33	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Poor	Wingwalls	Medium
	Downstream	None	N/A	Concrete	Poor	Wingwalls	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Abutment	Medium	Fair	Overhead electric	Poor
Structure Condit	ion N/A			

Comments:

Ecological Assessment:		<u>Upstream</u>	<u>Downstream</u>	
	Natural Community Classification:	Low Salt Marsh		Sparsely Vegetated Intertidal Habitat
	Upstream Salt Marsh Migration Potential (acres):		6.29	

Flood Hazard & Emergency Access Site Identified in Us A N/1+1

Site Identified in Hazard Mitigation Plan:	No
Emergency Access or Evacuation Route:	N/A
History of Flooding:	Unknown

			_	-1				
	Tidal (Crossing	g Summ	ary Sheet				
	New Hampshi	ire's Tidal C	rossing Ass	essment Proto	col			
	Crossing ID:		95]		
Observer(s) &				Date:		7/27/20)18	
Organization:	TS, SL (NHDES	Coastal)		Start Time:		7:40:00	AM	
Municipality:	DURHAM			End Time:		9:37:00	AM	
Stream Name:	Johnson Creek			Tide Prediction		High	Low	
Road Name:	Piscataqua Rd			Ti	me:	1:33 PM	7:16 AM	
		• •		Elevat	ion:	6.1	0.2	_
Crossing Condition	Evaluation	Score*		Tide Chart Locatio	n:	Dover	Point	
Crossing Condition	า	1						
Tidal Restriction Ev	aluation		DS view	v toward structur	re	US view	above struc	ture
Tidal Range Ratio		1						Sec. 16
Crossing Ratio		3	TEFE					
Erosion Classificat	ion	4	4				10	
Tidal Restriction O	overall Score	3			2	and the second	Carlos and a second	
Tidal Aquatic Organ	nism Passage		A see	P at			The second	
Tidal Range Ratio		1		- And		-	NIN ST	
Salt Marsh Migratio	on Evaluation			2000	7.15			
Salt Marsh Migrat	ion Potential (Eval. Unit)	4						
Salt Marsh Migrat	ion Potential (Wshed.)	5	US view	v toward structur	re	DS view	above struc	ture
Vegetation Evaluation	ion		A State		the w		-	an Ar
Vegetation Compa	arison Matrix	1					Deserved 1	
Infrastructure Risk	Evaluation		Nor all the		-		and the second second	ALL STATE
Inundation Risk to	the Roadway (US, DS)	1,1			1967		- angen y	K K
Inun. Risk to the C	crossing Structure (US, DS)	1,1		C TRANSPORT				AND
Adverse Impacts Ev	aluation**			9966		and the state of the	and the	A. Car
Inundation Risk to	Low-Lying Development	5			di in	24 18		Same Survey
Overall Scores								
Infrastructure		1						
Ecological		1						
Combined		2				Lo	ng. Profile	

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-4.148	HC	C/S
99	-4.578	HC	C/S
122	-6.648	Ρ	C/S
175	-4.958	I	G
240	-4.538	I	В
266	-4.778	GC	В
281	-10.778	Ρ	C/S
365	-7.098	HC	C/S
456	-5.868	HC	G

N/A



Stru	Structure Characteristics:						
	Structure Type:	Bridge with Abutments	Date of Last				
	Structure Material:	Concrete	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	1	6	15.5
Dimension B ^{CB} (height):	16.1		13.5
Crossing Length (Invert to Invert):		65	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Good	None	None
	Downstream	None	N/A	Concrete	Good	Abutment	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Abutment	Low	Fair	Overhead electric	Good
	L	J		

Structure Condition Comments:

Good overall so spalling/scour inside exposing rebar

Ecol	Ecological Assessment:		<u>Upstream</u>	<u>Downstream</u>	
	Natural Community Classification:	L	Low Salt Marsh	Low Salt Marsh	
	Upstream Salt Marsh Migration Potentia		10.97		

Flood Hazard & Emergency Access Site Identified in Hazard Mitigation Plan: No Emergency Access or Evacuation Route: N/A History of Flooding: unknown

l ida	I Crossing	g Summ	ary Sneet	_				
New Hamp	shire's Tidal C	rossing Ass	essment Protoc	ol				
Crossing ID:		96						
Observer(s) &			Date:		7/:	18/2018		
Organization: JB TS (NH	IDES Coastal)		Start Time:		12:3	30:00 PM		
Stroom Name: Johnson Crook			End Time:		2:0	0:00 PIN	Low	
Road Name: Grook Rd			Time Prediction	<u>.</u>			11.35 AM	
			Flevatio	n:	7.1		-0.5	
Crossing Condition Evaluation	<u>Score</u> *		Tide Chart Location:		Saln	non Falls F	River	_
Crossing Condition	5			-				
Tidal Restriction Evaluation		DS view	v toward structure		US۱	view abo	ove stru	ctur
Tidal Range Ratio	1	S					Cinton Contractor	
Crossing Ratio	5		W ALL DALL			entre a	No 10	C.
Erosion Classification	4					in the		
Tidal Restriction Overall Score	3	- Carter -	The second		5. S. M		Alle-	
Tidal Aquatic Organism Passage		-				al and		
Tidal Range Ratio	1			The second				
Salt Marsh Migration Evaluation			「行き」で		- 3			No. of
Salt Marsh Migration Potential (Eval. Unit)	2							
Salt Marsh Migration Potential (Wshed.)	2	US v <u>i</u> ew	v toward structure		DS ۱	view abo	ove stru	ctur
Vegetation Evaluation			Sector Sector					¥.
Vegetation Comparison Matrix	4					es n e d	1. M	
Infrastructure Risk Evaluation			A LAND					
Inundation Risk to the Roadway (US, DS)	5,4	20					4.42	
Inun. Risk to the Crossing Structure (US, D	S] 1,1	1					Mart	
Adverse Impacts Evaluation**		2.00	the state of the		1		Sure .	4. A
Inundation Risk to Low-Lying Developmen	t 5				2	1 AN		Y
Overall Scores								
Infrastructure	5							
Ecological	4							
Combined	5					Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replac **Adverse Impacts Evaluation scores range from 1 to 5, when	ement priority and 5 = h e 1 = high risk and 5 = lo	ighest replacemen ow risk	t priority		<u>Dist.</u> 0	<u>Hght.</u> 5.3019	<u>Feat.</u> HC	<u>Sı</u> С
					146	4.0619	HC	С
Crossing Cross Section a	nd Stream Lon	ngitudinal F	Profile		170	3.3619	Р	С
12				- 1				



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	5.3019	HC	C/S
146	4.0619	HC	C/S
170	3.3619	Ρ	C/S
182	4.0819	HC	C/S
200	2.6119	I	В
211	2.9819	HC	В
222	1.9519	I	В
247	-1.4281	Р	В

Johnson Creek is a long narrow tidal creek that reaches into Madbury as it becomes brackish and fresh. Creek Road crosses the waterway with a 9.3 feet wide by 6.8 feet tall stone bridge. The crossing condition is poor, crossing ratio is poor and erosion is evident. The overall combined score is 5, highest priority for replacement.



Stru	cture Characteristics			
	Structure Type:	Bridge with Abutments	Date of Last	
	Structure Material:	Stone	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstrear</u>	n
Dimension A (width):	9	.3	9.3	
Dimension B ^{CB} (height):	6	.9	6.7	
Crossing Length (Invert to Invert):		22		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	Abutment	High
	Downstream	None	N/A	None	N/A	Abutment	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Culvert	High	N/A	None	Poor

Structure Condition Comments:

Stone abutments with 3 boards over it. Otherwise open

Ecological Assessment:		Upstream	Downstream			
Natural Community Classification:		Freshwater Marsh	Brackish Riverbank Marsh			
	Upstream Salt Marsh Migration Potent	tial (acres): 1.30				
Floo	Flood Hazard & Emergency Access					

Site Identified in Hazard Mitigation Plan:	No
Emergency Access or Evacuation Route:	N/A
History of Flooding:	unknown

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:		97
Observer(s) &			
Organization:	JB	TS (NHDES Coastal)	
Municipality:	DURHAM		
Stream Name:	Beards Creek		
Road Name:	Dover Rd		

Date:		8/3/20)18	
Start Time:	12:00:00 PM			
End Time:	1:25:00 PM			
Tide Prediction		High	Low	
ті	ime:	5:53 PM	11:29 AM	
	-	~ -		
Elevat	ion:	6.5	0.4	

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	2
Tidal Restriction Evaluation	
Tidal Range Ratio	5
Crossing Ratio	5
Erosion Classification	0
Tidal Restriction Overall Score	5
Tidal Aquatic Organism Passage	
Tidal Range Ratio	5
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	0
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	5,4
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	2
Ecological	5
Combined	5

DS view toward structure



US view toward structure



US view above structure

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist. Hght. Feat. Sub. 0 -1.5193 Ρ G 0.8607 СВ С 1.0107 СВ С 1.7107 СВ N/A GC N/A -4.5893 -4.6693 N/A Т C/S -4.9193 L C/S -5.5193 CB Ρ -6.5893 В 185.5 -3.4193 CB G -2.7193 GC N/A С 284.5 -3.4693 CB 308.5 -4.3193 Ρ S 329.5 -3.6693 G HC

The entrance to the town center of Durham on Route 108 (Dover Road) passes over Beards Creek which drains through an 8.5 high by 7.5-foot-wide concrete box culvert. Stop logs had kept the upstream wetland an open freshwater pond with no tidal exchange. The crossing is in good shape but has severe ecological impacts to the upstream wetlands and will prevent future marsh migration. The overall combined score is a 5, highest priority for replacement due to the ecological impacts. The main sewage line leading to the treatment plant to the south crosses the mouth of the culvert, below the stop logs, so that tidal restoration would require reconfiguration of the sewer line.



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):		ream	<u>Downstream</u>	
Dimension A (width):	7	.5	7.5	
Dimension B ^{CB} (height): 8		.6	8.5	
Crossing Length (Invert to Invert):		54.5		

Cros Con	sing Headwall Material		Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Fair	Metal	Fair	None	None
	Downstream	Concrete	Good	Metal	Good	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	OHE DS. pump house	Fair
	I			

Structure Condition Comments: Dam condition is poor.

Ecological Assessment:	<u>Upstream</u>	<u>Downstream</u>
Natural Community Classification:	Freshwater Marsh	Sparsely Vegetated Intertidal Habitat

Upstream Salt Marsh Migration Potential (acres): 13.45

Flood Hazard & Emergency Access

Site Identified in Hazard Mitigation Plan:	NO
Emergency Access or Evacuation Route:	N/A
History of Flooding:	No

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	98	3
Observer(s) &			
Organization:	TS	, JB (NHDES Coastal)	
Municipality:	DURHAM		
Stream Name:	Oyster River		
Road Name:	Newmarket Rd		

Date:	7/12/2018			
Start Time:	7:52:00 AM			
End Time:	9:30:00 AM			
Tide Prediction		High	Low	
ті	me:	12:29 PM	6:10 AM	
Elevat	ion:	6.8	-0.2	
Tide Chart Location:				

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	2
Tidal Restriction Evaluation	
Tidal Range Ratio	3
Crossing Ratio	3
Erosion Classification	4
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	3
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	1
Salt Marsh Migration Potential (Wshed.)	1
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	2
Ecological	3
Combined	3



US view toward structure

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Dist.	<u>Hght.</u>	Feat.	Sub.
0	-6.3428	HC	С
14	-6.7428	СВ	С
41	-7.2628	HC	В
62	-8.3128	Р	В
66	-7.5928	I	В
88	-10.593	СВ	В
117	-11.743	I	S
125	-13.623	Р	В
166	-11.543	HC	В
188	-11.443	HC	В

N/A



Stru	cture Characteristics	:		
	Structure Type:	Bridge with Abutments	Date of Last	
	Structure Material:	Stone	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	25		25	
Dimension B ^{CB} (height):			19.07	
Crossing Length (Invert to Invert):		51		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Fair	Wingwalls	Low
	Downstream	None	N/A	Rip Rap	Fair	Wingwalls	Low

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities	at Crossing	Structure Condition Overall	
	None	None	Fair	Fair		Good	
	Structure Condition Comments:	n N/A					
Ecol	cological Assessment:		<u>Upstream</u>	<u>Upstream</u>		Downstream	
	Natural Communit	y Classification:	Sparsely Vegetated Intertion	rsely Vegetated Intertidal Habitat Sparsely Vege			
	Upstream Salt Ma	rsh Migration Poten	tial (acres): 0.13				
Floc	od Hazard & Emerg	gency Access					
	Site Identified in H	azard Mitigation Pla	in: No	No			
	Emergency Access	or Evacuation Rout	e: N/A	N/A			
	History of Flooding	g:	No				

Tidal	Crossing	Summary	Shoot		
I luar Now Hamph	CIUSSIII Simo'a Tidal (g Summary	SILCEL		
Crossing ID:	ires Haai C	rossing Assessme			
		33 Date:		5/3/20	18
Organization: JB & KL (NHD)	ES Coastal)	Start	Time:	10:02:00	AM
Municipality: DURHAM		End T	ime:	1:30:00	AM
Stream Name: N/A		Tide I	Prediction	High	Low
Road Name: Bay Rd			Time:	2:50 PM	8:31 AM
			Elevation:	7.7	-0.1
Crossing Condition Evaluation	Score*	Tide (Chart Location:	Swamsc	ott River
Crossing Condition	1				
Tidal Restriction Evaluation		DS view towa	rd structure	US view	above structure
Tidal Range Ratio	1			made	
Crossing Ratio	4			AND A	
Erosion Classification	1	ROOT LE	Property in the	Les alla	and the second
Tidal Restriction Overall Score	2	E Standard	and the second		and the second s
Tidal Aquatic Organism Passage		- Caller M	duto	and the A	No.
Tidal Range Ratio	1		Service and		
Salt Marsh Migration Evaluation		Stand Park	and a second	1	
Salt Marsh Migration Potential (Eval. Unit)	4				
Salt Marsh Migration Potential (Wshed.)	4	US view towa	rd structure	DS view	above structure
Vegetation Evaluation		Contraction of the second	anales.	And a	4
Vegetation Comparison Matrix	3		Brank L		and the second s
Infrastructure Risk Evaluation					
Inundation Risk to the Roadway (US, DS)	2,2				The second se
Inun. Risk to the Crossing Structure (US, DS)	1,1	- A BERT	The second		- Adam
Adverse Impacts Evaluation**		de la st			Frank V
Inundation Risk to Low-Lying Development	2			and the	

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
**Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

1

3

2

Overall Scores Infrastructure

Ecological

Combined



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-3.0184	HC	C/S
40	-3.8184	Ρ	G
68	-2.7184	HC	G
123	-3.9184	Ρ	G
135	-2.4184	GC	G
142	-2.5684	I	G
167	-2.9184	I	G
185	-2.8684	GC	G
200	-3.7684	Ρ	C/S
224	-3.1184	HC	G
316	-3.8184	HC	C/S

N/A



Stru	cture Characteristics	:		
	Structure Type:	Bridge with Abutments	Date of Last	
	Structure Material:	Stone	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	16		16
Dimension B ^{CB} (height):	9	.4	6.65
Crossing Length (Invert to Ir	vert):	25	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Fair	None	None
	Downstream	None	N/A	Other	Good	None	None

	Scour in Structure	Scour Severity in Structure	Road Sur	face Condition	Utilities	at Crossing	Structure Condition Overall	
	None	None		Good	Over	nead electric	Good	
	Structure Condition Comments:	on N/A						
Ecol	cological Assessment:			<u>Upstream</u>		<u>Downstream</u>		
	Natural Communi	ty Classification:		Low Salt Marsh		Sparsely Vegetated Intertidal Habita		
	Upstream Salt Ma	rsh Migration Potent	ial (acres):	7.09				
Floo	d Hazard & Emer	gency Access						
	Site Identified in Hazard Mitigation Plan:			No				
	Emergency Access or Evacuation Route:			N/A				
	History of Flooding: No flooding documented							

	m·1 1	<u> </u>	C	<u>C1</u>			
	lidal	Crossing	g Summ	ary Sheet			
	New <u>Hamps</u> ł	nire's Tidal C	Crossing Ass	sessment Proto	col	_	
	Crossing ID:		100				
Observer(s) &				Date:		7/13/20	018
Organization:	TS, JB, SG (NHI	DES Coastal)		Start Time:		8:00:00	AM
Municipality:	NEWMARKET			End Time:		9:49:00	AM
Stream Name:	Lubberland Creek			Tide Prediction		High	Low
Road Name:	Bay Rd			Ti	me:	2:11 PM	8:18 AM
				Elevat	ion:	7.5	-1.1
Crossing Condition	Evaluation	Score*		Tide Chart Locatio	on:	Squamso	ott River
Crossing Condition	n	5					
Tidal Restriction Ev	aluation		DS viev	v toward structu	re	US view	above structure
Tidal Range Ratio		5			P		
Crossing Ratio		5	220		5	Section .	- 1922年7
Erosion Classificat	ion	5			-		
Tidal Restriction C	Verall Score	5		North Contraction	Contraction of the	and service	
Tidal Aquatic Organ	nism Passage		A State		200		- Males
Tidal Range Ratio		5			15-5		
Salt Marsh Migratio	on Evaluation		10 Alexandre	the second	and a second		a
Salt Marsh Migrat	ion Potential (Eval. Unit)	1					
Salt Marsh Migrat	ion Potential (Wshed.)	1	US viev	v toward structu	re	DS view	above structure
Vegetation Evaluat	ion			- Colorester			
Vegetation Compa	arison Matrix	5		PC-T		1-11-1	
Infrastructure Risk	Evaluation		A A		-		President of
Inundation Risk to	the Roadway (US, DS)	3,2					

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

3,3

5

5

5

5

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Combined



Long. Profile Feat.

