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December 6, 2013
File: 195600539

Peter Tischbein
U.S. Army Corps of Engineers
Maine Project Office
675 Western Avenue #3
Manchester, Maine 04351

Reference: Bingham Wind Project: Data Request – Salmon Streams

Dear Peter,

The following information, with the enclosed materials, provides the supplemental data requested for the U.S. Army Corps of Engineers (Corps) Application (application) for the Bingham Wind Project (project). This information supports on-going Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS) on project area streams that occur within designated Critical Habitat for Gulf of Maine Distinct Population Segment (GOM DPS) of Atlantic salmon (*Salmo salar*). This supplemental information provides detail on materials previously submitted in the application.

The project area is located within 4 HUC 10 watersheds; two of which have been designated as Critical Habitat for the GOM DPS of Atlantic salmon (50CFR226: Federal Register, June 19, 2009). Of the two watersheds designated as Critical Habitat, project area streams are located only within the Piscataquis River (1) watershed (HUC 10 0102000401) (Appendix 1).

Streams in Project Area

Table 1 summarizes the proposed stream and stream buffer impacts for those project area streams located within the designated Critical Habitat. While, the project proposes aboveground utility crossings of streams, there will be no new or upgraded permanent stream crossings associated with construction or operation of the project.

Table 1. Summary of Project Streams within Salmon Critical Habitat		
Project Area / Project Impact	Summit - Number of Streams in Project Area	Generator Lead - Number of Streams Crossed
Perennial	8	22
<i>New/Upgraded Road Crossing</i>	0	0
<i>Temporary Road Crossing</i>	0	12
<i>Clearing in Associated Wetlands</i>	4	10
Intermittent	17	10
<i>New/Upgraded Crossing</i>	0	0
<i>Temp Crossing</i>	0	4
Total Streams	25	32



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Reference: Bingham Wind Project: Data Request – Salmon Streams

Details on these streams are provided in attached Appendix 2. Appendix 2 provides Appendix C-3-5 from the original Corps application, which has been revised to include only those project area streams located within designated Critical Habitat. Additional revisions to this original submission include information about the current and proposed cover types of perennial stream buffers. This cover type information was originally included in Appendix B, Exhibit B5 (Compensation/Mitigation Package), as well as in the Supplemental Corps submission on August 27, 2013 (Wetland Conversion and Construction Methods).

Proposed Cover Type Conversion for Forested Wetlands

An analysis of the cover type conversion of forested wetlands along the generator lead was provided in the August 27, 2013, Bingham Wind Project: Additional Information on Wetland Conversion and Construction Methods. This analysis provided a general characterization of the landscape in which the proposed conversion will occur, and included both those wetlands directly associated with project area streams and those without an apparent stream association. The following provides a brief summary of the conversion analysis.

- 3.48 acres or approximately 13% of the 26.75 acres of identified conversion along the generator lead is currently scrub-shrub habitat;
- 13.13 acres or approximately 49% of the proposed conversion of forested wetlands along the generator lead will occur within working forest; and
- 0.28 acres of approximately 1% of the proposed conversion will occur adjacent to roads.

In other words, approximately 16.9 acres, or 64% of the wetlands affected by project construction will not be cleared of forest canopy and will not undergo a conversion from a forested condition. Note that this analysis included approximately 1.4 miles of the generator lead located outside Critical Habitat.

No new stream crossings, permanent or temporary, associated with crane paths or access roads will be required for the ridge-top turbine portion of the project. The aboveground collector line along Route 16 will cross over streams but construction access will occur from Route 16, so additional construction access or temporary stream crossings will not be required

Details on the current and proposed cover type for perennial streams with associated wetlands within Critical Habitat and figures depicting the existing cover type are included in Appendix 2.

Project Buffers and Construction Methods

No construction work is proposed to take place within the channel of any of delineated streams. In addition, buffer zones, construction design criteria, and vegetation maintenance restrictions have been established for the streams that are crossed by the overhead collector line or the generator lead. These measures include the following:

- A minimum buffer zone of 100 feet has been established for all streams. To maintain the integrity of the buffers, the Applicants have located permanent structures greater than 100 feet



Reference: Bingham Wind Project: Data Request – Salmon Streams

from perennial streams to the maximum extent practicable. Only 24 total poles, 10 on the collector line and 14 on the generator lead, will be located within 100 feet from a perennial stream. The placement of some of these poles within 100 feet of streams was deliberate in order to provide a higher conductor height over the stream, allowing for taller vegetation to remain or develop under the conductor, thereby providing greater buffering of the stream channel. This method has reduced and eliminated the need for clearing in several locations. Because of the documented presence of northern spring salamanders, 7 of these streams, 5 along the generator lead and 2 along the collector line, will have 250 foot buffer.

- The maximum height of vegetation within the right-of-way (ROW) is a function of conductor height. The conductors are at their highest closest to a structure, and they are at a low point midway between structures. The closer the structure is to the stream, the higher the conductor will be over the stream and the taller vegetation will be allowed to safely grow. This taller vegetation will provide maximum shading of the stream;
- During construction and ongoing maintenance, clearing and cutting in the buffer zone will be subject to the same procedures and prohibitions, as applicable, that are required in the typical ROW and for standard stream buffers. These would include Maine Board of Pesticide Control requirements, restoring and stabilizing disturbed soils, disposition of slash, ROW access constraints, the restrictions on stream crossings by equipment within the ROW, the use of construction mats and other procedures related to work in wetlands, the limited use of mechanized tree harvesting equipment, and the prohibition on the use, mixing, or transfer of herbicides and petroleum products within the buffer zone.
- Additional restrictions within the buffer zone include the following:
 - Only those trees capable of growing to a height within the minimum of 15 feet from a conductor within the next 3 to 4 years will be topped or removed. No other vegetation, other than dead or danger trees, will be removed, unless necessary for construction access and temporary bridge crossings.
 - Topping of trees is the preferred method of vegetation maintenance, unless the tree is dead or dying, or unless topping will leave insufficient vegetation to sustain the tree.
 - Removal of capable species will be conducted by hand-cutting or with low ground pressure tree harvesting equipment working from inside or outside the buffer.

The combination of closer structures and maximum allowable vegetation height within the buffer zone will provide vegetation that ranges, on average, from approximately 20 to 30 feet tall during a routine maintenance cycle. Maintaining maximum allowable vegetation height within at least 100 feet of each bank at the salmon habitat streams will minimize the potential for warming of water temperatures that might result from removal of existing vegetation.

Construction of the generator lead will require temporary equipment access across certain streams to reach locations of proposed structures or . Access routes are designed to minimize the number of crossings and have avoided crossing larger streams where possible. The preferred method for temporary access across



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Reference: Bingham Wind Project: Data Request – Salmon Streams

streams is mats or timber bridges, as described in MDIFW's *Recommended Performance Standards for Riparian Buffers in Overhead Utility ROW Projects* (2012). The temporary mat detail based upon these standards is provided in Appendix 3.

I believe this information addresses your request for additional information and demonstrates that implementation of these protective measures will minimize impacts to Critical Habitat for Atlantic salmon.

Sincerely,
STANTEC CONSULTING

Dale F. Knapp
Director, Water Resources Division

Attachments:

- Appendix 1: Figures Depicting Streams in Project Area located within Critical Habitat
- Appendix 2: USFWS Streams Package, updated with proposed cover type for Streams with Associated Wetlands (*Updated from original submission in Application, Appendix C-3-5*)
- Appendix 3: Schematic depicting construction methods for temporary access across waterbodies, as described in MDIFW's *Recommended Performance Standards for Riparian Buffers in Overhead Utility ROW Projects* (2012).

- c. Dave Fowler, First Wind
- Bob Roy, First Wind
- Dan Courtemanch, MDEP
- Wende Mahaney, USFWS
- Mark Kern, USEPA



December 6, 2013

Reference: Bingham Wind Project: Data Request – Salmon Streams

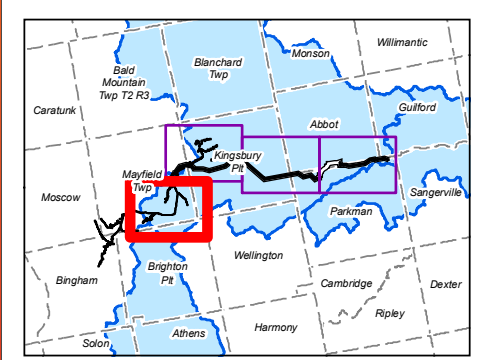
Appendix 1: Figures Depicting Streams in Project Area located within Critical Habitat



- Legend**
- S012 Intermittent Stream
 - S014 Perennial Stream
 - Clearing Limits
 - == Electrical Generator Lead
 - Clearing Limits
 - ▭ Critical Habitat by HUC 10
 - Town Boundary

0 2,000 Feet
 1:24,000 (At Original document size of 11x17)

1. Coordinate System: NAD 1983 UTM Zone 19N FT
2. Orthimagery © NAIP 2013



Project Location: Bingham, Maine Prepared by: DLJ on 2013-11-27

Client/Project: Bingham Wind Project 195600539

Figure No.: 1
 Title:

Bingham Salmon Stream Habitat



Legend

- S012 Intermittent Stream
- S014 Perennial Stream
- Clearing Limits
- ══ Electrical Generator Lead
- Clearing Limits
- ▭ Critical Habitat by HUC 10
- ▭ Town Boundary

0 2,000 Feet
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1. Coordinate System: NAD 1983 UTM Zone 19N FT
2. Orthoimagery © NAIP 2013



Project Location: Bingham, Maine Prepared by: DLJ on 2013-11-27

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Client/Project
 Bingham Wind Project

Figure No.