HC

СВ

HC

Ρ

L

L

СВ

Р

HC

CB

HC

Ρ

HC

Sub.

C/S

C/S

C/S

C/S

C/S

N/A

G

G

С

C/S

C/S

G

G

Hght.

4.5743

3.6843

3.8143

2.2143

4.3243

3.7343

2.7443

1.5743

3.2543

2.5643

3.4143

2.0243

2.7943

Dist.

0

The crossing at Lubberland Creek, where it crosses Bay Road in Newmarket is effectively at the head of tide. The restrictive crossing is in poor condition; it contributes to the inundation risk from stormwater flooding, and is undersized, leading to severe scour, strongly restricting tides and prevention of organism passage. The overall combined score is 5 indicating highest priority for restoration. The culvert is slated to be restored in 2019 and the project champion and abutting landowner is The Nature Conservancy.



Structure Characteristics: Structure Type: Elliptical Culvert Date of Last Structure Material: Steel - Corrugated Known N/A Tide Gate Present: No Replacement: N/A

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	3.5		4.2
Dimension B ^{CB} (height):	2	.2	2.8
Crossing Length (Invert to Ir	vert):	42	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Poor	Dry Fit Stone	Poor	Wingwalls	High
	Downstream	Dry Fit Stone	Poor	Dry Fit Stone	Poor	Wingwalls	High

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Fair	Overhead electric	Poor
None	None	i dii	Overlead electric	1001

Structure Condition Comments:

Upstream opening clogged with sediment and veg due to Beaver gate.

Есо	logical Assessment:	<u>Upstream</u>	<u>Downstream</u>	
	Natural Community Classification:	Freshwater Marsh	Freshwater Stream	
Upstream Salt Marsh Migration Potential (acres): 0.00				
Floc	od Hazard & Emergency Access			
	Site Identified in Hazard Mitigation Plan	n: Yes		
	Emergency Access or Evacuation Route	acuation Route: N/A		
	History of Flooding:	historical flooding at crossing.		

	Tidal (Crossing	g Summ	ary Sheet				
New Hampshire's Tidal Crossing Assessment Protocol								
	Crossing ID:		101					
Observer(s) &	-			Date:	7/2	26/2018		
Organization:	JB TS (NHDES	Coastal)		Start Time:	8:3	0:00 AM		
Municipality:	NEWINGTON			End Time:	9:5	5:00 AM		
Stream Name:	N/A			Tide Prediction	High		Low	
Road Name:	No Name			Time:	12:53 PN	1	6:37 AM	
		_		Elevation:	6.0		0.2	
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Location:	[Dover Poin	t	
Crossing Condition	ו	1						
Tidal Restriction Ev	aluation		DS viev	v toward structure	US ۱	view abo	ove stru	cture
Tidal Range Ratio		1		S LALAKS 5		1/2		
Crossing Ratio		5						-
Erosion Classificat	ion	5		Sale of the		ALT	No.	
Tidal Restriction O	verall Score	4	and the second s			Mar / /		
Tidal Aquatic Orgar	iism Passage					1 To		
Tidal Range Ratio		1			2017	STAFE.	The last	
Salt Marsh Migration	on Evaluation		1			No-No		
Salt Marsh Migrat	ion Potential (Eval. Unit)	1						
Salt Marsh Migrat	ion Potential (Wshed.)	1	US viev	v toward structure	DS v	view abo	ove stru	cture
Vegetation Evaluation	on			-9-9				
Vegetation Compa	arison Matrix	0				NALAN	T A	
Infrastructure Risk	Evaluation							
Inundation Risk to	the Roadway (US, DS)	0,2					15 .	
Inun. Risk to the C	rossing Structure (US, DS)	0,5			C.	A A	Acrimi	
Adverse Impacts Ev	aluation**		A	A A				
Inundation Risk to	Low-Lying Development	5		2.21			W. Cont	14 14 14
Overall Scores								
Infrastructure		1						
Ecological		4						
Combined		2				Long.	Profile	
* Scoring system ranges from	om 1 to 5, where 1 = lowest replacemer	it priority and 5 = h	ighest replacemer	nt priority	Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
**Adverse Impacts Evaluation	tion scores range from 1 to 5, where 1 =	high risk and 5 = 1	ow risk	·	0	11.492	HC	C/S
				- (''	16	10.432	СВ	C/S
Cross	sing Cross Section and	Stream Lor	ngitudinal l	Profile	55	8.532	Р	C/S
10			-	— Road Profile*	70	11.642	I	C/S
14	000				113	7.832	I	С

2

50

100

Distance from Upstream Hydraulic Control (feet)

150

Height (NAVD 88 feet) 9 4

2 0 0

113 7.832 Т HWI Wrack 118 7.792 Ρ HWI Stain 129 9.642 HC Avg. Marsh Plain 140 9.542 СВ --- Low Tide Stream Profile

*The road profile is centered over the inverts for graphical purposes; it does not necessarily
 reflect its true configuration along the longitudinal profile.

С

G

S

N/A



Structure Characteristics:				
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Steel - Corrugated	Known	N/A
	Tide Gate Present:	Yes	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	1.5		1.5
Dimension B ^{CB} (height):	1	.5	1.5
Crossing Length (Invert to In	43		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	None	N/A	None	N/A	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	N/A	None	Good

Structure Condition Comments:

Vertical structure covering inlet. Barrier to two directional flow. Water trickling in from US pond.

Eco	logical Assessment:	<u>Upstream</u>	<u>Downstream</u>
	Natural Community Classification:	Freshwater Marsh	Brackish Marsh
Upstream Salt Marsh Migration Potential (acres): 0.00			
Floc	od Hazard & Emergency Access		
	Site Identified in Hazard Mitigation Pla	n: No	
	Emergency Access or Evacuation Route	ite: N/A	
	History of Flooding:	unknown	

	Tidal (Crossing	Summ	arv Sheet			
	New Hampshi	ire's Tidal C	rossina Ass	essment Proto	col		
	Crossing ID:	ire b Ituur e	102	essment i roto	201	Т	
Observer(s) &				Date:		6/20/20)18
Organization:	TS, JB (NHDES	Coastal)		Start Time:		1:10:00	PM
Municipality:	NEWINGTON			End Time:		2:20:00	PM
Stream Name:	N/A			Tide Prediction		High	Low
Road Name:	Newington Rd			Ti	me:	8:13 PM	2:11 PM
				Elevat	ion:	7.4	-0.3
Crossing Condition I	Evaluation	<u>Score</u> *		Tide Chart Locatio	on:	Squamso	ott River
Crossing Condition	1	1					
Tidal Restriction Eva	aluation		DS view	toward structu	re	US view	above structure
Tidal Range Ratio		2	1412 Jan		Ter	- 18 - 10 - 10 - 10 - 10 - 10 - 10 - 10	
Crossing Ratio		4					a set
Erosion Classificati	on	4	the second se		-		A Shi to p
Tidal Restriction O	verall Score	3	and the second	1 1 22	1		
Tidal Aquatic Organ	ism Passage						
Tidal Range Ratio		2	A				
Salt Marsh Migratio	n Evaluation		- and			1	an ites
Salt Marsh Migrati	on Potential (Eval. Unit)	1					
Salt Marsh Migrati	on Potential (Wshed.)	1	US view	v toward structu	re	DS view	above structure
Vegetation Evaluati	on		Sec. 1				
Vegetation Compa	rison Matrix	4		Carlos I		- Hitseler	West States
Infrastructure Risk Evaluation				7	L. T.		
Inundation Risk to	the Roadway (US, DS)	1,1			Point and	- And	
Inun. Risk to the Ci	rossing Structure (US, DS)	1,1	and the	- And A	and the second	1994 - 31 - 31 - 31 - 31 - 31 - 31 - 31 - 3	nin and a la
Adverse Impacts Eva	aluation**						En 1
Inundation Risk to	Low-Lying Development	5		N/N . A			
Overall Scores							
Infrastructure		1					

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

4

3

Ecological

Combined



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	2.0621	HC	С
7	2.7121	HC	С
29	2.4221	CB	G
34	2.3421	I	С
75	2.1721	I	С
92	-2.2279	Ρ	С
109	1.7221	HC	G
118	0.9021	Ρ	С
137	1.3221	HC	С

N/A



Structure Characteristics:				
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>	<u>Downstream</u>
Dimension A (width):	5	5
Dimension B ^{CB} (height):	5	5
Crossing Length (Invert to Invert):		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Concrete	Good	Wingwalls	Low
	Downstream	Concrete	Good	Rip Rap	Good	None	None

	Structure	Scour Severity in Structure	Road Surface Condition	Utilities	at Crossing	Structure Condition Overall					
	Culvert	Low	Fair	Overh	ead electric	Good					
	Structure Condition Comments:										
Ecolo	ogical Assessmen	it:	<u>Upstream</u>		Dov	<u>wnstream</u>					
	Natural Communit	ty Classification:	Freshwater Swam	р	High	Salt Marsh					
	Upstream Salt Ma	rsh Migration Potent	tial (acres): 0.00								
-											
Floo	d Hazard & Emer	gency Access									
	Site Identified in F	lazard Mitigation Pla	n: Yes								
	Emergency Access	or Evacuation Route	e: N/A	N/A							
	History of Floodin	g:	road has washed	road has washed out in the past.							

	Tidal (7	- Cumm	- Choot				
		LTOSSIN	g Summe	ary Sheet	,			
	New Hampshi	re's Tidal C	Trossing Ass	essment Proto	col	T		
Cro	ossing ID:		103					7
Observer(s) &	Observer(s) &					6/27/20)18	_
Organization:	IS, Copro (NHDI	ES Coastal)		Start Time:		7:53:00	AM	-
Chrosen Names GREENLA				End Time:		9:40:00	AM	-
Bead Name: N/A	JK			The Prediction			8.13 0.04	-
Road Name: N/A				Flevat	ion:	2.05 PIVI	0.13 AM	-
Crossing Condition Evaluat	ion	Score*		Tide Chart Locatio	n:	Squamsc	ott River	-
Crossing Condition		4		L				_
Tidal Restriction Evaluation	n		DS view	toward structur	re	US view	above struct	ure
Tidal Range Ratio		3	and the					
Crossing Ratio		4	A Part	A REAL PROPERTY.		a drate price to		Carlos -
Erosion Classification		5			The second	and the second	Same in the	
Tidal Restriction Overall S	core	4			- Aller		62.2	
Tidal Aquatic Organism Pa	ssage				No.		A State	PA
Tidal Range Ratio		3					- AND	
Salt Marsh Migration Evalu	uation					Sharmen B		
Salt Marsh Migration Pote	ential (Eval. Unit)	2						
Salt Marsh Migration Pote	ential (Wshed.)	2	US view	toward structur	re	DS view	above struct	ure
Vegetation Evaluation				is bast of	12	Stant-1	dit. i fin a dissipatives of an	
Vegetation Comparison N	/latrix	1	and the second	and the second s	-		and the	the state
Infrastructure Risk Evaluat	ion			- FIL			in the second second	and a
Inundation Risk to the Ro	adway (US, DS)	2,2	- IN S/R					attender of the second
Inun. Risk to the Crossing	Structure (US, DS)	2,3		and a set	1997	S. ASA		
Adverse Impacts Evaluatio	n**			te stat		A STATE OF	and the second s	
Inundation Risk to Low-Ly	/ing Development	5			al all	S. J. Market	- SM	PLY?
Overall Scores								
Infrastructure		4						
Ecological		3						
Combined		3				Lo	ong. Profile	

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Feat.

HC

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HC

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Sub.

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C/S

C/S

C/S

C/S

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<u>Hght.</u>

0.7277

-0.0623

0.3777

-0.1623

0.1777

0.0377

-1.0823

0.0077

-0.9623

0.0177

-0.1623

Dist.

0

32

74

86

111

156

169

178

186

193

204

N/A



Structure Characteristics:							
	Structure Type:	Bridge with Abutments	Date of Last				
	Structure Material:	Stone	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	2.9		2.65	
Dimension B ^{CB} (height):	7	7	6.15	
Crossing Length (Invert to In	45			

Crossing Condition:		Headwall Material	ial Headwall Wingwall Material Condition		Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Dry Fit Stone	Fair	Wingwalls	Low
	Downstream	None	N/A	Dry Fit Stone	Poor	Wingwalls	High

	Scour in Structure	Scour Severity in Structure	Road Surf	d Surface Condition Utilities a		at Crossing	Structure Condition Overall			
	Abutment	Low		Fair			Fair			
	Structure Condition Comments:	on N/A								
Ecol	ogical Assessmen	it:		<u>Upstream</u>			<u>Downstream</u>			
	Natural Communi	ty Classification:		High Salt Marsh			Salt Marsh			
	Upstream Salt Ma	rsh Migration Potent	ial (acres):	1.33						
Floo	d Hazard & Emer	gency Access								
	Site Identified in I	lazard Mitigation Pla	n: Y	'es						
	Emergency Access or Evacuation Route:			J/A						
	History of Floodin	ig:	U	unknown						

Tidal (Crossing	Summ	ary Sheet					
New Hampsh	ire's Tidal C	rossing Ass	sessment Proto	col				
Crossing ID:		104			T			
Observer(s) &			Date:		6/2	7/2018		
Organization: JB, Copro (NHD	ES Coastal)		Start Time:		7:45	:00 AM		
Municipality: GREENLAND			End Time:		9:15	:00 AM		
Stream Name: Shaw Brook			Tide Prediction		High		Low	
Road Name: N/A			Tir	ne:	2:03 PM		8:13 AM	
			Elevati	on:	6.6		0.0	
Crossing Condition Evaluation	<u>Score</u> *		Tide Chart Location	n:	Squa	mscott R	iver	
Crossing Condition	5							
Tidal Restriction Evaluation		DS viev	v toward structure	е	US vi	iew abo	ove strue	ture
Tidal Range Ratio	2	-	1 Martin			Starther	C. Alice	
Crossing Ratio	5							
Erosion Classification	5							
Tidal Restriction Overall Score	4	1				N Sal	125	
Tidal Aquatic Organism Passage					Z			
Tidal Range Ratio	2				1	Story B		
Salt Marsh Migration Evaluation		1 miles				- ACT		1
Salt Marsh Migration Potential (Eval. Unit)	1							
Salt Marsh Migration Potential (Wshed.)	1	US v <u>ie</u> v	v toward structur	e	DS vi	iew abc	ove strue	cture
Vegetation Evaluation						1999 (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (
Vegetation Comparison Matrix	3							
Infrastructure Risk Evaluation			Tes		-		See See	
Inundation Risk to the Roadway (US, DS)	2,1		and the second		-1-5	A second		
Inun. Risk to the Crossing Structure (US, DS)	3,4				de la la			
Adverse Impacts Evaluation**		7	- A Part of the		Att.	S the	S S	≤ 1
Inundation Risk to Low-Lying Development	5		A LAND			STR.	12 mar	reall
Overall Scores								
Infrastructure	5							
Ecological	3							
Combined	4					Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replacement	nt priority and 5 = hi	ghest replacemen	t priority		Dist.	<u>Hght.</u>	Feat.	<u>Sub</u>

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The railroad line that traverses the southeast corner of Great Bay crosses several small valleys of salt marsh (#103, 104, 106) and the Winnicut River (#105). This crossing is a granite culvert, about 1.5 feet wide and 5 feet tall, over a small tributary called Shaw Brook. With poor crossing condition, erosion and poor crossing ratio the overall combined score is 4, high priority for replacement.



Structure Characteristics:

History of Flooding:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstr</u>	eam
Dimension A (width):	1	.7	1.35	
Dimension B ^{CB} (height):	5	.2	5.05	
Crossing Length (Invert to Ir	48			

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	Culvert	Medium
	Downstream	None	N/A	None	N/A	Culvert	Medium

	Scour in Structure	Scour Severity in Structure	Road	Surface Condition	Utilities	at Crossing	Structure Condition Overall				
	Culvert	Medium		N/A		None	Poor				
	Structure Condition Comments: N/A										
Ecol	ogical Assessmen	t:		<u>Upstream</u>		Dov	Downstream				
	Natural Communi	ty Classification:		High Salt Mars	h	High Salt Marsh					
	Upstream Salt Ma	rsh Migration Potent	ial (acr	es): 0.10							
Flood Hazard & Emergency Access											
	Site Identified in H	lazard Mitigation Pla	n:	No							
	Emergency Access	or Evacuation Route	:	N/A							

unknown
	Tidal	Crossing	Summ	ary Sheet			
	New Hamps	hire's Tidal Ci	ossing Ass	sessment Protoc	ol		
	Crossing ID:		105				
Observer(s) &	-			Date:	L	6/19/20	018
Organization:	TS, JB, KL, PS (N	NHDES Coastal)		Start Time:		12:50:00) PM
Municipality:	GREENLAND			End Time:		3:00:00	AM
Stream Name:	Winnicut River			Tide Prediction		High	Low
Road Name:	N/A			Tim	e: 7	7:12 PM	1:12 PM
				Elevatio	n:	7.5	-0.6
Crossing Condition	Evaluation	Score*		Tide Chart Location:	:	Squamso	cott River
Crossing Condition	ı	5					
Tidal Restriction Eva	aluation		DS viev	v toward structure		US view	above structure
Tidal Range Ratio		1					
Crossing Ratio		3		A state			
Erosion Classificati	ion	3	Teacht	THE REAL PROPERTY AND INCOMENTAL PROPERTY AND INTENTI AND INTENTI AND INTENTE AND INTENTI AND INTENTE			
Tidal Restriction O	verall Score	2	a the start of the			-1-	
Tidal Aquatic Organ	ism Passage				1		
Tidal Range Ratio		1	the state of	in the second			STATISTICS AND INCOMENTS
Salt Marsh Migratio	on Evaluation		- destable	1 Strate			
Salt Marsh Migrati	on Potential (Eval. Unit)	4					
Salt Marsh Migrati	on Potential (Wshed.)	4	US viev	v toward structure		DS view	above structure
Vegetation Evaluati	on					10- 11	
Vegetation Compa	rison Matrix	3	the second	the tracking			
Infrastructure Risk I	Evaluation		- A	and williers			
Inundation Risk to	the Roadway (US, DS)	1,1			J.	and the	
Inun. Risk to the C	rossing Structure (US, DS)	1,1	A State		1	and the second	
Adverse Impacts Ev	aluation**		and a	at the second	1	MAR ELL	and the second second
Inundation Risk to	Low-Lying Development	5				Like Star	Start and a
Overall Scores	,						
Infrastructure		5					
Ecological		3					
Combined		4				Lo	ong. Profile

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

<u>Dist.</u>	Hght.	Feat.	<u>Sub.</u>
0	-3.8912	HC	S
52	-4.2012	Р	C/S
82	-4.2012	HC	S
145	-6.5412	Р	S
153	-6.3612	I	S
159	-8.1412	Р	S
169	-8.3312	I	S
176	-6.6312	Р	S
191	-3.8012	HC	С
239	-6.8712	Р	C/S
291	-3.4212	HC	G

The railroad line that traverses the southeast corner of Great Bay crosses several small valleys of salt marsh (#103, 104, 106) and the Winnicut River (#105). The Winnicut River is bridged by the railroad (about 19 feet wide and 18 feet tall) with granite abutments. The crossing condition is poor and exhibits some erosion and minor tidal restriction. The vegetation upstream becomes brackish and is more shaded by large trees and the marsh plain was measured more than 0.5 foot lower, an indicator of peat subsidence. The overall combined score is 4, high priority for replacement.



Stru	Structure Characteristics:					
	Structure Type:	Bridge with Abutments	Date of Last			
	Structure Material:	Stone	Known	N/A		
	Tide Gate Present:	No	Replacement:			

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	18.8		18.8
Dimension B ^{CB} (height):	18	8.6	16.7
Crossing Length (Invert to Ir	16		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Masonry	Poor	Wingwalls	Medium
	Downstream	None	N/A	Masonry	Poor	Wingwalls	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Abutment	Medium	N/A		Poor
Abutment	Medium	IN/A		FOOI

Structure Condition Comments:

	Sink hole rail surface river left
ts:	1

Ecological Assessment:			<u>Upstream</u>	Downstream	
	Natural Community Classification:	Low Salt Marsh		Low Salt Marsh	
Upstream Salt Marsh Migration Potential (acres):		9.67			

Floo	d Hazard & Emergency Access	
	Site Identified in Hazard Mitigation Plan:	No
	Emergency Access or Evacuation Route:	N/A
	History of Flooding:	flooding from dam breach prior to dam removal.

		Ti	dal Crossii	ng Summ	arv Sheet					
		Now He	uai Ciossii	I Crossing Ac	aly Direct					
	Cr	new I Iu	impsnire's ridu	106		0001	l			
				100	Date		7/	6/2018		
Observ	ver(s) &	TS II	B (NHDES Coastal)		Start Time		1.4	5.00 PM		
Munic	ipality: GREENLA	 AND			End Time:		3:0	0:00 PM		
Stream	Name: Winnicu	t River			Tide Prediction		High		Low	
Road	Name: N/A				Ti	ime:	8:05 PM		2:06 PM	-
					Elevat	ion:	6.8		0.6	_
Crossing Cond	dition Evalua	tion	<u>Score</u> *		Tide Chart Locatio	on:	Squ	amscott R	iver	
Crossing Cor	ndition		5							
Tidal Restricti	ion Evaluatio	n		DS viev	v toward structur	re	US v	view abc	ve stru	cture
Tidal Range	Ratio		1	and the			and and	1 mart	8/32	
Crossing Rat	tio		4		THE ST. BE				Mag class	- August
Erosion Clas	sification		3				See.	st.		Sec. 1
Tidal Restric	tion Overall S	Score	3	2				a de la	A A A A	
Tidal Aquatic	Organism Pa	issage				- Martin Contraction	23.4	State .	NVA.	These
Tidal Range	Ratio	-	1		ale to la	AN AN			1.1	No.
Salt Marsh M	igration Eval	uation		1		14		1	A	-de-
Salt Marsh N	- Vigration Pot	ential (Eval. U	Jnit) 1							
Salt Marsh N	Vigration Pot	ential (Wshec	j.) 1	US viev	v toward structur	re	DS v	view abc	ove stru	cture
Vegetation Ev	valuation	·		4. 6 To		163		2.94		
Vegetation (Comparison N	∕Jatrix	3						10.5.5	Contraction of the
Infrastructure	e Risk Evaluat	tion			A State of the second s	4			aller and	
Inundation (Risk to the Ro	adway (US, D	(5) 1.1		- CONTRACTOR		TRA		Sand	1 apr
Inun Risk to	the Crossing	structure (U	S, _,_ S, _,_ S, _,_	S alert	No. Charles	1		Re-	618	Star 7
	orte Evaluatio	, 5ti ucture (5. m**	J, UJ, J, J, T		Sta Sta	-		the second		
Inundation (Rick to Low-Ly	ving Developr	nent 5		North Mark	22		200	-	
		Ing Developing	lient 5			•				and the second second
Infractruct			5							
Ecological	ure		ر د							
Combined			5					Long	Profile	
Compilea			4				21-1	LUIIS.	Prome	6 b.
* Scoring system **Adverse Impact	ranges from 1 to 5, ts Evaluation scores	where 1 = lowest re s range from 1 to 5,	applacement priority and 5 where 1 = high risk and 5	5 = highest replacemen 5 = low risk	t priority		Dist.	<u>Hgnτ.</u>	Heat.	<u>sup.</u>
							0	0.6909	HU	2
	Crossing C	ross Sectior	າ and Stream L	ongitudinal I	Profile		30 59	0.8109	HL CB	B
14					Bood Profile	*	55	0.9100	1	D D
12					KUdu FIUme	, .	110	0.9109	1	ь С
⊋ 10				-	HWI Wrack		112	0.5505		
fee				-	HWI Stain		124	0.4009	GC LIC	
88 8					Aver March	Dista	134	-0.5291	нс	G
A 6		- /			Avg. Marsh	Plain	149	-0.7691	HC	G
				-	Low Tide	- 1	1/6	-1.2091	СВ	C/S
right.		0		-	Stream Prof	ile				
¥ ²		-								

0 -2 0

50

100 Distance from Upstream Hydraulic Control (feet) *The road profile is centered over the inverts for graphical purposes; it does not necessarily reflect its true configuration along the longitudinal profile.

150

The railroad line that traverses the southeast corner of Great Bay crosses several small valleys of salt marsh (#103, 104, 106) and the Winnicut River (#105). This easternmost crossing is over a tributary to the Winnicut River, a 3 by 3 (approximately) granite culvert. The crossing condition is poor and moderate erosion was observed as well as a change in plant community. The culvert is slightly perched, and high tides often overtop the culvert. The overall combined score is 4, high priority for replacement.



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	3.4		2.4
Dimension B ^{CB} (height):	2	.7	3.4
Crossing Length (Invert to Ir	50		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	Culvert	Medium
	Downstream	None	N/A	None	N/A	Culvert	None

	Scour inScour Severity inStructureStructure		Road Su	Road Surface Condition Utilities		at Crossing	Structure Condition Overall		
	Culvert	Medium		N/A		None	Poor		
	Structure Conditi Comments:	on N/A							
Ecol	ogical Assessmer	nt:		Upstream			<u>ownstream</u>		
	Natural Communi	ty Classification:		High Salt Marsh			High Salt Marsh		
	Upstream Salt Ma	arsh Migration Potent	tial (acres): 0.39					
Floo	Flood Hazard & Emergency Access								
	Site Identified in I	Hazard Mitigation Pla	n:	No					
	Emergency Access	s or Evacuation Route	:	N/A					
	History of Floodin	g:		unknown					

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	10
Observer(s) &		
Organization:	JB	TS (NHDES Coastal)
Municipality:	GREENLAND	
Stream Name:	Winnicut River	
Road Name:	Portsmouth Ave	

Date:		8/24/20	018	
Start Time:		7:21:00	AM	
End Time:	9:03:00 AM			
Tide Prediction		High	Low	
Tir	ne:	1:10 PM	7:22 AM	
Elevation:		6.4	0.4	
Tide Chart Location:		Squamscott River		

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	1
Erosion Classification	4
Tidal Restriction Overall Score	2
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	3
Salt Marsh Migration Potential (Wshed.)	3
Vegetation Evaluation	
Vegetation Comparison Matrix	4
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	1,1
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	1
Ecological	4
Combined	2

DS view toward structure



US view toward structure



DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile Feat.

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Hght.

6.6339

6.2339

6.5339

5.1339

4.6339

6.6339

8.1839

14.614

15.364

14.164

15.464

17.814

13.814

16.464

Dist.

N/A



Stru	Structure Characteristics:						
	Structure Type:	Bridge with Side Slopes and Abutments	Date of Last				
	Structure Material:	Concrete	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	54		54
Dimension B ^{CB} (height):	21	.67	26.3
Crossing Length (Invert to Ir	32		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Concrete	Good	None	None
	Downstream	None	N/A	Concrete	Good	None	None

	Scour in Structure	Scour Severity in Structure	Road Su	face Condition	Utilities	at Crossing	Structure Condition Overall			
	None	None		Good	Small pipe DS side of	bridge. Electrical conduit?	Good			
	Structure Condition Multiple fish weirs in armored channel under bridge Comments: Multiple fish weirs in armored channel under bridge									
			1							
Ecol	ogical Assessmen	t:		<u>Upstream</u>			<u>Downstream</u>			
	Natural Communi	ty Classification:		Freshwater Stre	am	Brackish Riverbank Marsh				
	Upstream Salt Ma	rsh Migration Potent	tial (acres)	: 3.67						
Floo	d Hazard & Emer	gency Access								
	Site Identified in Hazard Mitigation Plan:			No						
	Emergency Access	or Evacuation Route	e:	Yes						
	History of Floodin	g:		None document	ed					

Tidal (Crossing	g Summar	v Sheet				
New Hampsh	ire's Tidal (rossina Asses	sment Protocol				
Crossing ID:	i e o ridui e	108	sment i rotocot				
Observer(s) &			Date:	5/	17/2018		
Organization: JB KL (NHDES	Coastal)	s	itart Time:	9:1	.5:00 AM		
Municipality: NEWMARKET		E	nd Time:	11:	30:00 AM		
Stream Name: N/A		Т	ide Prediction	High		Low	
Road Name: New Rd			Time:	4:38 PM	1	9:45 AM	
			Elevation:	7.5		-1.0	_
Crossing Condition Evaluation	<u>Score</u> *	т	ide Chart Location:	Swa	amscott R	iver	
Crossing Condition	5						
Tidal Restriction Evaluation		DS view to	ward structure	US	view abo	ove struc	ture
Tidal Range Ratio	3				Shine half	Marine	
Crossing Ratio	5		state Short				
Erosion Classification	5				1.2		
Tidal Restriction Overall Score	4	-			P. A.		
Tidal Aquatic Organism Passage					2450		
Tidal Range Ratio	3		-Post and a second	/	The second	A	
Salt Marsh Migration Evaluation		S. Marth					
Salt Marsh Migration Potential (Eval. Unit)	1						
Salt Marsh Migration Potential (Wshed.)	1	US v <u>iew to</u>	ward structure	DS	view abo	ove struc	ture
Vegetation Evaluation			- 15 ⁻			S. M	
Vegetation Comparison Matrix	3		and the				
Infrastructure Risk Evaluation		-				100 AND - 400	
Inundation Risk to the Roadway (US, DS)	1,1						
Inun. Risk to the Crossing Structure (US, DS)	4,0						
Adverse Impacts Evaluation**			1 AC			and the	
Inundation Risk to Low-Lying Development	5		Land March				
Overall Scores							
Infrastructure	5						
Ecological	4						
Combined	4				Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replacemer **Adverse Impacts Evaluation scores range from 1 to 5, where 1 =	nt priority and 5 = h high risk and 5 = 1	ighest replacement pri ow risk	ority	<u>Dist.</u> 0	Hght. 3.9907	<u>Feat.</u> HC	<u>Sub.</u> C/S

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4.0907

5.0907

3.6907

2.6907

3.7907

1.6907

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This crossing under New Road in Newmarket conducts water to a wetland high in the intertidal zone with little potential for migration. However, its crossing condition is poor, it is restrictive, and it exhibits high erosion. The overall combined score is 4, indicating high priority for replacement.



Date of Last

Structure Characteristics:					
Structure Type:	Round Culvert				

.

Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstre</u>	am	<u>Downstream</u>
Dimension A (width):	2		2
Dimension B ^{CB} (height):	2		2
Crossing Length (Invert to Ir	nvert):	43	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Masonry	Poor	Masonry	Poor	Headwall	High
	Downstream	Masonry	Poor	None	N/A	None	None

	Scour in Structure	Scour Severity in Structure	Road Sur	rface Condition Utilities at Crossing		at Crossing	Structure Condition Overall
	None	None		Good Over head electric		nead electric	Poor
	Structure Condition Comments:	N/A					
						-	
Ecol	ogical Assessmen	t:		<u>Upstream</u>		<u>_</u>	<u>)ownstream</u>
	Natural Communit	y Classification:		Freshwater Marsh Freshwater Stream			
	Upstream Salt Mar	rsh Migration Poten	tial (acres)	: 0.00			
Floc	d Hazard & Emer	gency Access					
	Site Identified in H	lazard Mitigation Pla	an:	No			
	Emergency Access	or Evacuation Rout	e:	N/A			
	History of Flooding	g:		No			

Tida	al Crossing	g Summ	ary Sheet					
New Ham	oshire's Tidal C	_ Crossing Ass	essment Proto	ocol				
Crossing ID:		109						
Observer(s) &			Date:		7/	2/2018		
Organization: JB, TS (N	HDES Coastal)		Start Time:		11:3	0:00 AM		
Municipality: STRATHAM			End Time:		12:3	0:00 PM		
Stream Name: N/A			Tide Prediction		High		Low	
Road Name: N/A			Ті	ime:	5:14 PM	1	1:20 AM	
			Elevat	ion:	6.5		0.3	
Crossing Condition Evaluation	<u>Score</u> *		Tide Chart Locatio	on:	Squa	amscott R	iver	
Crossing Condition	2							
Tidal Restriction Evaluation		DS view	toward structu	re	US v	iew abc	ove stru	cture
Tidal Range Ratio	1		A A A	/		The P		
Crossing Ratio	5		and the second		and the second		RAM	1×
Erosion Classification	0		10/10/1000		14	And Contraction	SSI	
Tidal Restriction Overall Score	3							
Tidal Aquatic Organism Passage		No Mar	X			K.		
Tidal Range Ratio	1				No.			
Salt Marsh Migration Evaluation			Jon Al				1	
Salt Marsh Migration Potential (Eval. Unit) 5							
Salt Marsh Migration Potential (Wshed.)	, 5	US view	v toward structu	re	DS v	iew abc	ve stru	cture
Vegetation Evaluation	-		A A A A A A A A A A A A A A A A A A A	20			to a new l	<u></u>
Vegetation Comparison Matrix	4	Sec. Sec.		6		(Landa)	h	Antes
Infrastructure Risk Evaluation	•		Carrier Marine		and the second second		-	dentration i NAIS
Inundation Risk to the Roadway (US_DS)	33	and a				1		
Inun Bick to the Crossing Structure (US, DS)	5,5 (1)				22		- 184	10
Adverse Imposts Evaluation**	-5, 4,4	1 and the	and the	7				1
Adverse impacts Evaluation **		12 A	A THE			en la		
Inundation Risk to Low-Lying Developmer	it 5							A Martin
Overall Scores	-							
Infrastructure	2							
Ecological	4							
Combined	3					Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replace	ement priority and 5 = h	highest replacemen	t priority		<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sul</u>
**Adverse Impacts Evaluation scores range from 1 to 5, whe	re 1 = high risk and 5 = 1	Iow risk			0	3.6765	СВ	C/5
Crossing Cross Soction	nd Stream La	ngitudinal	Profile		13	3.3065	I	C/
9		ingituuliial f	10IIIe	- 1	42	3.1665	I	G
		-	Road Profile	*	55	3.4565	СВ	C/5
		_		- 1	64	3.0565	Р	C/5
tet)				- 1				
₩ 6			—— HWI Stain	- 1				
Q 5			Avg. Marsh	Plain				
¥ 4				- 1				
¥ 3			LOW Hae	- 1				
e eig		-	Stream Prof	ile				
• Z								

10

20

30

40

Distance from Upstream Hydraulic Control (feet)

50

60

70

1 0 0

*The road profile is centered over the inverts for graphical purposes; it does not necessarily reflect its true configuration along the longitudinal profile.