2

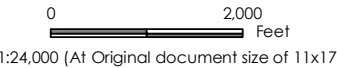
Title

**Bingham Salmon
 Stream Habitat**



Legend

- S012 Intermittent Stream
- S014 Perennial Stream
- Clearing Limits
- == Electrical Generator Lead
- Clearing Limits
- ▭ Critical Habitat by HUC 10
- Town Boundary



1. Coordinate System: NAD 1983 UTM Zone 19N FT
2. Orthomagery © NAIP 2013



Project Location: Bingham, Maine Prepared by DLJ on 2013-11-27

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Client/Project
Bingham Wind Project

Figure No.
3

Title
Bingham Salmon Stream Habitat



- Legend**
- S012 Intermittent Stream
 - S014 Perennial Stream
 - Clearing Limits
 - Electrical Generator Lead
 - Clearing Limits
 - Critical Habitat by HUC 10
 - Town Boundary

0 2,000 Feet
 1:24,000 (At Original document size of 11x17)

1. Coordinate System: NAD 1983 UTM Zone 19N FT
2. Orthoimagery © NAIP 2013



Project Location: Bingham, Maine Prepared by: DLJ on 2013-12-05

Client/Project: Bingham Wind Project 195600539

Figure No. **4**
 Title

Bingham Salmon Stream Habitat



December 6, 2013

Reference: Bingham Wind Project: Data Request – Salmon Streams

Appendix 2: USFWS Streams Package, updated with proposed cover type for Streams with Associated Wetlands (*Updated from original submission in Application, Appendix C-3-5*)

STREAM SUMMARY

INTRODUCTION

In the course of project development, Stantec Consulting (Stantec) conducted a variety of ecological surveys within the Bingham Wind Project (project) area, including wetland and stream delineations. Much of the project area occurs within the Piscataquis River watershed (HUC 0102000401), which is designated as critical habitat for Atlantic salmon (*Salmo salar*) (Figure 1). In addition, several of the delineated perennial streams provide documented habitat and one stream potential habitat for the northern spring salamander (*Gyrinophilus porphyriticus*), a State Species of Special Concern. The Applicants, Blue Sky West, LLC and Blue Sky West II, LLC, have made efforts to minimize stream impacts by avoiding direct stream work and proposing managed buffers along the delineated streams. For those streams identified as potential habitat or with documented presence of northern spring salamander, the proposed management buffer will be 250 feet as measured from each stream bank. Those streams within the designated critical habitat for Atlantic salmon will receive a 100-foot buffer unless the more restrictive 250-foot buffer applies. All other streams within the project area will receive a minimum 25-foot vegetation management buffer. The following documents provide a summary of the delineated stream resources and the proposed stream buffer management. Note that this document has been revised from the May 2013 submission to include only those streams located within the designated critical habitat for Atlantic salmon. This includes streams located within approximately 300 feet of proposed edge of gravel surfaces and those resources located within the approximately 100-foot wide electrical corridors:

- Summary of perennial streams within the project area;
- Detailed discussion of each perennial stream within the project area and proposed stream buffer management;
- Summary of intermittent streams within the project area; and
- Available photographs of intermittent streams within the project area.

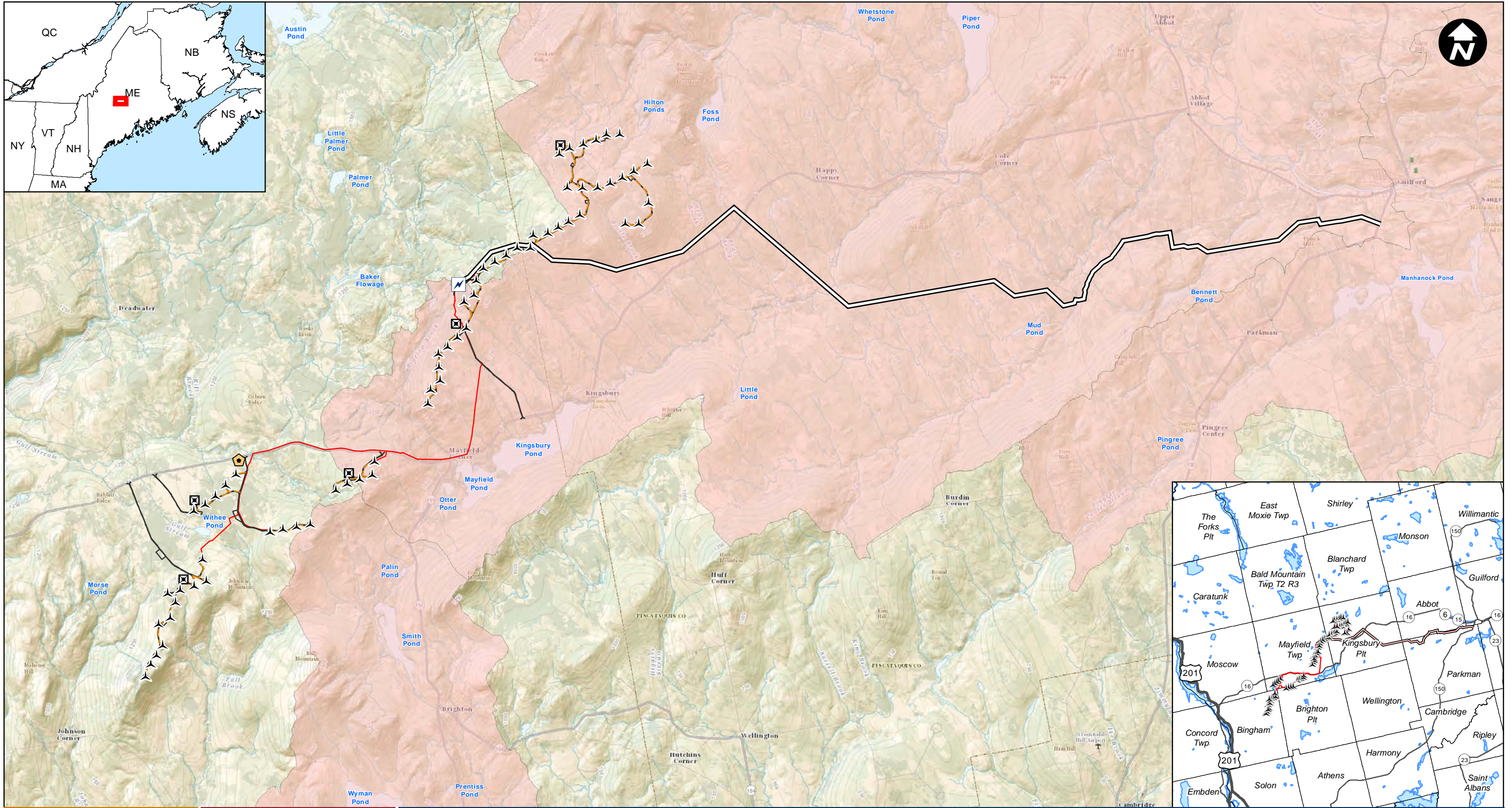
Substantive changes to the May 2013 submission incorporated within this document include:

- Results of northern spring salamander surveys conducted in September 2013, which are reflected in the buffers applied to several of the perennial streams;
- All intermittent and perennial streams will receive a minimum 100-foot buffer;
- Figures for those perennials streams that have associated wetlands have been replaced with figures that show the wetland community types. Similar figures have been added for those intermittent streams with associated wetlands; and

- Where available, photographs taken under winter conditions have been replaced with growing season photographs.

Note that natural resource maps showing the location of the delineated streams with proposed project components are provided in Exhibit B-1 of this permit application.

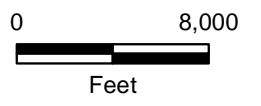
Figure 1



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00539_001_HUC10_CriticalHabitat.mxd

- Legend**
- Turbine Location
 - Permanent MET Tower
 - O&M Building
 - Substation
 - Electrical Generator Lead
 - Edge of Gravel
 - Overhead Collector
 - Underground Collector
 - Critical Habitat by HUC 10



Client/Project
 Bingham Wind Project
 Figure No.
 1
 Title
Bingham Wind Project Location
 5/21/2013

195600539

Perennial Stream Summary Table

Perennial Streams Located Within Bingham Project Area and Within Designated Critical Habitat for Atlantic Salmon

Stream ID	Associated Wetland ID	Town or Township	NR Map Number	Latitude	Longitude	Approximate Bankfull Width (Ft.)	Stream Name	HUC 10 Watershed	Stream Buffer Width (Ft.)*	Number of Poles within 100 Ft. of Stream	Proposed Temporary Stream Crossing	Proposed Clearing in Associated Wetland	Current Vegetative Cover Type of Associated Wetland	Proposed Vegetative Cover Type of Associated Wetland within Impact Area
S014	MAY_W129	Mayfield Township	9	45.106267	-69.725472	6.5	Unnamed perennial stream	102000401	250	1		X	Forested	Scrub-shrub
S022	MAY_W155, MAY_W156, MAY_W157	Mayfield Township	10	45.103547	-69.701785	7.5	Unnamed perennial stream	102000401	250	2			Scrub-shrub/Emergent, Emergent, Emergent	Scrub-shrub/Emergent, Emergent, Emergent
S023	No associated wetland	Mayfield Township	10	45.104509	-69.693014	40	Bigelow Brook	102000401	250	2			No associated wetland	No associated wetland
S024	MAY_W161	Mayfield Township	10	45.105147	-69.688184	8	Unnamed perennial stream	102000401	250	2			Emergent	Emergent
S025	MAY_W164	Mayfield Township	10	45.111006	-69.68572	6.5	Unnamed tributary of Kingsbury Pond	102000401	250	1		X	Forested	Scrub-shrub
S027	MAY_W170, MAY_W171, MAY_W172	Mayfield Township	11	45.126437	-69.683998	6	Unnamed tributary of Kingsbury Pond	102000401	250	2		X	Forested/Emergent, Scrub-shrub/Emergent, Scrub-shrub/Emergent	Scrub-shrub/Emergent, Scrub-shrub/Emergent, Scrub-shrubEmergent
S033	MAY_W189	Mayfield Township	14	45.141713	-69.693075	5	Headwater of Bigelow Brook	102000401	125	0			Scrub-shrub	Scrub-shrub
S041	KING_W252, KING_W254	Kingsbury Plantation	16	45.176305	-69.652165	10.5	Unnamed tributary of Bog Brook	102000401	250	0		X	Forested, Forested	Scrub-shrub, Scrub-shrub
S043	No associated wetland	Kingsbury Plantation	19	45.149692	-69.648223	4.5	Unnamed tributary of Kingsbury Stream	102000401	250	1	X		No associated wetland	No associated wetland
S045	No associated wetland	Kingsbury Plantation	20	45.14918	-69.63325	17.5	Bottle Brook	102000401	250	0			No associated wetland	No associated wetland
S046	No associated wetland	Kingsbury Plantation	20	45.150564	-69.626459	3	Unnamed perennial stream	102000401	250	0	X		No associated wetland	No associated wetland
S047	No associated wetland	Kingsbury Plantation	21	45.151476	-69.621637	2	Unnamed perennial stream	102000401	250	1	X		No associated wetland	No associated wetland
S048	No associated wetland	Kingsbury Plantation	21	45.152905	-69.615917	6	Unnamed tributary of Kingsbury Stream	102000401	250	0	X		No associated wetland	No associated wetland
S049	No associated wetland	Kingsbury Plantation	21	45.157892	-69.608567	6.5	Bear Brook	102000401	250	1	X		No associated wetland	No associated wetland
S050	No associated wetland	Kingsbury Plantation	21	45.161467	-69.602722	20	Unnamed Tributary of Bear Brook	102000401	250	0			No associated wetland	No associated wetland
S051	No associated wetland	Kingsbury Plantation	22	45.152711	-69.584255	4	Unnamed Tributary of Bear Brook	102000401	250	2	X		No associated wetland	No associated wetland

Perennial Streams Located Within Bingham Project Area and Within Designated Critical Habitat for Atlantic Salmon

Stream ID	Associated Wetland ID	Town or Township	NR Map Number	Latitude	Longitude	Approximate Bankfull Width (Ft.)	Stream Name	HUC 10 Watershed	Stream Buffer Width (Ft.)*	Number of Poles within 100 Ft. of Stream	Proposed Temporary Stream Crossing	Proposed Clearing in Associated Wetland	Current Vegetative Cover Type of Associated Wetland	Proposed Vegetative Cover Type of Associated Wetland within Impact Area
S052	No associated wetland	Kingsbury Plantation	23	45.143298	-69.569581	40	Kingsbury Stream	102000401	250	0			No associated wetland	No associated wetland
S056	KING_W354	Kingsbury Plantation	24	45.143299	-69.540067	4	Unnamed perennial stream	102000401	100	0		X	Forested	Scrub-shrub
S057	KING_W355	Kingsbury Plantation	25	45.144271	-69.530114	4	Unnamed tributary of Carlton Stream	102000401	250	0	X	X	Forested	Scrub-shrub
S058	PARK_W356	Kingsbury Plantation	25	45.144801	-69.52614	7.5	Unnamed tributary of Carlton Stream	102000401	250	1	X	X	Forested	Scrub-shrub
S060	PARK_W363	Parkman	26	45.143136	-69.506123	6	Unnamed tributary of Carlton Stream	102000401	100	0		X	Forested/Scrub-shrub	Scrub-shrub
S062	PARK_W370	Parkman	26	45.141865	-69.488637	37.5	Carlton Stream	102000401	250	1		X	Forested	Scrub-shrub
S063	No associated wetland	Parkman	26	45.141913	-69.487303	11	Unnamed tributary of Carlton Stream	102000401	250	1			No associated wetland	No associated wetland
S065	No associated wetland	Parkman	26	45.147123	-69.484222	7	Unnamed tributary of Carlton Stream	102000401	250	1			No associated wetland	No associated wetland
S066	ABB_W376	Parkman	27	45.152116	-69.476821	8.5	Unnamed stream	102000401	250	1		X	Forested	Scrub-shrub
S069	ABB_W384, ABB_W385, ABB_W386	Abbot	27 & 28	45.157197	-69.458304	6	Gales Brook	102000401	100	0	X	X	Forested, Forested, Forested	Forested, Scrub-shrub, Scrub-shrub
S070	ABB_W387	Abbot	28	45.154675	-69.457675	5	Unnamed tributary of Gales Brook	102000401	250	1	X	X	Forested	Scrub-shrub
S071	PARK_W396	Parkman	28	45.154075	-69.439012	11	Unnamed tributary of Gales Brook	102000401	250	1	X	X	Forested	Scrub-shrub
S074	ABB_W404	Abbott	29	45.16057	-69.410835	3.5	Unnamed tributary of Piscataquis River	102000401	100	0			Scrub-shrub/Emergent	Scrub-shrub/Emergent
S075	PARK_W411	Parkman	30	45.160194	-69.390637	9	Unnamed tributary of Piscataquis River	102000401	100	2	X	X	Forested	Scrub-shrub

*Buffer width as measured from each bank of the stream.

Perennial Stream Descriptions and Buffer Management

**1. S014 – Unnamed Perennial Stream, Mayfield Township
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S014 occurs within a narrow but clearly defined valley. Within the project corridor, the stream occurs within deciduous forested uplands that show relatively little disturbance from harvesting. North of the project corridor, the stream is associated with two small forested wetlands. The stream flows north from Route 16 and has two small forested wetlands occurring along the banks.

Stream Characteristics

- Perennial stream occurring in a forested upland.
- Channel substrate is primarily sand, gravel and cobble.
- Macro-invertebrates are present.
- Moderate erosion characterized by vertical to undercut banks.
- Physical characteristics (**Photo 1**):
 - Bankfull width is 6-7 feet (Average 6.5 feet);
 - Water depth in October 2012 was 4-12 inches;
 - Moderate gradient with riffles and occasional pools.

Associated Wetland

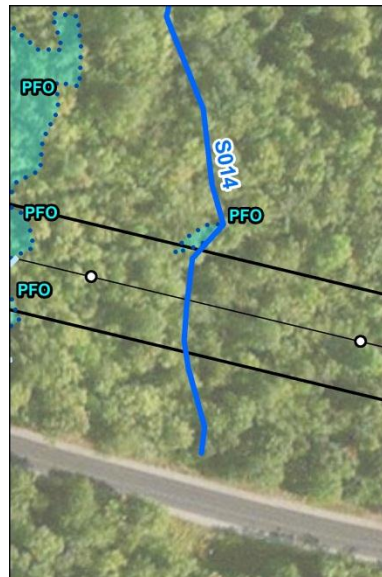
The two small forested wetlands associated with this stream are both characterized by yellow birch in the canopy and red maple, green ash (*Fraxinus pennsylvanica*), and yellow birch within the sapling/shrub layer. Herbaceous vegetation includes sensitive fern, fowl manna grass, cinnamon fern, and woodland horsetail (*Equisetum sylvaticum*). The wetlands have thick organic soils that are frequently flooded by the stream.