This is a railroad crossing of a small upper tidal reach with a 2 by 2-foot granite culvert. Ponding on either side of the structure suggests an artificial condition of the wetlands (perhaps a borrow site for fill for the railroad bed). The vegetation appears to be largely salt marsh downstream and fresh upstream. This crossing has an overall combined score of 3, indicating moderate priority for replacement, which may rank higher for marsh migration as sea levels rise.



N/A

Structure Characteristics: Structure Type: Box Culvert Date of Last Structure Material: Stone Known Tide Gate Present: No Replacement:

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):		2	2.3
Dimension B ^{CB} (height):	1	.9	2.3
Crossing Length (Invert to Ir	29		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	None	N/A	None	N/A	Culvert	None

	Scour in Structure	Scour Severity in Structure	Road Surf	ace Condition	Utilities	at Crossing	Structure Condition Overall
	Culvert	Low		N/A None		None	Fair
	Structure Condition Comments:	on N/A					
			_			-	
Есо	logical Assessmen	t:		<u>Upstream</u>		<u>D</u>	<u>ownstream</u>
	Natural Communit	ty Classification:		Freshwater Swamp)	Hig	h Salt Marsh
	Upstream Salt Ma	rsh Migration Poten	tial (acres):	11.86			
	L			·			
Flo	od Hazard & Emer	gency Access					
	Site Identified in H	lazard Mitigation Pla	in: Y	'es			
	Emergency Access	or Evacuation Route	e: N	J/A			
	History of Floodin	g:	U	Inknown			

Tidal (Crossing	g Summary	Sheet					
New Hampsh	ire's Tidal (rossing Assessm	ent Proto	col				
Crossing ID:		111]			
Observer(s) &		Date:			6/2	26/2018		
Organization: JB TS (NHDES	S Coastal)	Start	Time:		7:5	0:00 AM		
Municipality: NEWFIELDS		End T	ime:		9:1	5:00 AM		
Stream Name: N/A		Tide I	Prediction		High		Low	
Road Name: N/A			Tir	ne:	1:20 PM		7:30 AM	
			Elevati	on:	6.7		0.1	
Crossing Condition Evaluation	<u>Score</u> *	Tide	Chart Location	n:	Squ	amscott R	iver	
Crossing Condition	5							
Tidal Restriction Evaluation		DS view towa	rd structur	е	US	view abo	ove struc	ture
Tidal Range Ratio	3	Washington and		F.,			No.	
Crossing Ratio	5	The age N	S Par	-		- Cont	17	
Erosion Classification	4	A Start		A.		63	2	
Tidal Restriction Overall Score	4			ite	100	107	10 3 5	
Tidal Aquatic Organism Passage					10			
Tidal Range Ratio	3		Sec.	and the second second				
Salt Marsh Migration Evaluation				3			et al	
Salt Marsh Migration Potential (Eval. Unit)	1							
Salt Marsh Migration Potential (Wshed.)	1	US view towa	rd structur	e	DS ۱	view abo	ove struc	ture
Vegetation Evaluation			China Carlos		1 200	12		
Vegetation Comparison Matrix	1		A REAL		872 AV		and the	
Infrastructure Risk Evaluation			A A					
Inundation Risk to the Roadway (US, DS)	1,1	- 12 Sec	1/-			No.		
Inun. Risk to the Crossing Structure (US, DS)	3,3		2 1					
Adverse Impacts Evaluation**						XX		
Inundation Risk to Low-Lying Development	5		- Verel				A. S.	
Overall Scores								
Infrastructure	5							
Ecological	3							
Combined	4					Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replacemer **Adverse Impacts Evaluation scores range from 1 to 5, where 1 =	nt priority and 5 = H high risk and 5 =	nighest replacement priority Iow risk			<u>Dist.</u> 0	<u>Hght.</u> 4.2487	<u>Feat.</u> HC	<u>Sub</u> C/S



8 4.0687 Ρ C/S 18 4.1387 HC C/S С 32 3.8887 L G 92 3.0387 L 98 2.3387 Ρ С С 102 HC 2.6687 Ρ S 116 2.2187 C/S 130 2.3787 HC

This crossing is over a branch of an unnamed brook and marsh and supports the rail line through Newington. It is terribly undersized (1.2 by 1.4 feet granite box culvert), has a poor crossing condition and exhibits high erosion. The crossing has an overall combined score of 4, indicating high priority for replacement.



Structure Type:	Box Culvert	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	rossing Dimensions (ft): Upstr		<u>Downstream</u>
Dimension A (width):	1	.4	2.4
Dimension B ^{CB} (height):	1	.2	2.2
Crossing Length (Invert to In	60		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Poor	Wingwalls	Medium
	Downstream	None	N/A	Rip Rap	Poor	Wingwalls	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall	
Culvert	Medium	N/A	None	Poor	
				•	

Structure Condition Comments:

c.	Stones collapsing at structure.
•	

Ecological Assessment:		<u>Upstream</u>	<u>Downstream</u>
	Natural Community Classification:	Freshwater Marsh	Freshwater Marsh
	Upstream Salt Marsh Migration Potent	ial (acres): 0.00	

Floo	lood Hazard & Emergency Access					
	Site Identified in Hazard Mitigation Plan:	No				
	Emergency Access or Evacuation Route:	N/A				
	History of Flooding:	Unknown				

Tidal (Crossin	g Summa	ary Sheet					
New Hampsh	ire's Tidal	Crossing Ass	essment Proto	col				
Crossing ID:		112			Ĩ			
Observer(s) &		Date:			6/28/2018			
Organization: TS, JB (NHDES	Coastal)		Start Time:		9:3	0:00 AM		
Municipality: NEWFIELDS			End Time:		1:2	2:00 PM		
Stream Name: N/A			Tide Prediction		High		Low	
Road Name: N/A			Ti	me:	12:00 AN	1 1	L2:00 AM	
			Elevati	ion:	0.0		0.0	_
Crossing Condition Evaluation	<u>Score</u> *		Tide Chart Locatio	n:	Squ	amscott R	iver	
Crossing Condition	4							
Tidal Restriction Evaluation		DS view	toward structur	e	US \	view abo	ove stru	cture
Tidal Range Ratio	3					- 12-1	- 6	
Crossing Ratio	5	the second		alera .				
Erosion Classification	5					"Per an	and the second	
Tidal Restriction Overall Score	4		and the se				The states	1
Tidal Aquatic Organism Passage		-	2- ANAN			- 4	从中部	
Tidal Range Ratio	3							
Salt Marsh Migration Evaluation		19 . C.		No.		and the second		
Salt Marsh Migration Potential (Eval. Unit)	1							
Salt Marsh Migration Potential (Wshed.)	1	US view	toward structur	e	DS \	view abo	ove stru	cture
Vegetation Evaluation			ALL PARTY				Star 1	
Vegetation Comparison Matrix	5		A CONTRACT					
Infrastructure Risk Evaluation		F					A ris	
Inundation Risk to the Roadway (US, DS)	1,1	(part)				HOT !!		
Inun. Risk to the Crossing Structure (US, DS)	4,3		AN OBSO			17- P		
Adverse Impacts Evaluation**		-9.3				A		
Inundation Risk to Low-Lying Development	5							
Overall Scores								
Infrastructure	4							
Ecological	5							
Combined	5					Long.	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest replacemen	nt priority and 5 =	highest replacement	priority		<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub</u>
Auverse impacts Evaluation scores range from 1 to 5, where 1 =	riigh risk and 5 =				0	2.3856	Р	C/S
Crossing Cross Section and	Stream I o	ngitudinal P	rofile		10	3.2056	СВ	C/S
30					17	2.1856	I	C/S
			Road Profile	*	107	1.9156	1	В

2.1856

1.3756

1.5856

-0.2244

-0.0944

GC

Ρ

HC

СВ

HC

В

В

В

S

В



The crossing is a railroad line over the upper reaches of a small drainage to the Squamscott River. It is a stone box culvert about 2 feet wide and 3 feet tall that shows constriction of the channel, erosion and potential impacts to the plant community. The overall combined score is a 5, highest priority for replacement.



Structure Characteristics:	
----------------------------	--

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	Yes	Replacement:	

Crossing Dimensions (ft):	<u>Upsti</u>	<u>eam</u>	<u>Downstream</u>
Dimension A (width):	3	}	2
Dimension B ^{CB} (height):	(H)	}	2.7
Crossing Length (Invert to In	90		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity	
	Upstream	Dry Fit Stone	Poor	Dry Fit Stone	Fair	Wingwalls	Low	
	Downstream	None	N/A	Dry Fit Stone	Fair	Wingwalls	Medium	

	Scour in Structure	Scour Severity in Structure	Road Surf	ace Condition	Utilities	at Crossing	Structure Condition Overall	
	Culvert	Low		Fair		None	Poor	
	Structure Condition R clogged DS							
Ecol	ogical Assessment	t:		<u>Upstream</u>			<u>Downstream</u>	
	Natural Communit	y Classification:		Freshwater Mars	sh	Freshv	vater Stream	
	Upstream Salt Mar	sh Migration Potent	ial (acres):	0.00				
Floo	d Hazard & Emerg	gency Access						
	Site Identified in Hazard Mitigation Plan:			No				
	Emergency Access or Evacuation Route:			N/A				
	History of Flooding:			Jnknown				

Tidal	Crossing	g Summ	ary Sheet					
New Hampsh	ire's Tidal C	Trossing Ass	sessment Proto	col				
Crossing ID:		113						
Observer(s) &			Date:		7/	5/2018		
Organization: TS, JB (NHDE	S Coastal)		Start Time:		1:00	0:00 PM		
Municipality: STRATHAM			End Time:		2:09	9:00 PM		
Stream Name: N/A			Tide Prediction		High		Low	
Road Name: N/A			Ті	me:	7:18 PM		1:20 PM	
			Elevat	ion:	6.7		0.6	
Crossing Condition Evaluation	<u>Score</u> *		Tide Chart Locatio	n:	Squa	amscott F	River	
Crossing Condition	5							
Tidal Restriction Evaluation		DS view	v toward structu	e	US v	iew abo	ove strue	cture
Tidal Range Ratio	1		CAL SURGE (TAL)	N.A	A Market		建动数 条	44
Crossing Ratio	5	144 Jak	A Standard B	W.	A PARA		a star	
Erosion Classification	5	STAR STAR	Coulde !!				-	
Tidal Restriction Overall Score	4						AL IN	A.
Tidal Aquatic Organism Passage		S.M.P.	Contraction of the					
Tidal Range Ratio	1			1	A East		Ni CA	
Salt Marsh Migration Evaluation					N. A.Y.		2.35	
Salt Marsh Migration Potential (Eval. Unit)	3							
Salt Marsh Migration Potential (Wshed.)	3	US view	v toward structu	re	DS v	iew abo	ove strue	ture
Vegetation Evaluation						atten en	alien dies	
Vegetation Comparison Matrix	4		何些学习	12		100 10 10 10 10 10 10 10 10 10 10 10 10	ant Abarbar S.	
Infrastructure Risk Evaluation		and the second second	1. A. A. A. A.					
Inundation Risk to the Roadway (US, DS)	4,2				14			
Inun. Risk to the Crossing Structure (US, DS)	5,5		the second second	A.		No to M	E. K	
Adverse Impacts Evaluation**			· · · · · · · · · · · · · · · · · · ·			- Constant		-
Inundation Risk to Low-Lying Development	5	C WYZ	IN YI/ Long		1			2 K
Overall Scores								
Infrastructure	5							
Ecological	4							
Combined	4					Long.	Profile	
* Scoring system ranges from 1 to 5. where 1 = lowest replaceme	nt priority and 5 = h	nighest replacemen	t priority		Dist.	Hght.	Feat.	Sub.

2.0516

2.8116

1.3816

1.2816

0.2816

0.6716

1.8816

1.8316

0.2816

0.6316

HC

HC

СВ

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L

Ρ

HC

HC CB

СВ

C/S

G

В

В

S

S

C/S

C/S

C/S

C/S

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



The crossing is on Squamscott Road over one of the unnamed upper marshes in Stratham and is rated an overall combined score of 4: high priority for replacement, due to tidal restriction and erosion associated with the 18-inch round culvert. The tidal creek fills the height of the culvert, even at low tide. Cattails are seen on both sides, but there is extensive marsh loss through ponding on the upstream side.



Structure Characteristics:

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	1	.5	1.5
Dimension B ^{CB} (height):	1.5		1.5
Crossing Length (Invert to Invert):		39	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Poor	None	N/A	Headwall	Low
	Downstream	None	Poor	None	N/A	Wingwalls	Low

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
	None	None	Good	None	Poor
	Structure Condition Comments:	Structure subm	erged		
Ecol	ogical Assessmen	it:	<u>Upstream</u>		<u>Downstream</u>
	Natural Community Classification:		Invasive Dominar	ıt	Brackish Marsh
	Upstream Salt Ma	rsh Migration Potent	tial (acres): 4.31		
Floo	d Hazard & Emer	gency Access			

Site Identified in Hazard Mitigation Plan:	Yes
Emergency Access or Evacuation Route:	Yes
History of Flooding:	flooding has occurred with 2+ inches of rain

T: 1 1	<u> </u>				_
Tidal	Crossing	g Summary Sheet			
New <u>Hampsh</u>	ire's Tidal C	rossing Assessment Protocol			
Crossing ID:		114			
Observer(s) &		Date:	6/11/2	018	
Organization: TS, JB (NHDE	S Coastal)	Start Time:	4:45:00	PM	
Municipality: STRATHAM		End Time:	5:51:00	PM	
Stream Name: N/A		Tide Prediction	High	Low	
Road Name: Squamscott Rd		Time:	11:51 AM	6:13 PM	
		Elevation:	6.9	0.3	
Crossing Condition Evaluation	<u>Score</u> *	Tide Chart Location:	Squamso	cott River	
Crossing Condition	2				
Tidal Restriction Evaluation		DS view toward structure	US view	above structure	
Tidal Range Ratio	1				
Crossing Ratio	4		A REAL PROPERTY AND		<u>an</u>
Erosion Classification	5			Santakar	
Tidal Restriction Overall Score	3	Pro the	and the second second		
Tidal Aquatic Organism Passage		Se sulta	Contraction of the second		Ì
Tidal Range Ratio	1	L	COL YES		1
Salt Marsh Migration Evaluation			Print and		
Salt Marsh Migration Potential (Eval. Unit)	4				
Salt Marsh Migration Potential (Wshed.)	4	US view toward structure	DS view	above structure	
Vegetation Evaluation			Contraction of the		1
Vegetation Comparison Matrix	3	A CARLES AND A	A. Anistration		11
Infrastructure Risk Evaluation					and the second
Inundation Risk to the Roadway (US, DS)	2,2		111111111		には
Inun. Risk to the Crossing Structure (US, DS)	5,5			A BANK	記載を
Adverse Impacts Evaluation**			WHIP TO BE	W CON	学
Inundation Risk to Low-Lying Development	5				P.