Construction and Maintenance

The stream and associated wetland will be crossed by the aboveground portion of the electrical collector. One pole (structure) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer. Construction and maintenance access will occur via existing access from adjacent Route 16; therefore, there will be no temporary or permanent access road crossing of the stream or its associated wetland.



Photo 1: Perennial stream S014.
Stantec Consulting, October 2, 2012.



Proposed aboveground collector line crossing of stream S014.
From Figure 9, Delineated Natural Resource Map by Stantec Consulting.

**2. S022 – Unnamed Perennial Stream, Mayfield Township
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S022 occurs on a moderate slope within a coniferous-dominated forest. Within the project corridor, the stream is associated with three principally emergent wetlands. There are other associated wetlands and intermittent tributaries located north and south of the project corridor. The stream flows northwest to southeast toward Route 16.

Stream Characteristics

- Perennial stream with several associated wetlands.
- Channel substrate is primarily cobble and boulder.
- Stream is fed by groundwater and smaller tributaries.
- Physical characteristics (**Photo 2**):
 - Bankfull width is 5-10 feet (Average 7.5 feet);
 - Well-defined banks;
 - Moderate gradient.

Associated Wetland

The emergent wetlands are generally characterized by melic manna grass, sensitive fern, fringed sedge (*Carex crinita*), and cinnamon fern. A few balsam fir saplings also occur within these wetlands. The scrub-shrub wetland is dominated by balsam fir with fowl manna grass, melic manna grass, and fringed sedge in the herbaceous layer. The soils are variable and include layers of depleted mucky sand with organic coating.

Construction and Maintenance

The stream and associated wetland will be crossed by the aboveground portion of the electrical collector. Two poles (structures) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the poles (structures) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the poles to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer. Construction and maintenance access will occur via existing access from adjacent Route 16; therefore, there will be no temporary or permanent access road crossing of the stream or its associated wetland.



Photo 2: Perennial stream S022.
Stantec Consulting, October 3, 2012.



Proposed aboveground collector line crossing of stream S022.
From Figure 10, Delineated Natural Resource Map by Stantec Consulting.

3. S023 – Bigelow Brook, Mayfield Township
HUC 10 Watershed: Piscataquis River (1), 0102000401

General Landscape Information

Within the project corridor, stream S023, Bigelow Brook, is relatively low gradient. The surrounding landscape is generally mixed second growth forests with some disturbance from past timber harvesting. There are no wetlands directly associated with the stream in the vicinity of the project corridor. The stream flows northwest to southeast toward Route 16 and through an existing culvert under the road. There is an existing fish passage in the culvert under Route 16.

Stream Characteristics

- Perennial stream that occurs within a forested upland.
- Substrate consists of boulders, slate, cobble, gravel, and sand.
- Aquatic invertebrates and brook trout (*Salvelinus fontinalis*) are present.
- Physical characteristics (**Photo 3**):
 - Bankfull width is 30-50 feet (Average 40 feet);
 - Water depth in October of 2012 was 5-10 feet;
 - Low to moderate gradient with riffles, runs and pools.

Associated Wetland

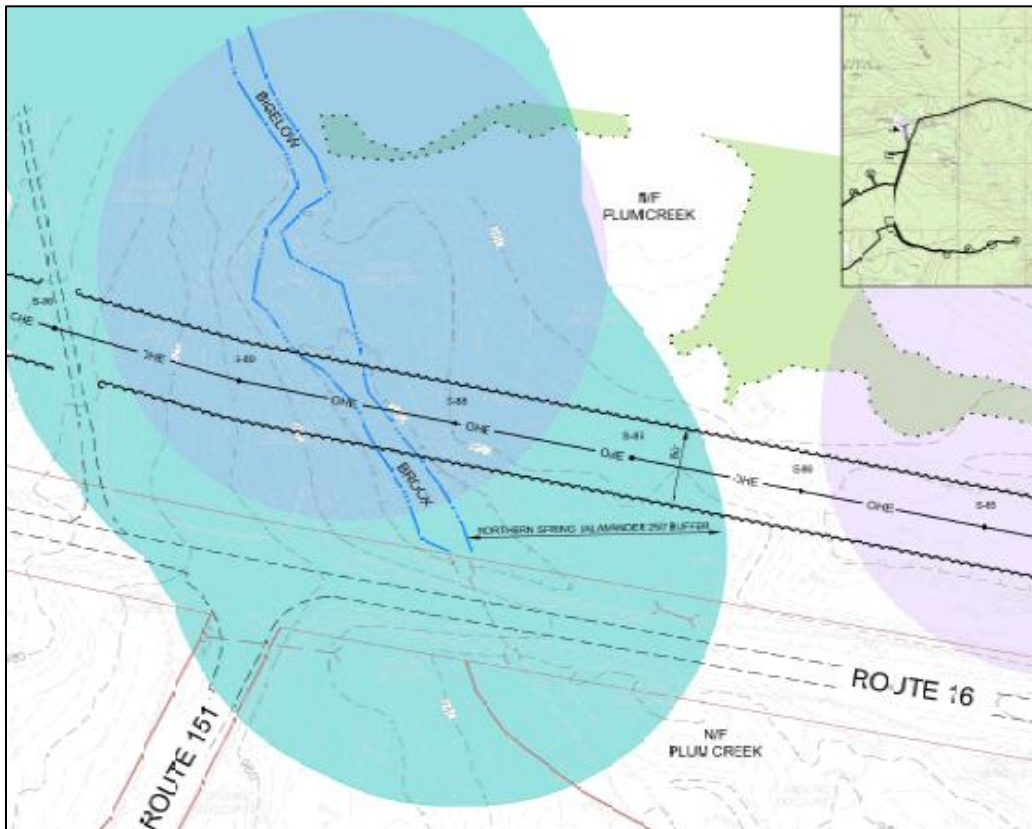
There are no wetlands directly associated with this stream.

Construction and Maintenance

The stream will be crossed by the aboveground portion of the electrical collector. Two poles (structures) will be located within 100 feet of this stream. Northern spring salamanders were documented in this stream during surveys conducted in 2013. Because of the presence of this species, a 250-foot foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer. Construction and maintenance access will occur via existing access from adjacent Route 16; therefore, there will be no temporary or permanent access road crossing of the stream or its associated wetland.



Photo 3: Perennial stream S023.
Stantec Consulting, October 4, 2012.



Proposed aboveground collector line crossing of stream S023.
From Sheet CL-1.04, Collector Line Plan prepared by DeLuca-Hoffman Associates, Inc.

**4. S024 – Unnamed Perennial Stream, Mayfield Township
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Perennial stream S024 originates in a forested/scrub shrub wetland located north of the project corridor and flows northwest to southeast toward Mayfield and Kingsbury ponds. This low gradient stream occurs in a deep topographic drainage surrounded by mixed second growth forest. There is one emergent wetland associated with the stream within the project collector corridor.

Stream Characteristics

- Perennial stream occurs within a forested setting.
- Channel substrate consists of gravel and cobble.
- No aquatic invertebrates observed.
- Physical characteristics (**Photo 4**):
 - Bankfull width is 8 feet;
 - Water depth in October of 2012 was 2-4 feet;
 - Undercut banks and drift deposits present.

Associated Wetland

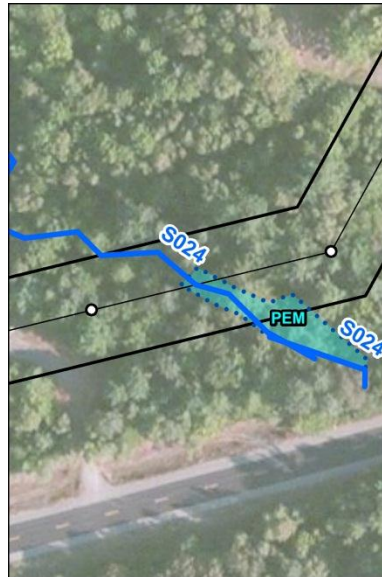
The emergent wetland that occurs along the eastern bank of the stream is characterized by American hog-peanut (*Amphicarpaea bracteata*), jewelweed (*Impatiens capensis*), American golden-saxifrage (*Chrysosplenium americanum*), sensitive fern, and fowl manna grass. Soils consist of dark alluvial deposits in the top 12 inches. Drift deposits from S024 are present within the wetland.

Construction and Maintenance

The stream and associated wetland will be crossed by the aboveground portion of the electrical collector. Two poles (structures) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the poles (structures) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the poles to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer. Construction and maintenance access will occur via existing access from adjacent Route 16; therefore, there will be no temporary or permanent access road crossing of the stream or its associated wetland.



Photo 4: Perennial stream S024.
Stantec Consulting, October 4, 2012.



Proposed aboveground collector line crossing of stream S024.
From Figure 10, Delineated Natural Resource Map by Stantec Consulting.

**5. S025 – Unnamed Tributary to Kingsbury Pond, Mayfield Township
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Perennial stream S025 flows northwest to southeast through deciduous forest that has some disturbance from past timber harvesting. A recreational vehicle trail crosses the stream next to an old stone bridge that has washed out. This trail causes some disturbance within the stream channel. Within the project corridor, there is one small forested wetland associated with the stream, and there are several other small stream associated wetlands located west and east of the project corridor.

Stream Characteristics

- Perennial stream occurring in a deciduous forest.
- Channel substrate consists of boulders, cobble, gravel, and woody debris.
- Aquatic mosses and brook trout observed.
- Physical characteristics (**Photo 5**):
 - Bankfull width is 5-8 feet (Average 6.5 feet);
 - Water depth in October of 2012 was 3-12 inches;
 - Low to moderate gradient with riffles and pools.

Associated Wetland

The forested wetland associated with the stream is dominated by green ash, red maple, and balsam fir in the canopy. Yellow birch is present in the sapling/shrub layer. Melic manna grass, sensitive fern, bluejoint, tall meadow-rue (*Thalictrum pubescens*), and nodding sedge are present in the herbaceous layer. Soils have 10-12 inches of organics over a depleted matrix.

Construction and Maintenance

The stream and associated wetland will be crossed by the aboveground portion of the electrical collector. One pole (structure) will be located within 100 feet of this stream. Northern spring salamanders were documented in this stream during surveys conducted in 2013. Because of the presence of this species, a 250-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 250-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer. Construction and maintenance access will occur via existing access roads; therefore, there will be no temporary or permanent access road crossing of the stream or its associated wetland.



Photo 5: Perennial stream S025.
Stantec Consulting, October 3, 2012.



Proposed aboveground collector line crossing of stream S025.
From Figure 10, Delineated Natural Resource Map by Stantec Consulting.

**6. S027 – Unnamed Tributary of Kingsbury Pond, Mayfield Township
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S027 flows generally southeast through moderately sloping mixed second growth forest. There are three stream associated wetlands and an intermittent tributary to stream S027 within the project corridor.

Stream Characteristics

- Perennial stream occurring in a mixed forest.
- Channel substrate consists of cobble, boulder, bedrock and gravel.
- Aquatic invertebrates and mosses are present.
- Physical characteristics (**Photos 6 and 7**):
 - Bankfull width is 5-7 feet (Average 6 feet);
 - Water depth in October of 2012 was 2-10 inches;
 - Moderate gradient dominated by riffles with some small pools.

Associated Wetland

The wetlands associated with stream S027 are forested/emergent and scrub-shrub/emergent communities that show some evidence of disturbance from past timber harvesting. Trees in the forested component include yellow birch, green ash, red maple, and balsam fir. The shrub layer includes speckled alder, yellow birch, black ash, and bebb's willow (*Salix bebbiana*). The emergent areas, which occur mostly in old skidder trails, are characterized by bluejoint, fowl manna grass, melic manna grass, wrinkle-leaf goldenrod (*Solidago rugosa*), and lady fern (*Athyrium filix-femina*). Soils are variable and include alluvial deposits over a depleted matrix and dark horizon over a depleted matrix.

Construction and Maintenance

The stream and associated wetland will be crossed by the aboveground portion of the electrical collector. In addition, this stream is crossed by an existing logging road and flows through a 24-inch culvert. No improvements are proposed for this road or culvert. Two poles (structures) will be located within 100 feet of this stream. This stream has the potential to contain northern spring salamanders, and (exclusive of existing roads and proposed poles) a 250-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. With regard to the poles (structures) located within the 250-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the poles to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 6: Perennial stream S027.
Stantec Consulting, September 28, 2010.

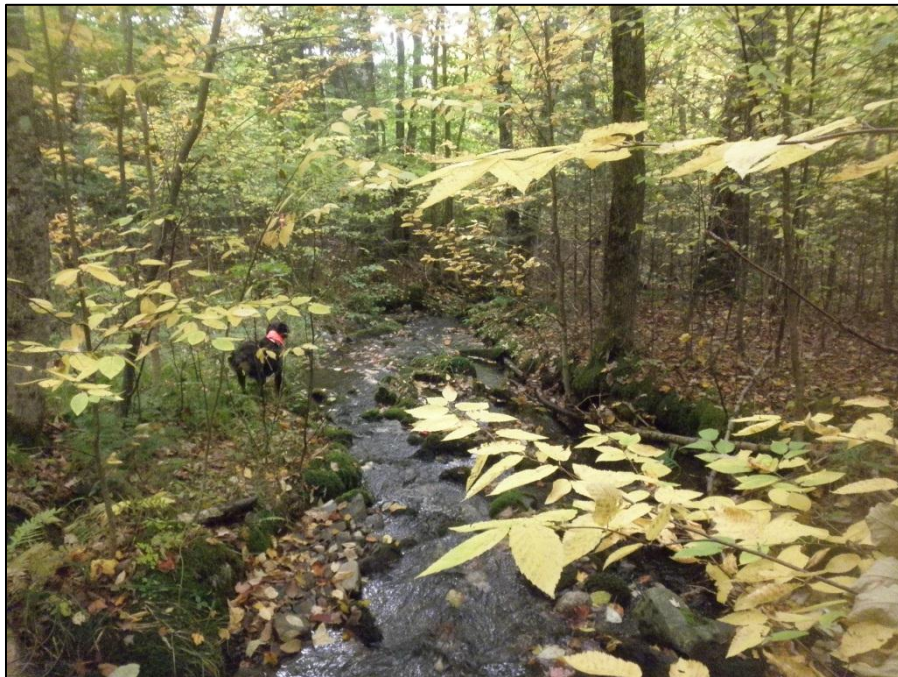
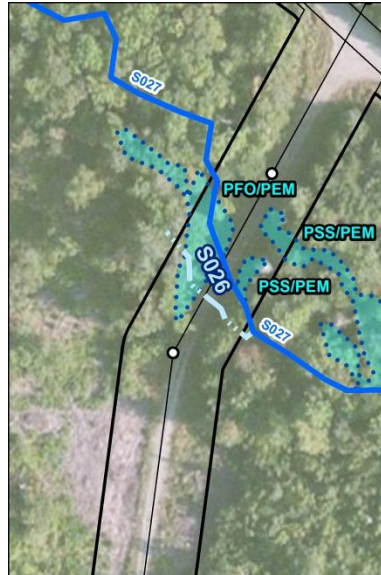


Photo 7: Perennial stream S027.
Stantec Consulting, October 3, 2012.



Proposed aboveground collector line crossing of stream S027. Note wetland MAY_W176 is located northwest along the existing access road and is not impacted by the proposed project.
From Figure 11, Delineated Natural Resource Map by Stantec Consulting.

**7. S033 – Headwater of Bigelow Brook, Mayfield Township
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S033 is a moderate gradient stream that flows southwest from a scrub-shrub wetland. The surrounding mixed forest is disturbed from previous timber harvesting.

Stream Characteristics

- Perennial stream occurring in a mixed forest.
- Channel substrate consists of gravel, cobble, and boulder.
- Aquatic fauna observed.
- Physical characteristics (**Photo 8**):
 - Bankfull width is 5 feet;
 - Very low flow in September of 2012;
 - Moderate slope.

Associated Wetland

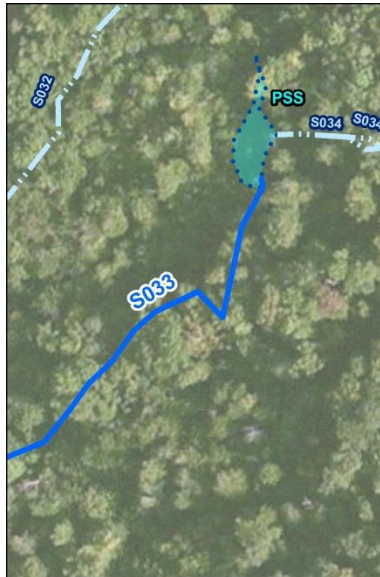
The scrub-shrub wetland that is associated with this stream is characterized by yellow birch and beaked hazelnut (*Corylus cornuta*) in the shrub layer and melic manna grass, and jewelweed in the herbaceous layer. This wetland appears to be a groundwater seep that contributes water to the stream.

Construction and Maintenance

There are no proposed impacts to this stream or associated wetland. An existing gravel access road and the proposed aboveground collector line are approximately 125 feet east of the stream.



Photo 8: Perennial stream S033
Stantec Consulting, September 25, 2012



Proposed aboveground collector line in proximity to stream S033.
From Figure 14, Delineated Natural Resource Map by Stantec Consulting.

**8. S041 – Unnamed Tributary of Bog Brook, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S041 is a perennial stream that flows north out of a beaver impoundment. The stream occurs within a deciduous forested upland and forested wetlands. Within its headwater wetland, this stream is relatively low gradient, but it becomes moderate to high gradient after it exits this wetland. This area has been disturbed by beaver activity and timber harvesting. The stream was previously crossed by an existing gravel road, but the road washed out when the upstream beaver dam failed.