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

5

2

3

3

Inundation Risk to Low-Lying Development

Overall Scores Infrastructure

Ecological

Combined



Long. Profile

Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	2.9491	HC	C/S
86	2.3991	HC	G
91	2.4991	HC	G
95	1.5491	Ρ	C/S
98	1.8891	I	C/S
134	1.4991	I	G
138	0.8091	Ρ	С
157	1.7991	HC	G
201	1.4491	HC	G
257	1.3091	HC	G

N/A



Stru	cture Characteristics	:		
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	1	.5	1.5
Dimension B ^{CB} (height):	1.5		1.5
Crossing Length (Invert to Invert):		36	

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Masonry	Fair	None	N/A	Headwall	Low
	Downstream	Concrete	Fair	None	N/A	Headwall	Low

	Scour in Structure	Scour Severity in Structure	Road Surf	ace Condition	Utilities	at Crossing	Structure Condition Overall	
	None	None	(Good	Overh	nead electric	Fair	
	Structure Condition Comments:	on N/A						
Ecol	ogical Assessmen	nt:		<u>Upstream</u>			<u>Downstream</u>	
	Natural Community Classification:			High Salt Marsh		High Salt Marsh		
	Upstream Salt Marsh Migration Potential (ac			7.06				
Floo	d Hazard & Emer	gency Access						
	Site Identified in Hazard Mitigation Plan:			Yes				
	Emergency Access	or Evacuation Route	te: Yes					
	History of Floodin	g:	fl	ooding has occu	rred with 2+'	of rain		

Tidal Crossing Summary Sheet

New Hampshire's Tidal Crossing Assessment Protocol

	Crossing ID:	115
Observer(s) &		
Organization:	TS,.	B,KL (NHDES Coastal)
Municipality:	STRATHAM	
Stream Name:	Jewell Hill Brook	
Road Name:	Squamscott Rd	

Date:	5/31/2018		
Start Time:	12:20:00 PM		
End Time:	2:30:00 AM		
Tide Prediction		High	Low
Tir	me:	3:44 PM	9:52 AM
Elevation:		6.7	-0.1

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	4
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	3
Erosion Classification	4
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	5
Salt Marsh Migration Potential (Wshed.)	5
Vegetation Evaluation	
Vegetation Comparison Matrix	3
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,4
Inun. Risk to the Crossing Structure (US, DS)	3,4
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	4
Ecological	3
Combined	4

DS view toward structure	US view above structure
	the second to
	The second second
St. Mary	

US view toward structure



DS view above structure

Dist.

0

16



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile Hght. Feat. Sub. -2.5597 HC G -3.2597 Ρ G

28	-1.4397	HC	C/S
57	-1.2897	HC	G
78	-1.9397	Р	G
89	-1.4397	GC	С
97	-1.7397	I	С
137	-2.8897	I	G
149	-1.8597	GC	С
154	-5.5397	Р	C/S
193	-2.6397	HC	G
206	-3.6997	Р	C/S
220	-2.1897	HC	G

Jewel Hill Creek carries tides through a fairly significant salt marsh and is crossed by Squamscott Road through an arched culvert, 8 feet wide and about 7 feet high. Although it appears to have been recently replaced, the structure condition was poor. The culvert constricted the channel and may have a negative impact on the plant community upstream. The overall combined score is 4, high priority for replacement.



Structure Characteristics:

Structure Type:	Embedded Pipe Arch Culvert	Date of Last	
Structure Material: Plastic - Smooth		Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	8		8.1	
Dimension B ^{CB} (height):	7		7.35	
Crossing Length (Invert to Ir	40			

Crossing Condition:		Headwall Material	Headwall Condition Wingwall Mate		Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Fair	Rip Rap	Good	Headwall	Medium
	Downstream	Concrete	Fair	Rip Rap	Good	Headwall	Medium

	Scour in Structure	Scour Severity in Structure	Road Su	face Condition	Utilities	at Crossing	Structure Condition Overall				
	None	None		Good	Overhead electric		Poor				
	Structure Condition Slanting headwall Comments: Slanting headwall										
Ecol	ogical Assessmen	t:		Upstream			<u>Downstream</u>				
	Natural Communit	y Classification:		High Salt Marsh Hig			h Salt Marsh				
	Upstream Salt Ma	rsh Migration Potent	tial (acres)	: 11.41							
Floo	d Hazard & Emerg	gency Access									
	Site Identified in Hazard Mitigation Plan:			Yes							
	Emergency Access	or Evacuation Route	e:	Yes							
	History of Flooding	2:		flooding has occurred with 2+ inches of rain							

	Tidal (rossin	T Summ	ary Sheet			
	New Hampsh	iro's Tidal (ary Direct	-1		
	Crossing ID:		<u>10551119 A55</u> 116				
Observer(s) &				Date:	8/27	/2018	
Organization:	JB TS CP (NHDI	ES Coastal)		Start Time:	9:13:	00 AM	
Municipality:	STRATHAM			End Time:	10:45	:00 AM	
Stream Name:	Mill Brook			Tide Prediction	High	Low	
Road Name:	No Name			Time	e: 2:58 PM	9:09 AM	
				Elevation	n: 6.8	0.2	
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Location:	Squar	nscott River	
Crossing Conditio	n	1					
Tidal Restriction Ev	aluation		DS viev	v toward structure	US vie	ew above structure	
Tidal Range Ratio		2		and the second	de la		
Crossing Ratio		3	The state of the second s	A CALL		and the second	
Erosion Classificat	tion	2	2				
Tidal Restriction C	Overall Score	2				See Month	
Tidal Aquatic Orga	nism Passage		《 教教》	Wess to a		A 4.8	
Tidal Range Ratio	-	2		BASSEL /			
Salt Marsh Migratio	on Evaluation		科 《起	March Mark	8		
Salt Marsh Migrat	ion Potential (Eval. Unit)	1					
Salt Marsh Migrat	ion Potential (Wshed.)	1	US viev	v toward structure	DS vie	ew above structure	
Vegetation Evaluat	ion		1- with	and an and a second sec		- Alton Street	
Vegetation Comp	arison Matrix	0		With die River alle			
Infrastructure Risk	Evaluation	-			and the second s	Contraction of the second	
Inundation Risk to	the Roadway (US. DS)	2.2	Marca .	A Men Els.		The states in	
Inun. Bisk to the Crossing Structure (US, DS)		12					
Adverse Impacts Fi	valuation**	_,_					
Inundation Risk to	low-lying Development	5				and the second	
		5					
Infrastructure		1					
		-					

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Ecological

Combined



4

2

Long. Profile

Feat.

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<u>Hght.</u>

-3.2958

-4.3358

-4.8958

-3.1558

-3.8958

-2.1858

-2.0458

-2.4158

-2.3358

-3.6858

-2.6958

-3.5758

-2.5658

Dist.

The tidal crossing at Mill Creek is on the drive to Stuart Farm. In 1993 a tide gate was removed and replaced by a large arched culvert. This was one of the first tidal restorations in the State. See link below for more information:

https://www.nrcs.usda.gov/wps/portal/nrcs/detail/nh/technical/?cid=nrcs144 p2_015690#Stuart%20Farm

The upstream side had subsided by 1 foot and the vegetation included purple loosestrife and common reed (exotic variety). Purple loosestrife was almost all eliminated, but some common reed remains, and the elevation of the marsh was found to build rapidly (0.12 feet per year in the 1990s). Today the elevation difference of the marsh is only 0.08 feet lower upstream than downstream. The metal pipe corroded and had to be replaced by a 9.5-foot round culvert in 2010. The crossing has an overall combined score of 2, indicating low priority for replacement. See the link below for more information on habitat change after tidal restoration:



https://scholars.unh.edu/jel/21/

Stru	tructure Characteristics:						
	Structure Type:	Round Culvert	Date of Last				
	Structure Material:	Plastic - Corrugated	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):			9.5	
Dimension B ^{CB} (height):	9.6		9	
Crossing Length (Invert to Ir	wert):	55		

Crossing Condition:		Headwall Material	Headwall Condition	l Wingwall Material Wingv		Scour at Structure	Scour Severity
	Upstream	Rip Rap	Good	None	N/A	Armoring	Low
	Downstream	Rip Rap	Good	None	N/A	Armoring	Medium

	Scour in Structure	Scour Severity in Structure	Road Su	Good Utilities		at Crossing	Structure Condition Overall	
	None	None				None	Good	
	Structure Conditi	on N/A						
	Comments:							
Есо	logical Assessmen	nt:		<u>Upstream</u>		<u>D</u>	<u>ownstream</u>	
	Natural Communi	ty Classification:		High Salt Marsh			gh Salt Marsh	
	Upstream Salt Ma	rsh Migration Poten	tial (acres)	: 0.35				
Floc	od Hazard & Emer	gency Access						
	Site Identified in H	lazard Mitigation Pla	an:	No				
	Emergency Access	or Evacuation Rout	e:	N/A				
	History of Floodin	g:		Prior to replacement				

	Tidal	Crossing	summ	ary Sheet			
	New Hampsh	ire's Tidal C	, rossing Ass	sessment Proto	ocol		
	Crossing ID:		117			T	
Observer(s) &				Date:		8/30/2	018
Organization:	JB TS KL (NHD	ES Coastal)		Start Time:		11:00:00) AM
Municipality:	NEWFIELDS			End Time:		12:00:00) PM
Stream Name: F	Parting Brook			Tide Prediction		High	Low
Road Name: N	N/A			Т	ime:	4:41 PM	10:50 AM
				Elevat	ion:	7.1	0.2
Crossing Condition E	Evaluation	<u>Score</u> *		Tide Chart Locatio	on:	Squamso	cott River
Crossing Condition		4					
Tidal Restriction Eva	luation		DS viev	v toward structu	re	US view	v above structure
Tidal Range Ratio		2		200			
Crossing Ratio		4	ANTE:	- North and			Carlo Sta
Erosion Classification	on	4	- 10 m	a la sance		Track and	A Station of the second
Tidal Restriction Ov	verall Score	3		and the second		A STAR	
Tidal Aquatic Organi	ism Passage					and the state	RALE
Tidal Range Ratio		2				19	SAFT - VA
Salt Marsh Migratio	n Evaluation	-		- All	GA	VER.	the second
Salt Marsh Migratio	on Potential (Eval. Unit)	3					
Salt Marsh Migratio	on Potential (Wshed.)	3	US viev	v toward structu	re	DS view	v above structure
Vegetation Evaluation	on	C C					
Vegetation Compa	rison Matrix	3		a second		Mr. W.	
Infractructure Bick E	instruction	5	·	ALEAN APP		A A A A	
mmastructure MISK E	valuation		and the second se	Take a state of the state of th	100		and the second s

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

2,2

3,3

5

4

3

3

Inundation Risk to the Roadway (US, DS)

Adverse Impacts Evaluation**

Overall Scores Infrastructure

Ecological

Combined

Inun. Risk to the Crossing Structure (US, DS)

Inundation Risk to Low-Lying Development



Long. Profile

Feat.

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Hght.

0.7453

0.3853

0.9353

0.5553

0.9453

0.7353

0.4353

-0.1547

-2.6447

-0.7747

0.1153

-0.6147

-0.0347

Dist.

0

18

50

81

99

106

204

204

227

244

270

286

314

N/A



Stru	cture Characteristics	N		
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Stone	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	4		3.8
Dimension B ^{CB} (height):	6.	22	6.2
Crossing Length (Invert to Ir	98		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	None	None
	Downstream	Dry Fit Stone	Fair	Dry Fit Stone	Poor	Headwall	High

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities	at Crossing	Structure Condition Overall
	Culvert	Low	N/A		None	Fair
	Structure Condition US side is solid.		Some spawling but good s	headwall. Water		
	Comments:	flowing under w	vood in structure.			
Ecological Assessment:		<u>Upstream</u>		Dov	wnstream	

	Natural Community Classification:		High Salt Marsh	High Salt Marsh					
	Upstream Salt Marsh Migration Potent	ial (acres):	2.47						
Floo	d Hazard & Emergency Access								
	Site Identified in Hazard Mitigation Pla	n: Y	'es						
	Emergency Access or Evacuation Route	oute: N/A							
	History of Flooding:	unknown							

		6	<u></u>				
Tidal	Crossing	g Summary	Sheet				
New Hampsh	ire's Tidal (Crossing Assessm	ient Protocol				
Crossing ID:		118					
Observer(s) &		Date	e:	8/29/2	018		
Organization: JB TS kl (NHD)	ES Coastal)	Star	t Time:	8:30:00	AM		
Municipality: EXETER		End	Time:	9:44:00	AM		
Stream Name: N/A		Tide	Prediction	High	Low		
Road Name: N/A			Time:	4:05 PM	10:15 AM		
Constitution Frankration	Ceere*	Tida	Elevation:	7.0	0.2		
	<u>score</u>	Tide	Chart Location:	Squarris			
	2						
	2	DS view towa	ard structure	US VIEW	v above structure		
lidal Range Ratio	2		the state of				
	4	Star Parts			and the state of the		
	3		TIM				
lidal Restriction Overall Score	3						
Tidal Aquatic Organism Passage	-	See all					
Tidal Range Ratio	2	- 10 - 10 -			the state		
Salt Marsh Migration Evaluation					A CONTRACTOR		
Salt Marsh Migration Potential (Eval. Unit)	1						
Salt Marsh Migration Potential (Wshed.)	1	US view tow	ard structure	DS view	v above structure		
Vegetation Evaluation		13.5	Sinta	a sta Reference	Constant of the		
Vegetation Comparison Matrix	5	100	a spat				
Infrastructure Risk Evaluation							
Inundation Risk to the Roadway (US, DS)	1,1	2					
Inun. Risk to the Crossing Structure (US, DS)	4,3		5				
Adverse Impacts Evaluation**			1 - C	4			
Inundation Risk to Low-Lying Development	5	All man			Star 1. 18		
Overall Scores							
Infrastructure	2						
Ecological	4						
Combined	2			Lo	ong. Profile		

Hght.

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* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



N/A



Stru	cture Characteristics	:		
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Stone	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	3.7		4
Dimension B ^{CB} (height):	6.	.3	6.5
Crossing Length (Invert to In	vert):	81	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	Wingwalls	Medium
	Downstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	Wingwalls	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall			
Culvert	Medium	N/A	Tracks	Fair			
Structure Conditio	on N/A						
Comments:							
		1					
cological Assessmen	ological Assessment:			<u>Downstream</u>			
Natural Communit	y Classification:	Brackish Riverbank N	Brackish Riverbank Marsh				
Upstream Salt Mai	rsh Migration Poten	tial (acres): 0.17					
lood Hazard & Emerg	gency Access						
Site Identified in H	azard Mitigation Pla	in: No					
Emergency Access	Emergency Access or Evacuation Route:		N/A				
History of Flooding	2:	Unknown					

	Ti	dal Crossing	g Summa	ary Sheet				
	New Ha	ampshire's Tidal C	rossing Asse	essment Proto	col			
	Crossing ID:		119					
Observer(s) &				Date:		8/30/2	018	
Organization:	TS	(NHDES Coastal)		Start Time:		9:00:00	AM	
Municipality: EX	ETER			End Time:		10:11:00) AM	
Stream Name: N/	Ά			Tide Prediction		High	Low	
Road Name: N/	Ά			ті	me:	4:41 PM	10:50 AM	
				Elevat	ion:	7.1	0.2	
Crossing Condition Ev	aluation	<u>Score</u> *		Tide Chart Locatio	on:	Squamso	cott River]
Crossing Condition		5						
Tidal Restriction Evalu	uation		DS view	toward structu	re	US view	/ above structu	re
Tidal Range Ratio		3					State and the	
Crossing Ratio		4			1920			
Erosion Classification	n	3	F		e alla		Contraction of the	aller.
Tidal Restriction Ove	erall Score	3			a H		ALC 20 M	

Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	3
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	1
Salt Marsh Migration Potential (Wshed.)	1
Vegetation Evaluation	
Vegetation Comparison Matrix	0
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	1,1
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	5
Ecological	4
Combined	4



US view toward structure

. Com

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>	
0	-2.5598	HC	C/S	
23	-2.3798	HC	C/S	
33	-2.6498	CB	S	
43	-3.3998	Р	C/S	
52	-2.8298	I	С	
136	-2.2698	I	G	
136	-3.6798	СВ	G	
144	-5.3598	Ρ	G	
150	-4.5698	HC	В	
158	-5.7498	Р	G	
175	-5.5898	СВ	G	

The railroad bed traveling north and south on the west side of Great Bay has several crossings of tidal marsh and creeks (117, 118, 119, 121). The granite culvert for this crossing is about 7 feet high by 4 feet wide and conducts water of an unnamed tidal creek to about 10 acres of tidal marsh. The crossing condition is poor, it constricts the channel width, restricts the tidal range and has a perch at low tide. The culvert fills during high tide on a regular basis. The overall combined score is 4, high priority for replacement.



Structure Characteristics: Structure Type: Box Culvert Date of Last Structure Material: Stone Known N/A Tide Gate Present: No Replacement: Replacement:

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	3.6		4
Dimension B ^{CB} (height):	6.75		6.85
Crossing Length (Invert to In	84		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Poor	Dry Fit Stone	Poor	Wingwalls	Medium
	Downstream	Dry Fit Stone	Fair	Dry Fit Stone	Fair	Headwall	Medium

Scour in Structure	Scour Severity in Structure Road Surface Condition		Utilities at Crossing	Structure Condition Overall	
Culvert	Low	N/A	None	Poor	
Structure Conditi Comments:	i on Water runs und	ler wood bottom			

 Ecological Assessment:
 Upstream
 Downstream

 Natural Community Classification:
 High Salt Marsh
 High Salt Marsh

 Upstream Salt Marsh Migration Potential (acres):
 0.08

 Flood Hazard & Emergency Access
 Site Identified in Heard Mitigation Plane

Site Identified in Hazard Mitigation Plan:	NO
Emergency Access or Evacuation Route:	N/A
History of Flooding:	Unknown

	Tidal (roccinc	Summary Shoot			
	I Iudi V		southinary Sheet	1		
	New Hampshi	res Ital C	rossing Assessment Proto	ocol	1	
			12U Data:		6/1E/20	10
Observer(s) & Organization:	IB TS (NHDES	Coastal)	Start Time:		8:30:00/	AM
Municipality:	EXETER	coustary	End Time:		10:22:00	AM
Stream Name:	Rocky Hill Brook		Tide Prediction		High	Low
Road Name:	Newfields Rd		т	ïme:	3:22 PM	9:28 AM
			Eleva	tion:	7.6	-1.2
Crossing Condition	Evaluation	Score*	Tide Chart Locati	on:	Squamsco	ott River
Crossing Condition	n	5				
Tidal Restriction Ev	aluation		DS view toward structu	re	US view	above structure
Tidal Range Ratio		3			1 200	
Crossing Ratio		3	A STATE OF THE REAL AND A STATE OF	the state of the s	Sec. Barre	
Erosion Classificat	tion	5		Para	Strack.	A STATE OF THE STATE OF
Tidal Restriction C	Overall Score	4	A CONTRACTOR OF			Sec. and
Tidal Aquatic Organ	nism Passage			12		
Tidal Range Ratio		3	No. of the second s	74 VI		
Salt Marsh Migratio	on Evaluation					The second s
Salt Marsh Migrat	ion Potential (Eval. Unit)	1				
Salt Marsh Migrat	ion Potential (Wshed.)	1	US view toward structu	re	DS view	above structure
Vegetation Evaluat	ion		1. 1 A A A A	0		1
Vegetation Compa	arison Matrix	1	The Planter MAN			ALC: NO
Infrastructure Risk	Evaluation				- 6	- m
Inundation Risk to	o the Roadway (US, DS)	1,1		N. Contraction	24	A A State
Inun. Risk to the C	Crossing Structure (US, DS)	2,2				
Adverse Impacts Ev	valuation**		and the second		A. S.	
Inundation Risk to	Low-Lying Development	5		14		S
Overall Scores						
Infrastructure		5				
Ecological		3				
Combined		4			Lo	ng. Profile

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



<u>Hght.</u> <u>Sub.</u> Dist. Feat. 0 4.9738 HC C/S S 26 4.8738 HC Ρ C/S 45 4.2338 58 4.5138 S L С 184 3.7238 L 189 2.8238 Ρ С С 200 3.6238 HC Ρ С 207 2.4438 С 211 2.7438 HC

Newfield's Road crosses Rocky Hill Brook well above the railroad bed and the Brook runs through a 3.5-foot round metal pipe (although the upstream pipe exiting the road bed is partially crushed). The crossing condition is poor, with strong evidence of erosion and the culvert constricts the channel flow. The overall combined score is 4 for this culvert, indicating a high priority for replacement.



Structure Characteristics:

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Steel - Corrugated	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	2.5		3.5
Dimension B ^{CB} (height):	3.2		3.5
Crossing Length (Invert to Ir	126		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Masonry	Poor	Masonry	Poor	Culvert	High
	Downstream	Masonry	Good	Rip Rap	Poor	Culvert	High

	Scour inScour Severity inStructureStructure		y in Road Surface Condition Utili		Utilities	at Crossing	Structure Condition Overall		
	Culvert	High		Good		OHE	Poor		
	Structure Conditio Comments:	US grate fallen							
Eco	logical Assossment	·.		Unstroom			ownstroom		
ECOI	oyicui Assessilielli			opstream			Downstream		
	Natural Communit	y Classification:		Freshwater Stream			Freshwater Stream		
	Upstream Salt Mar	sh Migration Potent	tial (acr	es): 0.00					
Floc	d Hazard & Emerg	ency Access							
	Site Identified in Hazard Mitigation Plan:			No					
	Emergency Access	or Evacuation Route	e:	Yes					
	History of Flooding	:		None documented	3				

	Tidal (-	- Cumm	my Choot				
		TOSSIII	g Summe	ary Sheet	,			
	New Hampshi	re's Tidal C	rossing Ass	essment Proto	ocol	т		
	Crossing ID:		121	1_				_
Observer(s) &		c		Date:		6/14/20	018	
Organization:	JB KL (NHDES	Coastal)		Start Time:		8:30:00		_
Stroom Name:	EXETER Pocky Hill Prook			End Time:		High		_
Road Name:				Tide Frediction	me	2.20 DM	8:36 AM	-
Road Name.	N/A			Flevat	ion:	2.29 FIVI	-1.0	_
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Locatio	on:	Squamso	cott River	
Crossing Condition	n	5						
Tidal Restriction Ev	aluation		DS view	toward structur	re	US view	<i>i</i> above struc	ture
Tidal Range Ratio		1						
Crossing Ratio		4				16		S. S. S.
Erosion Classificat	ion	5		A Marsher My			E parts	14
Tidal Restriction C	Verall Score	3	for the second		ale se			-
Tidal Aquatic Organ	nism Passage					-	1.	5 3
Tidal Range Ratio		1		The Second			1.12 4	
Salt Marsh Migratio	on Evaluation		1. s / s		24			Chine .
Salt Marsh Migrat	ion Potential (Eval. Unit)	1						
Salt Marsh Migrat	ion Potential (Wshed.)	1	US view	toward structur	re	DS view	<i>i</i> above struc	ture
Vegetation Evaluat	ion			300 Sa 22		5 - 940 - C		
Vegetation Compa	arison Matrix	0				A MAL	Contraction of the	No. I Company
Infrastructure Risk	Evaluation			Lar. I.			Sale Pour	
Inundation Risk to	the Roadway (US, DS)	1,1			- in	The second second		
Inun. Risk to the C	Crossing Structure (US, DS)	5,5		Party Add	-			
Adverse Impacts Ev	valuation**					and the second second		
Inundation Risk to	Low-Lying Development	5	(EP)		10		The second	
Overall Scores								
Infrastructure		5						
Ecological		4						
Combined		4				Lo	ong. Profile	
* Cooring outom ranges fr	om 1 to 5, where 1 - lowest replacemen	t priority and E = I	highost roplacomont	priority		Dist He	tht Feat	Sub

-0.656

-0.846

-2.516

-3.406

-3.576

-1.316

-1.606

-1.376

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* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



The railroad bed traveling north and south on the west side of Great Bay has several crossings of tidal marsh and creeks (117, 118, 119, 121). Rocky hill brook is tidal marsh where it crosses under the railroad through a 4foot-wide and 5.5-foot-tall stone bridge. The crossing condition is poor showing channel constriction and severe erosion, with high tides overfilling the structure on a daily basis. The upstream marsh is more than 0.5 feet lower than the downstream marsh plain, indicating restriction has led to subsidence. The overall combined score is 4, high priority for replacement.



Structure Characteristics:

Structure Type:	Bridge with Abutments	Date of Last				
Structure Material:	Stone	Known	N/A			
Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upst</u>	<u>ream</u>	<u>Downstream</u>
Dimension A (width):	4		3.9
Dimension B ^{CB} (height):	5.7		5.5
Crossing Length (Invert to Ir	24		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Poor	None	N/A	Headwall	High
	Downstream	Dry Fit Stone	Fair	None	N/A	Headwall	High

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	N/A	Tracks	Poor

Structure Condition Comments:

Scour from lack of wingw

Ecological Assessment:			<u>Upstream</u>	<u>Downstream</u>
	Natural Community Classification: Upstream Salt Marsh Migration Potential (acres):		Brackish Marsh	Brackish Riverbank Marsh
			0.00	

Flood Hazard & Emergency Access Site Identified in Hazard Mitigation Plan: No Emergency Access or Evacuation Route: N/A History of Flooding: Unknown

	Tidal (rossing	Summ	ary Sheet			
	Now Hampeh	ino'a Tidal (rogging Ag	ary Direct			
	Crossing ID:	iles fluur C	123	sessment riotoc	.01	ī	
Observer(s) &				Date:		6/13/20	018
Organization:	JB TS (NHDES	Coastal)		Start Time:		7:45:00	AM
Municipality:	EXETER			End Time:		9:27:00	AM
Stream Name:	Wheelwright Creek			Tide Prediction		High	Low
Road Name:	Portsmouth Ave			Tim	ne:	1:36 PM	7:45 AM
				Elevatio	on:	7.4	-0.7
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Location	:	Squamso	cott River
Crossing Condition	n	1					
Tidal Restriction Ev	aluation		DS viev	v toward structure	5	US view	<i>i</i> above structure
Tidal Range Ratio		3					
Crossing Ratio		2					
Erosion Classificat	ion	3					
Tidal Restriction C	Verall Score	3				A Strat	
Tidal Aquatic Organ	nism Passage		- menter	AV 3 CAN			
Tidal Range Ratio		3					
Salt Marsh Migratio	on Evaluation		A CONTRACT		1. Same		
Salt Marsh Migrat	ion Potential (Eval. Unit)	1					
Salt Marsh Migrat	ion Potential (Wshed.)	1	US viev	v toward structure	2	DS view	v above structure
Vegetation Evaluat	ion				1		S. F. C.
Vegetation Compa	arison Matrix	0		1 m.			Real Second
Infrastructure Risk	Evaluation				1/41		M. CONSTRUCT
Inundation Risk to	the Roadway (US, DS)	1,1	The 1	L I WW	N.	CA a	学校的意味である
Inun. Risk to the Crossing Structure (US, DS)		1,1	A A A	And the second			A CONTRACT
Adverse Impacts Evaluation**			sty 12			NAM	
Inundation Risk to	Low-Lying Development	5					
Overall Scores							
Infrastructure		1					

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

Ecological

Combined

4

3



Long. Profile

<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	3.0324	HC	В
40	1.9024	Ρ	С
71	2.9524	HC	С
82	2.8124	GC	С
97	2.5124	I	С
216	2.2224	I	С
233	2.4524	HC	С
283	1.7324	HC	С
321	1.8024	HC	С

N/A



Stru	Structure Characteristics:						
	Structure Type:	Box Culvert	Date of Last				
	Structure Material:	Concrete	Known	N/A			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>	
Dimension A (width):	16		16	
Dimension B ^{CB} (height):	6		6	
Crossing Length (Invert to Ir	119			

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Concrete	Good	None	None
	Downstream	Concrete	Good	Concrete	Good	None	None

	Scour in Structure	Scour Severity in Structure	Road Surface Condition	Surface Condition Utilities at Crossin		Structure Condition Overall		
	None	None None Good		OHE	Good			
	Structure Condition Comments: N/A							
					-			
Ecol	ogical Assessmen	nt:	<u>Upstream</u>	<u>Upstream</u>		<u>vnstream</u>		
	Natural Communi	ty Classification:	Freshwater Str	Freshwater Stream		Riverbank Marsh		
	Upstream Salt Ma	rsh Migration Potent	tial (acres): 0.00					
Floo	d Hazard & Emer	gency Access						
	Site Identified in H	lazard Mitigation Pla	n: Yes					
	Emergency Access	or Evacuation Route	e: Yes					
	History of Flooding: Chronic reoccurring flooding.							

	7	Tidal Crossing	Summa	ary Sheet		
	New I	Hampshire's Tidal Cro	ssing Asse	essment Protocol		
	Crossing ID:		124			
Observer(s) &				Date:	6/29/20	018
Organization:	TS	5, JB (NHDES Coastal)		Start Time:	9:30:00	AM
Municipality:	EXETER			End Time:	10:30:00	AM
Stream Name:	Norris Brook			Tide Prediction	High	Low
Road Name:	Swazey Pkwy			Time:	3:21 PM	9:31 AM

Crossing Condition Evaluation	<u>Score</u> *
Crossing Condition	1
Tidal Restriction Evaluation	
Tidal Range Ratio	1
Crossing Ratio	4
Erosion Classification	3
Tidal Restriction Overall Score	3
Tidal Aquatic Organism Passage	
Tidal Range Ratio	1
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	2
Salt Marsh Migration Potential (Wshed.)	2
Vegetation Evaluation	
Vegetation Comparison Matrix	5
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	3,3
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	3
- Ecological	4
Combined	3

DS view toward structure	US view above structure

Elevation

Tide Chart Location:

6.6

Squamscott River





0.1

DS view above structure



* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Long. Profile

Dist. Hght. Feat. Sub. 2.4798 0 HC N/A 0 0.6898 СВ В 6 1.1798 HC В 7 -0.3902 HC В 37 -1.4902 GC В -2.3902 В 39 Т С 77 -3.3502 L 81 -2.9902 GC В С 106 -3.0902 HC С 133 -3.6502 HC С 140 -4.5402 СВ

N/A



Stru	cture Characteristics	:		
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>	
Dimension A (width):	5.57		5.5	
Dimension B ^{CB} (height):	5.85		6.26	
Crossing Length (Invert to In	38			

Crossing Condition:		Headwall Material Headw Condition		Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Masonry	Good	Masonry	Good	Wingwalls	Low
	Downstream	Masonry	Good	Masonry	Good	Wingwalls	Low

	Scour in Structure	Scour Severity in Structure	Road Su	rface Condition	Condition Utilities at Crossing		Structure Condition Overall	
	None None			Good Water pipe for water		ing, electric wire running us	Good	
	Structure Conditio Comments:	N/A						
			-			r		
Ecol	cological Assessment:			<u>Upstream</u> <u>Do</u>		wnstream		
	Natural Community Classification:		В	Brackish Riverbank Marsh		Sparsely Vegetated Intertidal Habitat		
	Upstream Salt Mar	sh Migration Poten	tial (acres)	: 1.95				
Floc	d Hazard & Emerg	gency Access						
	Site Identified in Hazard Mitigation Plan:			Yes				
	Emergency Access or Evacuation Route:			N/A				
	History of Flooding:			Chronic flooding. Susceptible to storm surge.				
Tidal	Crossing	Summe	my Choot					
---	-----------------------	--------------------	--------------------------	---	-----------------------	-----------------------	-------	
llual	Crossing	Summe	iry Sheet	,				
New Hampsh	ire's Tidal C	rossing Asse	essment Proto	col	T			
Crossing ID:		125						
Observer(s) &	((, , , , , , ,))		Date:		8/1/20	18		
Organization: JB, TS (NHDE:	s Coastal)		Start Time:		8:55:00	AM		
Stream Name: N/A			Tide Prediction		9.45.00 High	Low		
Road Name: N/A			Ti	me:	3.20 PM	9:00 AM		
			Elevat	ion:	7.7	0.3		
Crossing Condition Evaluation	Score*		Tide Chart Locatio	n:	Portsmou	th Harbor		
Crossing Condition	4							
Tidal Restriction Evaluation		DS view	toward structur	e	US view	above structu	re	
Tidal Range Ratio	1							
Crossing Ratio	4				APPIN -	-		
Erosion Classification	3	ANT CARE OF CARE	The second second second	C. S.			Care.	
Tidal Restriction Overall Score	3			- 14	and the second second	and the second second		
Tidal Aquatic Organism Passage		Ch_		5 -	A PAR	and the second		
Tidal Range Ratio	1		M Part	2	2000	- Al an		
Salt Marsh Migration Evaluation				3.38	- mail and	ASE IN	di	
Salt Marsh Migration Potential (Eval. Unit)	4		The fleres "	and a				
Salt Marsh Migration Potential (Wshed.)	4	OS VIEW	towara structur	-	DS view	above structur	re	
Vegetation Evaluation						and the second second		
Vegetation Comparison Matrix	1	- man a feit		a and a second				
Infrastructure Risk Evaluation				and the second second				
Inundation Risk to the Roadway (US, DS)	3,4	- 14 C		で見				
Inun. Risk to the Crossing Structure (US, DS)	5,5							
Adverse Impacts Evaluation**					-	ACCESSION -		
Inundation Risk to Low-Lying Development	5				Carland .	1 Tel		
Overall Scores								
Infrastructure	4							
Ecological	1							

4

Combined



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	-0.9032	HC	G
40	-1.3832	Р	G
69	-0.9432	HC	G
99	-2.5432	Р	G
109	-1.3732	СВ	G
118	-1.3932	GC	С
124	-1.8832	T	С
182	-2.0932	T	В
220	-0.9832	HC	G
285	-1.7432	HC	G
330	-1.6632	HC	G

Route 1A crosses an extensive back-barrier salt marsh at Rye Harbor several times and this crossing provides tidal flow to a fragmented marsh that also receives flow through a crossing to the south (#46). Tidal waters are conducted through a 6 by 6-foot concrete culvert installed circa 1997 to restore tidal exchange and halt the spread of exotic *Phragmites* (common reed). The crossing condition is fair, the channel is constricted, and the high tide stain indicates that the culvert overfills regularly. The overall combined score is 4, high priority for replacement.