Stream Characteristics

- Perennial stream that flows out of beaver impoundment.
- Channel substrate consists of rock, cobble, gravel, and sand.
- Aquatic mosses, invertebrates, dusky salamanders (*Desmoganthus fuscus*), and two-lined salamanders (*Eurycea bislineata*) are present.
- Canopy cover is 75 percent.
- Physical characteristics (**Photo 9**):
 - Bankfull width is 8-12 feet (Average 10 feet)
 - Water depth in October of 2012 was 3-5 inches;
 - Flow structure is dominated by riffles with a few pools;
 - Low to high gradient.

Associated Wetland

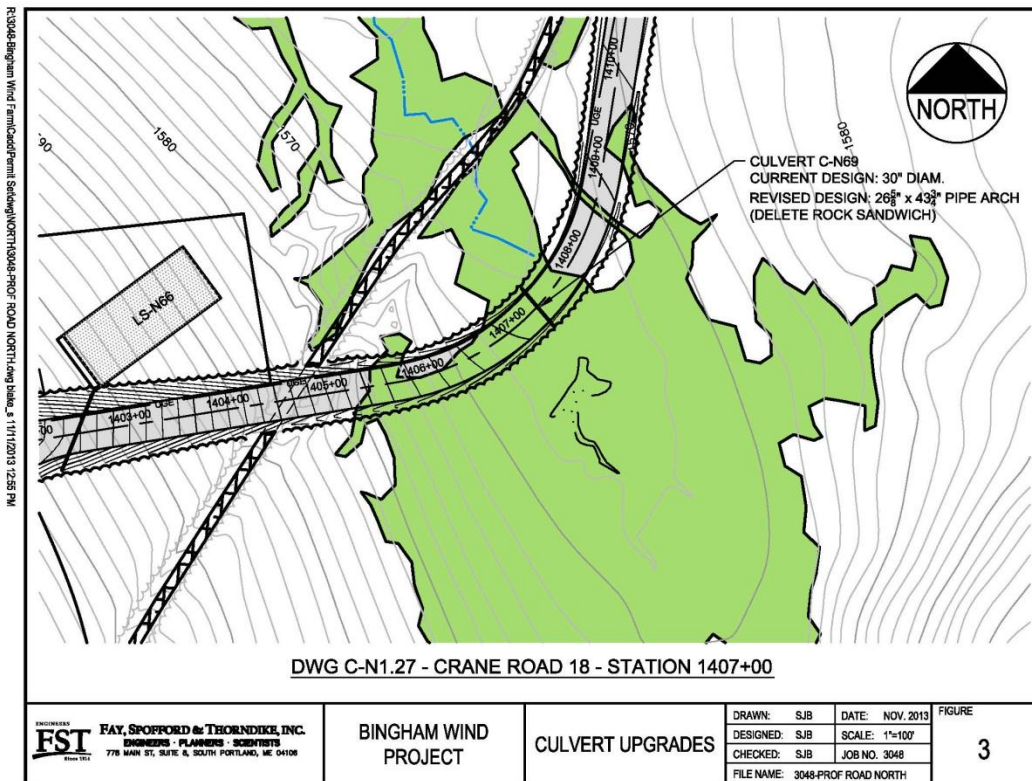
The forested headwater wetland has been altered by beaver activity and construction of a gravel access road. A second forested wetland occurs to the northwest of the headwater wetland. It is likely that these two wetlands formed a single resource prior to construction of the gravel access road. The canopy of these wetlands includes red maple, red spruce, yellow birch, and green ash. The shrub layer includes speckled alder and the above mentioned tree species. The herbaceous vegetation in these wetlands includes sensitive fern, cinnamon fern, manna grass, nodding sedge, and tall meadow-rue. Soils have either an organic or dark mineral horizon over depleted sandy loam.

Construction and Maintenance

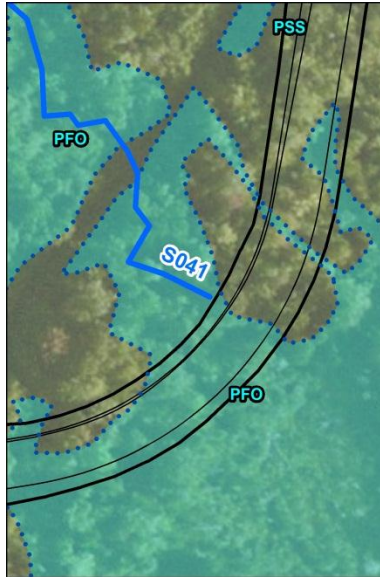
The proposed access road will cross the headwater wetland above the stream, and there will be no direct impact to the stream. The original wetland crossing at this location was designed to include a rock sandwich to maintain wetland hydrology. Following consultation with the Maine Department of Inland Fisheries and Wildlife, the proposed rock sandwich will be replaced with a pipe arch. A 250-foot buffer will be maintained on the stream outside of the proposed access road crossing. Former access road that was washed out after the failure of an upstream beaver dam will be revegetated.



Photo 9: Perennial stream S041.
Stantec Consulting, September 13, 2011.



Proposed access road in proximity to stream S041.
From Sheet C-N1.27, Crane Road 18 Plan and Profile prepared by DeLuca-Hoffman Associates, Inc.



From Figure 16, Delineated Natural Resource Map by Stantec Consulting.

**9. S043 – Unnamed Tributary of Kingsbury Stream, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S043 is an unnamed perennial tributary to Kingsbury Stream. This stream flows southeast to Route 16 and converges with Kingsbury Stream approximately two miles southeast of the proposed project corridor. The stream is located in a steep valley and is bordered by upland hardwood forest that is dominated by American beech (*Fagus grandifolia*), sugar maple, and yellow birch. Much of the area surrounding the stream has been disturbed by recent timber harvesting activities. The stream is crossed by an old, unmaintained logging road near the proposed generator lead centerline. There is no existing culvert or bridge associated with this crossing.

Stream Characteristics

- Perennial stream in steep valley.
- Channel substrate is primarily boulder, cobble, and gravel.
- Aquatic mosses occur throughout the stream channel.
- Physical characteristics (**Photo 10**):
 - Bankfull width 3-6 feet (Average 4.5 feet);
 - Water depth in November of 2010 was 1-6 inches;
 - Moderate gradient riffle complexes;
 - Overhanging hardwood trees present.

Associated Wetland

There are no stream-associated wetlands within the surveyed limits of the proposed generator lead corridor.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. There will be no direct impact to the stream channel. One pole (structure) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 10: Perennial stream S043.
Stantec Consulting, November 10, 2010.



Proposed generator lead crossing of stream S043.
From Figure 19, Delineated Natural Resource Map by Stantec Consulting.

10. S045 – Bottle Brook, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401

General Landscape Information

Stream S045, Bottle Brook, is a perennial stream and tributary to Kingsbury Stream. This stream flows southeast to Route 16 and converges with Kingsbury Stream approximately 1.5 miles southeast of the proposed project corridor. The stream is located in a small valley and is bordered by mixed upland forest dominated by American beech, sugar maple, and eastern hemlock (*Tsuga canadensis*). Much of the area surrounding the stream has been disturbed by recent timber harvesting activities.

Stream Characteristics

- Perennial stream in small valley.
- Channel substrate is primarily boulder, cobble, and gravel.
- Aquatic mosses and macro- invertebrates occur throughout the stream channel.
- Physical characteristics (**Photo 11**):
 - Bankfull width 15-20 feet (Average 17.5 feet);
 - Water depth in November of 2010 was 6-12 inches;
 - Low gradient riffle and run sequences;
 - Overhanging mixed forest trees present.