Structure Characteristics:						
	Structure Type:	Box Culvert	Date of Last			
	Structure Material:	Concrete	Known	1998		
	Tide Gate Present:	No	Replacement:			

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	6	5	6
Dimension B ^{CB} (height):	6	5	6
Crossing Length (Invert to Ir	58		

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Fair	None	None
	Downstream	Concrete	Good	Rip Rap	Poor	Wingwalls	High

Scour in Structure	Scour Severity in Structure	Road Sur	rface Condition	Utilities at Crossing		Structure Condition Overall	
Culvert	Low		Fair			Fair	
Structure Condition	on N/A						
Ecological Assessmen	ıt:		Upstream		<u>_</u>	Downstream	
Natural Communi	ty Classification:		High Salt Marsh High Salt Marsh			igh Salt Marsh	
Upstream Salt Ma	rsh Migration Poten	tial (acres)	: 8.94				
Flood Hazard & Emer	gency Access						
Site Identified in H	lazard Mitigation Pla	an:	Yes				
Emergency Access or Evacuation Route: Yes							
History of Flooding: Prone during high tide events, flooding along 1A					1Δ		

נ ידי	al Cranita -	Current	owy Chast					
110	ai Crossing	Summ	lary Sneet					
New Han	าpshire's Tidal Cr	ossing As	sessment Proto	col				
Crossing ID:		126						
Observer(s) &			Date:		7/20/	/2018		
Organization: TS, JB, PS,	KL (NHDES Coastal)		Start Time:		1:49:0	00 PM		
Municipality: North Hampton			End Time:	_	2:30:0	00 PM		
Stream Name: Chapel Brook			Tide Prediction		High		Low	
Road Name: N/A			Tir	ne: 6	:38 PM	12	2:34 PM	
	c *		Elevati	on:	8.9		0.3	
Crossing Condition Evaluation	Score*		Tide Chart Location	n:	Hamp	ton Harb	or	
Crossing Condition	2							
Tidal Restriction Evaluation		DS vie	w toward structur	e	US vie	ew abov	ve struc	ture
Tidal Range Ratio	5		Los Mar	6	State of the		and the second	ANT
Crossing Ratio	5	No. The Party of the Party of the				THE	1	-
Erosion Classification	2						and the	
Tidal Restriction Overall Score	4	1	Property is			<u> </u>		
Tidal Aquatic Organism Passage		112	Maria Santara	A-2	E. P.			14
Tidal Range Ratio	5	1 Jana		115 No.	Els.	- B).		(gale
Salt Marsh Migration Evaluation		The Stay		e i			-1	1. 194
Salt Marsh Migration Potential (Eval. Un	it) 5							
Salt Marsh Migration Potential (Wshed.)	5	US vie	w toward structur	е	DS vie	w abov	ve struc	ture
Vegetation Evaluation		2.	the state		and the second			11-5
Vegetation Comparison Matrix	1	they they	And Strands I and		10.000		AL IL de	
Infrastructure Risk Evaluation	-							- Le
Inundation Risk to the Roadway (US_DS)	34		March Constant		A.			-
Inun Risk to the Crossing Structure (US		-	a change of					
Advorso Impacts Evaluation**	5, 5,5						Mark 1	and the second s
Inundation Disk to Low Lying Davelonme	ant 0			1				
	201 2							
ingrastructure	4							
Ecological	5							
Combined	5				I	Long. P	Profile	
* Scoring system ranges from 1 to 5, where 1 = lowest repl	acement priority and 5 = hig	shest replaceme	nt priority		Dist. I	Hght.	Feat.	Sub.

HC

Ρ

HC

Ρ

GC

Т

L

GC

Ρ

HC

Ρ

GC

L

8.0357

7.6357

7.9957

5.1657

6.8957

6.2557

6.4257

7.1657

5.5157

8.4257

6.8857

8.0657

7.4957

C/S

S

G

С

В

В

В

В

S

S

G

С

С

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



Tidal flow supporting the salt marsh at Philbrick's Pond has been restricted by the trolley berm of the early 1900s as well as Route 1A (crossing #39). A recent investigation into the hydrodynamic flows and how they may be restored to rejuvenate the degraded salt marsh showed that the small clay pipe (2.5 feet in diameter) under the trolley berm was intact, but restricted tides, while the culvert under Route 1A was less restrictive (CMA Engineers 2018). The overall combined score of 5 indicates highest priority for replacement, but it will require landowner permission.



Stru	cture Characteristics	::		
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Stone	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	2	.5	2.5
Dimension B ^{CB} (height):	2	.5	2.5
Crossing Length (Invert to Invert):			

Cros Con	sing dition:	Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Dry Fit Stone	Fair	None	N/A	Headwall	Medium
	Downstream	Dry Fit Stone	Fair	None	N/A	Headwall	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	N/A	N/A	Fair
Structure Conditi Comments:	Clay pipe, comp	letely flooded		

Ecol	ogical Assessment:		<u>Upstream</u>	<u>Downstream</u>		
	Natural Community Classification:		Low Salt Marsh	Low Salt Marsh		
Upstream Salt Marsh Migration Potential (acres):		29.89				
Flood Hazard & Emergency Access						
		N	_			

Site Identified in Hazard Mitigation Plan:	No
Emergency Access or Evacuation Route:	N/A
History of Flooding:	undersized culvert, flooded US marsh

	Tidal (Crossing	g Summ	ary Sheet					
	New Hampshi	re's Tidal C	_ Crossing Ass	essment Proto	col				
	Crossing ID:		127			T			
Observer(s) &				Date:		8/2	3/2018		
Organization:	TS, JB (NHDES	Coastal)		Start Time:		3:4	5:00 PM		
Municipality: Ne	ew Castle			End Time:		4:2	5:00 PM		
Stream Name: N/	Â			Tide Prediction		High		Low	
Road Name: N/	Â			Ti	me:	10:39 PM		4:19 PM	
				Elevat	ion:	8.1		1.2	_
Crossing Condition Ev	aluation	<u>Score</u> *		Tide Chart Locatio	on:	Ports	mouth Ha	arbor	
Crossing Condition		2							
Tidal Restriction Evalu	uation		DS view	toward structur	re	US v	iew abo	ove stru	cture
Tidal Range Ratio		5			Sea and			A CO	
Crossing Ratio		3			T	<u> 198</u>	S 48		2
Erosion Classification	n	4		274	1.75.		- Landa	5.4	
Tidal Restriction Ove	erall Score	4				Mer .	and a mark		
Tidal Aquatic Organis	m Passage		Marie -	SK as r	21				
Tidal Range Ratio		5					A		
Salt Marsh Migration	Evaluation			A VSA AV	42		28 36	S. 19816	
Salt Marsh Migration	n Potential (Eval. Unit)	1							
Salt Marsh Migration	n Potential (Wshed.)	1	US view	toward structur	re	DS v	iew abo	ove strue	ture
Vegetation Evaluation	า			And the second	1			10000	Mar and
Vegetation Comparis	son Matrix	5	Ale And	Audito mat		C. C		Contraction of the second	
Infrastructure Risk Ev	aluation					CONTRACTOR OF	Cate of the second	and and	
Inundation Risk to th	ne Roadway (US, DS)	4,4	AND AND A	1 1	A.			eden St.	La com
Inun. Risk to the Cro	ssing Structure (US, DS)	5,5				anator a	and the get	R.	- 1. A. T.
Adverse Impacts Eval	uation**					State of the second sec	and the		
Inundation Risk to Lo	ow-Lying Development	4	Sand Com		the a	St.	1 20	2	
Overall Scores									
Infrastructure		4							
Ecological		5							
Combined		5					Long.	Profile	
* Scoring system ranges from	1 to 5, where 1 = lowest replacemen	t priority and 5 = ł	nighest replacement	t priority		Dist.	<u>Hght.</u>	Feat.	Sub.

0

32

90

103

168

168

172

174

194

246

3.4726

3.6426

3.7026

3.4626

2.2126

0.7126

-0.0274

0.3026

-1.9574

-3.6974

HC

HC

СВ

L

L

СВ

Ρ

HC

СВ

HC

C/S C/S

C/S

G

С

С

G

G

С

S

Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority
 **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk



A small head of tide marsh on New Castle Island is crossed by River Road and a new 1.25-foot round pipe was installed in 2011 to improve tidal flow to the marsh, which was being invaded by weedy species such as a nonnative form of common reed (Phragmites). The site has a history of flooding and continues to show signs of restriction. The overall combined score is 5: highest priority for replacement.



Structure Characteristics:

Structure Type:	Round Culvert	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft): Upst		ream	<u>Downstream</u>
Dimension A (width):	1.25		1.25
Dimension B ^{CB} (height):	1.25		1.25
Crossing Length (Invert to Ir	65		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	None	N/A	None	N/A	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Fair	Overhead electric	Fair
None	None	Fair	Overhead electric	Fair

Structure Condition Comments:

Metal girdle elevating DS structure

Ecological Assessment:			<u>Upstream</u>	<u>Downstream</u>	
	Natural Community Classification:		High Salt Marsh	Sparsely Vegetated Intertidal Habitat	
	Upstream Salt Marsh Migration Potent	ial (acres):	0.20		

Floo	Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan:	Yes			
	Emergency Access or Evacuation Route:	N/A			
	History of Flooding:	road flooding due to storm surge and heavy rain			

			-					
	Tidal (Crossing	g Summ	ary Sheet				
	New Hampshi	ire's Tidal C	Trossing Ass	essment Proto	col			
	Crossing ID:		128			Ī		
Observer(s) &				Date:		8/14/20)18]
Organization:	TS, JB (NHDES	Coastal)		Start Time:		10:20:00	AM	
Municipality:	Hampton Falls			End Time:		11:20:00	AM	
Stream Name:	N/A			Tide Prediction		High	Low	4
Road Name:	N/A			Ti	me:	2:27 PM	8:28 AM	-
		~ *		Elevat	ion:	9.7	-1.3	-
Crossing Condition	Evaluation	Score*		Tide Chart Locatio	on:	Hamptor	n Harbor]
Crossing Condition	1	1						
Tidal Restriction Ev	aluation		DS view	toward structur	re	US view	above structu	ire
Tidal Range Ratio		5	A STATE OF	HATE FOR FT	1		and a second	
Crossing Ratio		5			32			1000
Erosion Classificat	ion	3	and the			- March		1
Tidal Restriction O	Verall Score	4				ATTR:		
Tidal Aquatic Organ	nism Passage						And Western	
Tidal Range Ratio		5	ALLA.	Sa A si				Color and a
Salt Marsh Migratio	on Evaluation				all so the	and the second		146
Salt Marsh Migrat	ion Potential (Eval. Unit)	5						
Salt Marsh Migrat	ion Potential (Wshed.)	5	US view	v toward structur	re	DS view	above structu	ire
Vegetation Evaluation	ion							
Vegetation Compa	arison Matrix	4	1 Mars	A. C.			All and	
Infrastructure Risk	Evaluation			The second se			to and a	
Inundation Risk to	the Roadway (US, DS)	2,2					- 13 B	
Inun. Risk to the C	rossing Structure (US, DS)	3,1	AL N.		Contra Co			
Adverse Impacts Ev	valuation**						· · ·	
Inundation Risk to	Low-Lying Development	5				14 t. 3 Y		
Overall Scores								
Infrastructure		1						
Ecological		5						
Combined		5				Lo	ong. Profile	



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
100	5.5973	СВ	C/S
101	8.0473	HC	N/A
102	-0.7327	СВ	В
108	-0.4327	I	В
166	0.2073	I	В
186	0.1373	GC	В
206	-0.4927	СВ	В
227	-2.2927	Р	В
263	-0.1527	HC	S
306	-1.8527	Р	В
328	-0.9127	HC	G

In Hampton Falls the head of tide for a narrow marsh 'finger' ends at the Dodge Ponds Dam just upstream of Route 1. The Route 1 cement culvert over the waterway is approximately 10 by 9 feet with wingwalls and fitted with slots for stoplogs (absent). The tide reaches about 5 feet above the culvert invert but is stopped by the dam, which impounds about 8 feet of water. The crossing condition is very good, but the dam restricts the tides completely, leading to an ecological score of 5 and an overall combined score of 5, highest priority for replacement.



Structure Characteristics:

Structure Type:	Bridge with Abutments	Date of Last	
Structure Material:	Concrete	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>	
Dimension A (width):	10		10.91	
Dimension B ^{CB} (height):	9.8		8.96	
Crossing Length (Invert to Ir	60			

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	None	None
	Downstream	None	N/A	N/A	Poor	None	None

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
None	None	Good	Overhead electric	Good
None	None	0000	Overnead electric	0000

Structure Condition Comments:

Dam directly upstream from inlet

Ecological Assessment:		<u>Upstream</u>	Downstream	
	Natural Community Classification:	Freshwater Marsh	High Salt Marsh	
	Upstream Salt Marsh Migration Potent	ial (acres): 12.32		

Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan:	Yes		
	Emergency Access or Evacuation Route:	Yes		
	History of Flooding:	Past local flooding problems.		

	Tidal (rossing	y Summ	arv Sheet			
Now Hampshira's Tidal Crossing Assassment Protocol							
	Crossing ID:		129	essment 170to	201	Т	
Observer(s) 8				Date:		9/6/201	18
Organization:	JB, TS (NHDES	Coastal)		Start Time:		2:15:00	PM
Municipality:	Seabrook	i		End Time:		2:40:00	PM
Stream Name:	N/A			Tide Prediction		High	Low
Road Name:	N/A			Tir	ne:	8:57 PM	2:56 PM
				Elevati	on:	9.6	0.4
Crossing Condition	Evaluation	Score*		Tide Chart Location	n:	Hamptor	า Harbor
Crossing Condition	า	2					
Tidal Restriction Ev	aluation		DS view	v toward structur	e	US view	above structure
Tidal Range Ratio 3				-			and the star
Crossing Ratio		2		U		Contraction of the second	
Erosion Classificat	ion	4		N'STA			and and the second
Tidal Restriction O	verall Score	3	3		4.4		
Tidal Aquatic Organ	nism Passage				100		
Tidal Range Ratio		3	Mar Antonia	IN THE TANK		613.00	
Salt Marsh Migratio	on Evaluation						
Salt Marsh Migrat	ion Potential (Eval. Unit)	5					
Salt Marsh Migrat	ion Potential (Wshed.)	5	US view	v toward structure	e	DS view	above structure
Vegetation Evaluation	ion						42
Vegetation Compa	arison Matrix	1			AND IN COLUMN		
Infrastructure Risk	Evaluation				NAME OF		A LAND
Inundation Risk to	the Roadway (US, DS)	2,2		- Light V	1 State		and the second in
Inun. Risk to the C	ne Crossing Structure (US, DS) 2,3		26				
Adverse Impacts Ev	aluation**		1				
Inundation Risk to	Low-Lying Development	3					
Overall Scores							
Infrastructure		2					
Ecological		3					
Combined		3				Lo	ng. Profile



<u>Dist.</u>	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	1.255	HC	G
35	1.225	HC	С
47	0.305	Р	G
49	0.395	СВ	G
49	1.115	GC	G
57	1.145	I	С
73	1.055	Ι	С
80	1.025	GC	С
80	0.075	СВ	G
85	-0.055	HC	G
115	-1.175	СВ	C/S
147	-0.875	HC	S

N/A



Structure Characteristics:				
	Structure Type:	Box Culvert	Date of Last	
	Structure Material:	Concrete	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstr</u>	<u>eam</u>	<u>Downstream</u>
Dimension A (width):	8		8
Dimension B ^{CB} (height):	5		5
Crossing Length (Invert to Invert):		16	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Fair	Concrete	Fair	Culvert	Low
	Downstream	Concrete	Fair	Concrete	Fair	Culvert	Low

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Culvert	Low	Good	Wastewater treatment facility	Fair

Structure Condition Comments:

Wood support beams inside structure. Skirt causing perch downstream and lip US

Ecological Assessment:		<u>Upstream</u>	<u>Downstream</u>	
	Natural Community Classification:	High Salt Marsh	High Salt Marsh	
	Upstream Salt Marsh Migration Potent	ial (acres): 27.34		
Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Pla	n: No		

Site identified in nazara witigation rian.	110
Emergency Access or Evacuation Route:	N/A
History of Flooding:	Unknown

	Tidal (Crossing	2 Summ	arv Sheet			_
	New Hampsh	ire's Tidal C	rossina Ass	essment Protoc	ol		
	Crossing ID:		130				
Observer(s) &				Date:	9	/6/2018	
Organization:	TS, JB (NHDES	S Coastal)		Start Time:	2:	52:00 PM	
Municipality:	Seabrook			End Time:	3:	40:00 PM	
Stream Name:	N/A			Tide Prediction	High	Low	
Road Name:	N/A			Tim	e: 8:57 PN	1 2:56 PM	
				Elevatio	n: 9.6	0.4	
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Location	:		
Crossing Condition	n	2					
Tidal Restriction Ev	aluation		DS view	v toward structure	USUS	view above structure	e
Tidal Range Ratio		2			-		6
Crossing Ratio		1		H. E		Canada Santa	1
Erosion Classificat	ion	5	State of				
Tidal Restriction C	Verall Score	3				interest and	1
Tidal Aquatic Organ	nism Passage				潮	State Contraction	
Tidal Range Ratio		2	2				
Salt Marsh Migratio	on Evaluation			La de Ma			
Salt Marsh Migrat	ion Potential (Eval. Unit)	5					
Salt Marsh Migrat	ion Potential (Wshed.)	5	US viev	v toward structure	DS	view above structure	e
Vegetation Evaluat	ion						R.
Vegetation Compa	arison Matrix	1					
Infrastructure Risk	Evaluation						and the second
Inundation Risk to	the Roadway (US, DS)	2,2		- de s	and the second		No.
Inun. Risk to the C	Crossing Structure (US, DS)	2,3	the second	**• · · · · · · · · · · · · · · · · · ·	and the second		
Adverse Impacts Ev	valuation**			ST LEND	NA SEL		
Inundation Risk to	Low-Lying Development	3	and the second s	and a strength			
Overall Scores							
Infrastructure		2					
Ecological		1					

Combined

2



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	2.0525	HC	В
94	0.5825	HC	В
208	-0.3275	Р	C/S
244	0.5325	СВ	С
249	1.1225	GC	С
258	1.0025	I	С
275	1.0025	I	G
283	1.0425	СВ	С
286	1.1325	HC	С
294	1.3625	HC	G
340	1.9025	HC	С

N/A



Structure Characteristics:						
	Structure Type:	Box Culvert	Date of Last			
	Structure Material:	Concrete	Known	N/A		
	Tide Gate Present:	No	Replacement:			

Crossing Dimensions (ft):	<u>Upstream</u>		<u>Downstream</u>
Dimension A (width):	8		8
Dimension B ^{CB} (height):	5		5
Crossing Length (Invert to Ir	nvert):	17	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Concrete	Good	Wingwalls	Low
	Downstream	Concrete	Fair	Concrete	Fair	Wingwalls	Low

	Scour in Structure	Scour Severity in Structure	Road Sur	face Condition	Utilities	at Crossing	Structure Condition Overall			
	Culvert	Low		Good	WWTF		Fair			
	Structure Condition Comments:									
			1							
Ecol	ogical Assessmen	t:		<u>Upstream</u>		Dov	<u>ownstream</u>			
	Natural Communit	ty Classification:		High Salt Marsl	h	High	Salt Marsh			
	Upstream Salt Ma	rsh Migration Potent	tial (acres)	: 27.34						
Floo	d Hazard & Emer	gency Access								
	Site Identified in H	lazard Mitigation Pla	in:	No						
	Emergency Access or Evacuation Route:			N/A						
	History of Flooding: Unknown									



Marsh Lane crosses Kenney Brook in Hampton and conducts flow through a 3-foot round culvert. It is rated an overall combined score of 3, indicating a moderate priority for replacement due to high scour scores and relatively deep downstream pool. It sits at a high position in the landscape, but improvements may benefit fish passage, especially as sea levels rise.



Stru	itructure Characteristics:								
	Structure Type: Round Culvert		Date of Last						
	Structure Material:	Plastic - Corrugated	Known	N/A					
	Tide Gate Present:	No	Replacement:						

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):		3	3
Dimension B ^{CB} (height):	~~~	}	3
Crossing Length (Invert to Ir	vert):	36	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	Rip Rap	Fair	None	None
	Downstream	None	N/A	Dry Fit Stone	Fair	Wingwalls	Low

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall			
None	None	Good	OHE DS	Fair			
Structure Condition Comments: Pipe good. Wingwalls fair and road sinking in over pipe							
		1					

ECOI	ogical Assessment:		<u>Upstream</u>	Downstream
	Natural Community Classification:		Freshwater Stream	Brackish Riverbank Marsh
	Upstream Salt Marsh Migration Potent	ial (acres):	0.83	
Floo	d Hazard & Emergency Access			
	Site Identified in Hazard Mitigation Pla	n: Ye	es	
	Emergency Access or Evacuation Route	: N,	/A	
	History of Flooding:	Kr	nown local flooding problems	

	r	Tidal Crossing	Summa	ary Sheet			
	New	Hampshire's Tidal Cro	ossing Ass	essment Proto	ocol		
	Crossing ID	:	132				
Observer(s) &				Date:		8/28/20	018
Organization:	Г Т	S, JB (NHDES Coastal)		Start Time:		7:30:00	AM
Municipality:	Rye			End Time:		8:22:00	AM
Stream Name:	N/A			Tide Prediction		High	Low
Road Name:	N/A			Т	ime:	1:34 PM	7:18 AM
				Elevat	ion:	7.9	0.2
Crossing Condition	Evaluation	<u>Score</u> *		Tide Chart Location	on:	Portsmou	ith Harbor
Crossing Conditio	n	1					
Tidal Restriction Ev	aluation		DS view	toward structu	re	US view	above structure
Tidal Range Ratio		4	-	A	acta		
Crossing Ratio		3	AT A COMPANY		Wald T		
Erosion Classificat	tion	3	284		Nr.		The Cash
Tidal Restriction C	Overall Score	3		AGE			
Tidal Aquatic Organ	nism Passage			- north at	1. Carl	ALL CAR	

Tidal Range Ratio	4
Salt Marsh Migration Evaluation	
Salt Marsh Migration Potential (Eval. Unit)	2
Salt Marsh Migration Potential (Wshed.)	2
Vegetation Evaluation	
Vegetation Comparison Matrix	1
Infrastructure Risk Evaluation	
Inundation Risk to the Roadway (US, DS)	4,5
Inun. Risk to the Crossing Structure (US, DS)	5,5
Adverse Impacts Evaluation**	
Inundation Risk to Low-Lying Development	5
Overall Scores	
Infrastructure	5
Ecological	4

Combined



and the



DS view above structure

* Scoring system ranges from 1 to 5, where 1 = lowest replacement priority and 5 = highest replacement priority **Adverse Impacts Evaluation scores range from 1 to 5, where 1 = high risk and 5 = low risk

3



Dist.	<u>Hght.</u>	Feat.	<u>Sub.</u>
0	1.3594	HC	G
40	1.0894	СВ	G
71	0.1594	Ρ	C/S
102	1.1994	HC	С
132	1.2594	I	G
179	1.2494	I	В
183	0.9494	GC	В
190	-0.5106	СВ	G
197	-1.3406	Ρ	G
209	-0.5606	HC	G
281	-2.6106	HC	G

A small rectangular marsh surrounded by roads and cut off from tides during the development of Rye Harbor was restored to tidal exchange in 1998 by the addition of a 3 by 4-foot concrete culvert that runs under Harbor Road. Common reed covered wetland which had been partially filled with dredge spoil. Restoration included the new culvert and the area had the fill and a small tidal creek excavated. The crossing is in very good condition, but the culvert still restricts some of the tidal flow. It has an overall combined score of 3, a moderate priority for replacement.



Stru	Structure Characteristics:						
	Structure Type:	Box Culvert	Date of Last				
	Structure Material:	Concrete	Known	1997			
	Tide Gate Present:	No	Replacement:				

Crossing Dimensions (ft):	<u>Upstre</u>	<u>am</u>	<u>Downstream</u>
Dimension A (width):	4		4
Dimension B ^{CB} (height):	3		3
Crossing Length (Invert to Ir	vert):	47	

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	Concrete	Good	Rip Rap	Fair	Wingwalls	Low
	Downstream	Concrete	Good	Rip Rap	Fair	Wingwalls	Low

Scour in Structure	S	cour Severity in Structure	Road Su	rface Condition	Utilities	at Crossing	Structure Condition Overall
None		None		Fair Overhead electric		ead electric	Good
Structure Co Comme	ondition nts:	N/A					
Ecological Asses	sment:			<u>Upstream</u>		<u>[</u>	<u>Downstream</u>
Natural Com	Natural Community Classification:			Low Salt Marsh High Salt Marsh			igh Salt Marsh
Upstream Sa	lt Marsh	Migration Poten	tial (acres	: 1.63			
Flood Hazard &	Emerge	ncy Access					
Site Identifie	Site Identified in Hazard Mitigation Plan:			Yes			
Emergency A	Emergency Access or Evacuation Route:			N/A			
History of Fl	History of Flooding:			6""""""" over road on 1/4/18			

Tidal	Crossin	- Cumm	am Choot			
l ludi			ary Sneet			
New Hampsh	ure's Tidal C	Tossing Ass	essment Protocol	_		
Crossing ID:		133	I			
Observer(s) &			Date:	9/10/20	018	
Organization: IS, JB (NHDE	S Coastal)		Start Time:	8:45:00		
Stream Name: N/A			Tide Prediction	High	Low	
Road Name: N/A			Time	2.27 DM	8:35 AM	
			Flevation:	8.1	-1.1	
Crossing Condition Evaluation	Score*		Tide Chart Location:	Squamso	cott River	
Crossing Condition	5			•		
Tidal Restriction Evaluation	0	DS view	toward structure	US view	above structure	
Tidal Range Ratio	5			10/52	Star of the	
Crossing Ratio	5					TI
Frosion Classification	3			1	at a	
Tidal Restriction Overall Score	4		A A A A A A A A A A A A A A A A A A A			101
Tidal Aquatic Organism Passage	-					
Tidal Range Ratio	5	E.			A State of the	12-1
Salt Marsh Migration Evaluation	5				A AND SAN	
Salt March Migration Potential (Eval Unit)	1			E-91,80830305113 + 143		_
Salt Marsh Migration Potential (Wished)	1		toward structure		above structure	
Vogetation Evaluation	T		toward structure	D3 VIEW	above structure	家
Vegetation Comparison Matrix	Л	10 M		a significant	Aless-	
	4		Contraction of the second	- A Company		
Inundation Pick to the Poadway (US_DS)	1 1	in the			Alter Alter	
Inundation Kisk to the Roadway (03, D3)	1,1 F D	- Service				
Inun. Risk to the crossing structure (OS, DS	5,2	1		19th		Sec. 1
Auverse impacts Evaluation**	F	ar is	Section of the sectio	and all	All is a	Con al
	5	and a second				350
Uverall Scores	_					
injrastructure	5					

Ecological

Combined



5

4

Long. Profile Feat.

HC

СВ

ΗС

СВ

Т

Т

Ρ

HC

СВ

HC

СВ

Sub.

S

G

G

С

S

G

C/S

С

S

С

S

Hght.

6.3579

6.0379

5.9779

5.6979

5.6179

3.2379

2.7379

3.6079

2.1879

2.2379

2.0379

Dist.

A small head of tide marsh that extends west from the Squamscott River in Newfields is crossed by an unnamed access road that conducts flow through a granite box culvert that may have been 4 by 4 feet in cross-section when installed. Currently, the upstream inlet appears to be collapsed and blocked by sediment. As might be expected, this culvert is not functional and is at risk for failure. The overall combined score is 4: high priority for replacement.



Structure Characteristics:

Structure Type:	Box Culvert	Date of Last	
Structure Material:	Stone	Known	N/A
Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upstr</u>	eam	<u>Downstream</u>
Dimension A (width):	0)	3.6
Dimension B ^{CB} (height):	C)	4
Crossing Length (Invert to In	60		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	Culvert	High
	Downstream	Dry Fit Stone	Poor	Dry Fit Stone	Poor	Wingwalls	Medium

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Culvert	Medium	N/A	None	Poor

Structure Condition Comments:

Collapsed US, no structure to measure, see photo

Ecological Assessment:		<u>Upstream</u>	Downstream	
	Natural Community Classification:	Freshwater Stream	Low Salt Marsh	
	Upstream Salt Marsh Migration Potent	tial (acres): 0.00		

Flood Hazard & Emergency Access Site Identified in Hazard Mitigation Plan: No Emergency Access or Evacuation Route: N/A History of Flooding: Unknown

	Tic	lal Crossing	Summa	ary Sheet					
	New Hai	mpshire's Tidal Cro	ssing Ass	essment Proto	ocol				
	Crossing ID:	1	134			Ĩ			
Observer(s) &				Date:		10/2	16/2018		
Organization	JB (I	NHDES Coastal)		Start Time:		1:08	8:00 PM		
Municipality	Hampton			End Time:		2:25	5:00 PM		
Stream Name:	N/A			Tide Prediction		High		Low	
Road Name:	N/A			т	ime:	5:28 AM	1	L1:42 AM	
		a *		Elevat	tion:	7.5		1.7	
Crossing Condition	Evaluation	Score*		Tide Chart Locatio	on:	Ham	npton Har	bor	
Crossing Conditio	n	5							
Tidal Restriction Ev	aluation		DS view	toward structu	re	US v	view abo	ove stru	cture
Tidal Range Ratio		3		Star Berge			THE	K C	
Crossing Ratio		5		as a late				- Autolie -	
Erosion Classifica	tion	5		A Partie				Ser Person	
Tidal Restriction (Overall Score	4		Plane and					
Tidal Aquatic Orga	nism Passage			<u></u>			A. M		
Tidal Range Ratio		3						in the	
Salt Marsh Migrati	on Evaluation						1.14		
Salt Marsh Migra	tion Potential (Eval. Ur	nit) 1							
Salt Marsh Migra	tion Potential (Wshed.	.) 1	US view	toward structu	re	DS v	view abo	ove strue	cture
Vegetation Evaluat	ion		1						(
Vegetation Comp	arison Matrix	0				Ĩ	THE REAL PROPERTY OF		
Infrastructure Risk									
Inundation Risk to									
Inun. Risk to the (1	N DE	569 - Ja	1		
Adverse Impacts E	valuation**	, = =, = =,=	100	1.0					
Inundation Risk to	o I ow-I ving Developm	ient 5	2000 	-16:0				a de la	
Overall Scores						_			_
Ecological		4							
Combined		4					Long	Profilo	
combined						Dist	Long.	Frome	Ch
 * Scoring system ranges f **Adverse Impacts Evaluation 	rom 1 to 5, where 1 = lowest rep ation scores range from 1 to 5, w	placement priority and 5 = high vhere 1 = high risk and 5 = low	est replacement risk	priority		0	2 5125		<u>Sub.</u>
	-	-				22	2 /125	CB	C/S
Cros	sing Cross Section	and Stream Long	itudinal P	Profile		48	2.7435	I	C/S
14			_	Road Profile	*	68	3.7935	I	G
12					-	74	3.9035	нс	G
÷.			-	HWI Wrack		84	3.5835	CB	s S
j 10			-	HWI Stain		97	3 4335	P	s
8					Plain	1//	2 8725	нс	ر د/د
	000			Avg. marsh		197	2.0735	нс	C/S
6 5			-	Low Tide		102	2.3033	ne	C/ 3
1 4 				Stream Prot	file				
I		•	•	*The road profile is					



2 0 0

S 3.4335 Ρ 2.8735 HC C/S 2.9835 C/S HC

At the head of a tidal creek just south of the Taylor River is a berm barrier to 1-2 feet of tidal flow with a 1-foot metal pipe for drainage that is crushed at the downstream end. Current conditions are poor and prevent tidal flow leading to an overall combined score of 4: high priority for replacement. The culvert should be replaced unless the berm has no current use, in which case it should be removed.



Stru	cture Characteristics			
	Structure Type:	Round Culvert	Date of Last	
	Structure Material:	Steel - Corrugated	Known	N/A
	Tide Gate Present:	No	Replacement:	

Crossing Dimensions (ft):	<u>Upst</u>	ream	<u>Downstream</u>
Dimension A (width):	-	L	0
Dimension B ^{CB} (height):		L	0
Crossing Length (Invert to Ir	20		

Crossing Condition:		Headwall Material	Headwall Condition	Wingwall Material	Wingwall Condition	Scour at Structure	Scour Severity
	Upstream	None	N/A	None	N/A	Culvert	High
	Downstream	None	N/A	None	N/A		

Scour in Structure	Scour Severity in Structure	Road Surface Condition	Utilities at Crossing	Structure Condition Overall
Culvert	High	N/A	None	Poor

Structure Condition Comments: NO DS STRUCTURE. BURIED

Ecological Assessment:		<u>Upstream</u>		Downstream	
	Natural Community Classification:		Invasive Dominant	Freshwater Stream	
	Upstream Salt Marsh Migration Potential (acres):		0.58		

Floo	Flood Hazard & Emergency Access				
	Site Identified in Hazard Mitigation Plan:	No			
	Emergency Access or Evacuation Route:	N/A			
	History of Flooding:	Culvert washed out and buried upon assessment.			