Associated Wetland

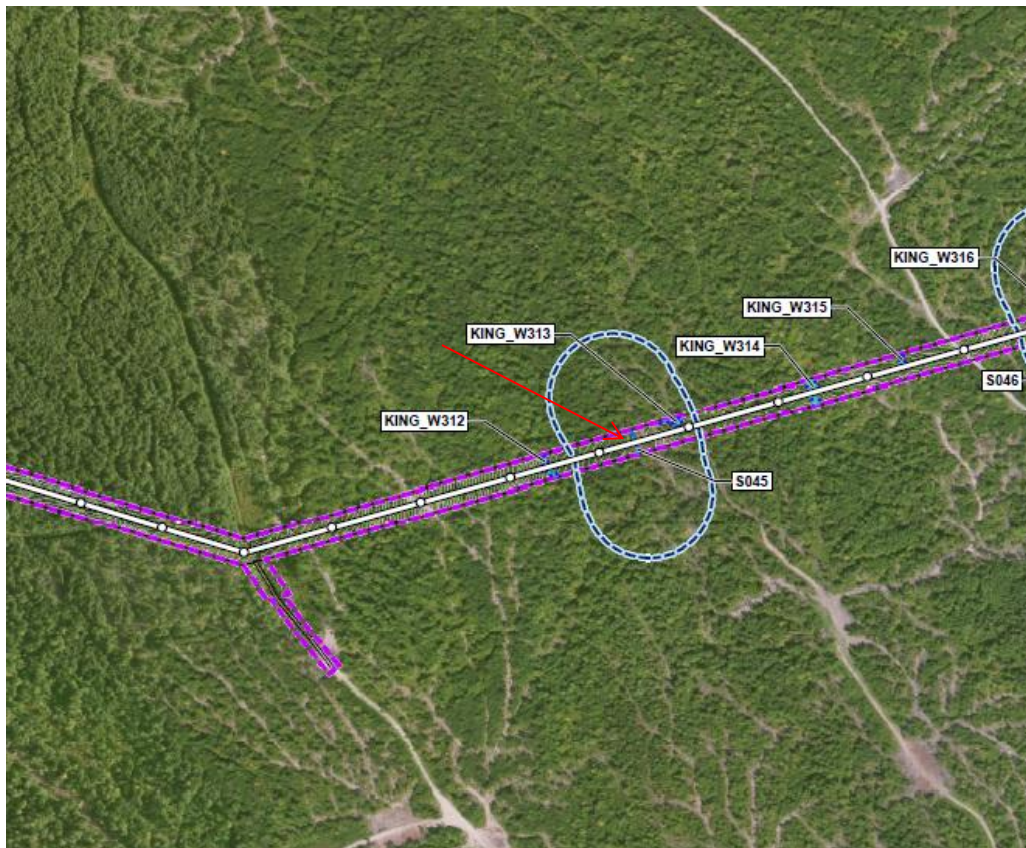
There are no wetlands associated with Bottle Brook within the surveyed limits of the proposed generator lead.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. Based upon discussions with Maine Department of Inland Fisheries and Wildlife biologist, this stream will not be crossed during construction. Construction access will occur from the east and west and there will be no need to cross the stream. Northern spring salamanders were documented in this stream during surveys conducted in 2013. Because of the presence of this species, a 250-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 11: Perennial stream S045.
Stantec Consulting, November 10, 2010.



Proposed generator lead crossing of stream S045.
From Figure 20, Delineated Natural Resource Map by Stantec Consulting.

11. S046 – Unnamed Perennial Stream, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401

General Landscape Information

Stream S046 is an unnamed perennial stream that flows south towards Route 16. The stream is bordered by upland hardwood forest that is dominated by American beech, sugar maple, and yellow birch. A forested wetland is located east of the stream, and an emergent wetland is present to the west. These wetlands do not directly abut the stream. The area surrounding the stream has been disturbed by recent timber harvesting activities.

Stream Characteristics

- Perennial stream.
- Channel substrate is primarily boulder, cobble, gravel, and sand.
- Aquatic mosses and macro-invertebrates occur throughout the stream channel.
- Physical characteristics (**Photo 12**):
 - Bankfull width 2-4 feet (Average 3 feet);
 - Water depth in November of 2010 was 2-5 inches;
 - Low gradient riffle and small plunge sequences;
 - Overhanging hardwood trees present.

Associated Wetland

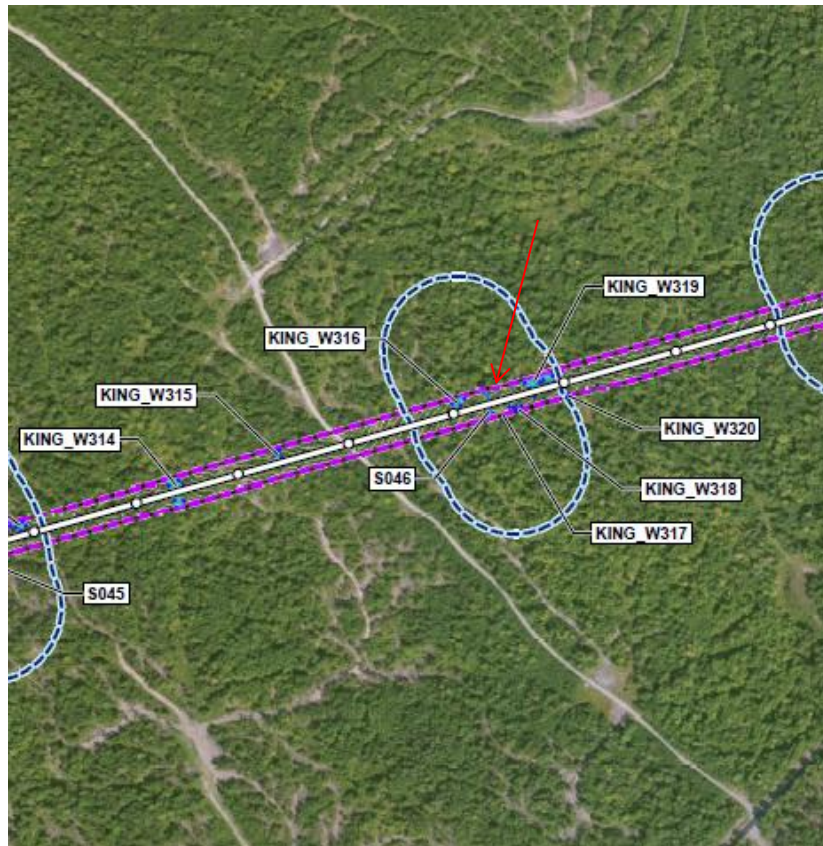
A forested wetland dominated by yellow birch, balsam fir, and eastern hemlock is located east of the stream but does not directly abut the stream. An emergent wetland dominated by fowl manna grass, melic manna grass, and cottongrass bulrush is located west of the stream, but does not directly abut the stream. Both wetlands have been disturbed by recent timber harvesting activities.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. There will be no direct impact to the stream channel. Northern spring salamanders were documented in this stream during surveys conducted in 2013. Because of the presence of this species, a 250-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 12: Perennial stream S046.
Stantec Consulting, November 10, 2010.



Proposed generator lead crossing of stream S046.
From Figure 20, Delineated Natural Resource Map by Stantec Consulting.

12. S047 – Unnamed Perennial Stream, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401

General Landscape Information

Stream S047 is an unnamed perennial stream that flows south toward Route 16 and is likely a tributary of Kingsbury Stream. The stream is bordered by upland hardwood forest that is dominated by American beech, sugar maple, and yellow birch. A forested wetland is present to the east of the stream but does not directly abut the stream. The area surrounding the stream has been disturbed by recent timber harvesting activities.

Stream Characteristics

- Perennial stream.
- Channel substrate is primarily boulder, cobble, and gravel.
- Aquatic mosses occur throughout the stream channel.
- Physical characteristics (**Photo 13**):
 - Bankfull width 1.5-2.5 feet (Average 2 feet);
 - Water depth in November of 2010 was 2-20 inches;
 - Low gradient riffle and small plunge sequences;
 - Overhanging hardwood trees present.

Associated Wetland

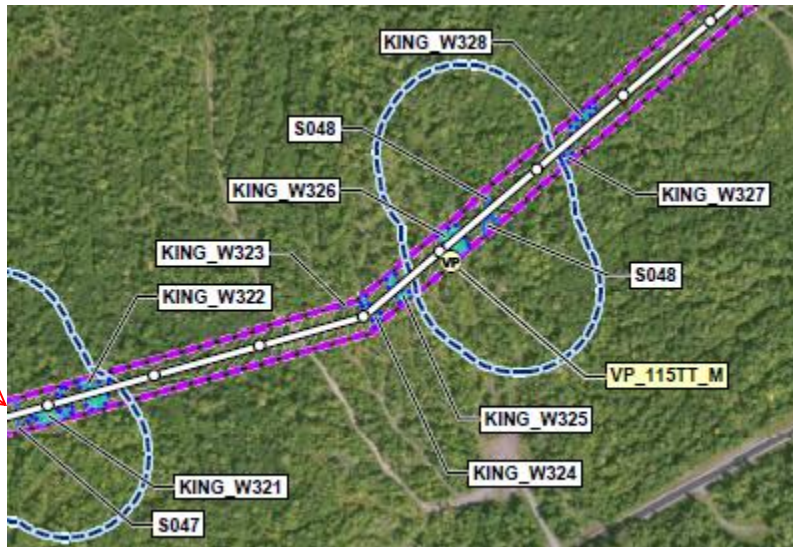
A forested wetland dominated by red maple, green ash, black ash, and yellow birch is located east of the stream, but does not directly abut the stream. The wetland has been disturbed by recent timber harvesting activities.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. There will be no direct impact to the stream channel. One pole (structure) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 13: Perennial stream S047.
Stantec Consulting, November 10, 2010.



Proposed generator lead crossing of stream S047.
From Figure 21 Delineated Natural Resource Map by Stantec Consulting.

**13. S048 – Unnamed Tributary of Kingsbury Stream, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S048 is an unnamed perennial tributary of Kingsbury Stream. This stream flows southeast to Route 16 and converges with Kingsbury Stream approximately 1.4 miles to the southeast of the proposed project corridor. The stream splits into two channels, each perennial, just north of the proposed clearing limits for the generator lead. The two channels then rejoin approximately 230 feet to the south. The stream is bordered by upland mixed forest that is dominated by yellow birch, sugar maple, and red spruce. An emergent wetland is present to the west of the stream but does not directly abut the stream bank. The area surrounding the stream including the nearby emergent wetland has been disturbed by recent timber harvesting activities.

Stream Characteristics

- Perennial stream.
- Channel substrate is primarily boulder, cobble, and gravel with some woody debris.
- Aquatic mosses and macro invertebrates occur throughout the stream channel.
- Physical characteristics (**Photo 14**):
 - Bankfull width 4-8 feet (Average 6 feet);
 - Water depth in November of 2010 was 4-8 inches;
 - Low gradient riffle complexes;
 - Overhanging mixed forest trees present.

Associated Wetland

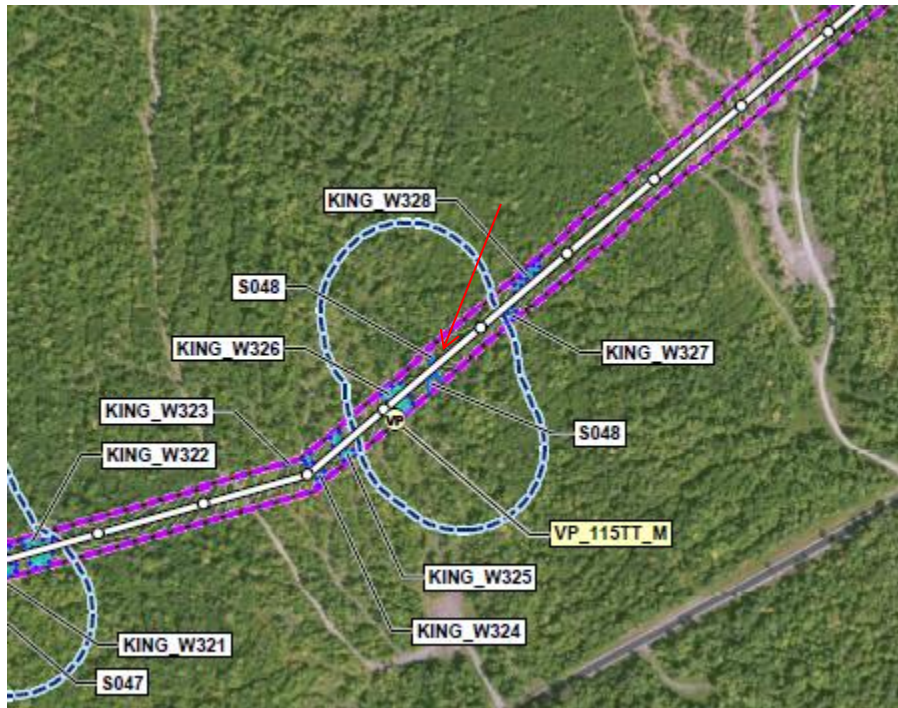
An emergent wetland that has developed within a network of skidder trails is located west but does not directly abut the stream. Fowl manna grass, melic manna grass, nodding sedge, and cottongrass bulrush dominate this wetland.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. There will be no direct impact to the stream channel. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 14: Perennial stream S048.
Stantec Consulting, November 11, 2010.



Proposed generator lead crossing of stream S048.
From Figure 21 Delineated Natural Resource Map by Stantec Consulting.

14. S049 – Bear Brook, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401

General Landscape Information

Stream S049, Bear Brook, is a perennial tributary of Kingsbury Stream. This stream flows southeast to Route 16 and converges with Kingsbury Stream approximately 1.3 miles to the southeast of the proposed project corridor. The stream is bordered by upland mixed forest that is dominated by yellow birch, sugar maple, and red spruce. A large forested wetland is located west of the stream but does not directly abut the stream. Much of the area surrounding the stream has been disturbed by recent timber harvesting activities.

Stream Characteristics

- Perennial stream.
- Channel substrate is primarily boulder, cobble, and gravel.
- Aquatic mosses occur throughout the stream channel.
- Physical characteristics (**Photo 15**):
 - Bankfull width 5-10 feet (Average 6.5 feet);
 - Water depth in November of 2010 was 6 inches;
 - Low gradient riffle, run, and pool sequences;
 - Overhanging mixed forest trees present.

Associated Wetland

A forested wetland is located to the west but does not directly abut the stream. This wetland is dominated by balsam fir, red maple, black ash and, speckled alder. The wetland has been disturbed by recent timber harvesting activities.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. There will be no direct impact to the stream channel. One pole (structure) will be located within 100 feet of this stream. Northern spring salamanders were documented in this stream during surveys conducted in 2013. Because of the presence of this species, a 250-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 250-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 15: Perennial stream S049.
Stantec Consulting, November 11, 2010.



Proposed generator lead crossing of stream S049.
From Figure 21 Delineated Natural Resource Map by Stantec Consulting.

**15. S050 – Unnamed Tributary of Bear Brook, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S050 is an unnamed perennial tributary to Bear Brook. This stream flows southeast to Route 16 and converges with Bear Brook approximately 1.6 miles southeast of the proposed project corridor. The stream is located in a small valley and is bordered by upland mixed forest dominated by yellow birch, sugar maple, and red spruce. Forested wetlands are present to the east and west of the stream but do not directly abut the stream. Much of the area surrounding the stream has been disturbed by recent timber harvesting activities.

Stream Characteristics

- Perennial stream in small valley.
- Channel substrate is primarily boulder, cobble, and gravel with some woody debris.
- Aquatic mosses occur throughout the stream channel.
- Physical characteristics (**Photo 16**):
 - Bankfull width 20-25 feet (Average 20');
 - Water depth in November of 2010 was 6-20 inches;
 - Low gradient riffle, run, and pool sequences;
 - Overhanging mixed forest trees present.

Associated Wetland

Forested wetlands are located to the east and west of the stream but do not directly abut the stream. These wetlands are dominated by yellow birch, red maple, and balsam fir. The wetlands have been disturbed by recent timber harvesting activities.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. Based upon discussions with Maine Department of Inland Fisheries and Wildlife biologist, this stream will not be crossed during construction. Construction access will occur from the east and west and there will be no need to cross the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 16: Perennial stream S050.
Stantec Consulting, November 11, 2010.



Proposed generator lead crossing of stream S050.
From Figure 21 Delineated Natural Resource Map by Stantec Consulting.

**16. S051 – Unnamed Tributary of Bear Brook, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S051 is an unnamed perennial stream that originates at a small, unnamed pond located north of the proposed project corridor. From the project corridor, the stream flows south approximately 0.8 mile where it converges with Bear Brook. The stream is bordered by upland hardwood forest dominated by yellow birch, sugar maple, and red spruce. Much of the area surrounding the stream has been disturbed by recent timber harvesting activities.

Stream Characteristics

- Perennial stream.
- Channel substrate is primarily gravel.
- Aquatic mosses occur throughout the stream channel.
- Physical characteristics (**Photo 17**):
 - Bankfull width 4 feet;
 - Water depth in December of 2010 was 4 inches;
 - Low gradient riffle complexes;
 - Overhanging hardwood trees present.

Associated Wetland

No wetlands are associated with the stream within the surveyed limits of the proposed generator lead.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. There will be no direct impact to the stream channel. Two poles (structures) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the poles (structures) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the poles to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 17: Perennial stream S051.
Stantec Consulting, September 10, 2013.



Proposed generator lead crossing of stream S051.
From Figure 22 Delineated Natural Resource Map by Stantec Consulting.

17. S052 –Kingsbury Stream, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401

General Landscape Information

Stream S052, Kingsbury Stream, is a perennial stream that originates at the spillway on the western end of Kingsbury Pond and flows easterly to the Piscataquis River in Abbot. The area immediately adjacent to the stream is second growth, upland mixed forest dominated by yellow birch, sugar maple, and red spruce. Beyond this forested buffer, the surrounding area has recently undergone timber harvesting. An existing gravel road, 2500 Road, crosses Kingsbury Stream approximately 300 feet south of the proposed generator lead corridor. A metal and wooden bridge is located at this existing road crossing.

Stream Characteristics

- Perennial stream with bridge crossing.
- Channel substrate is primarily boulder, cobble, and gravel.
- Aquatic mosses and macro-invertebrates occur throughout the stream channel.
- Physical characteristics (**Photo 18**):
 - Bankfull width 30-50 feet (Average 40 feet);
 - Water depth in December of 2010 was 0-20 inches;
 - Low gradient riffle, run, pool, and glide sequences;
 - Sparse overhanging mixed forest trees present.

Associated Wetland

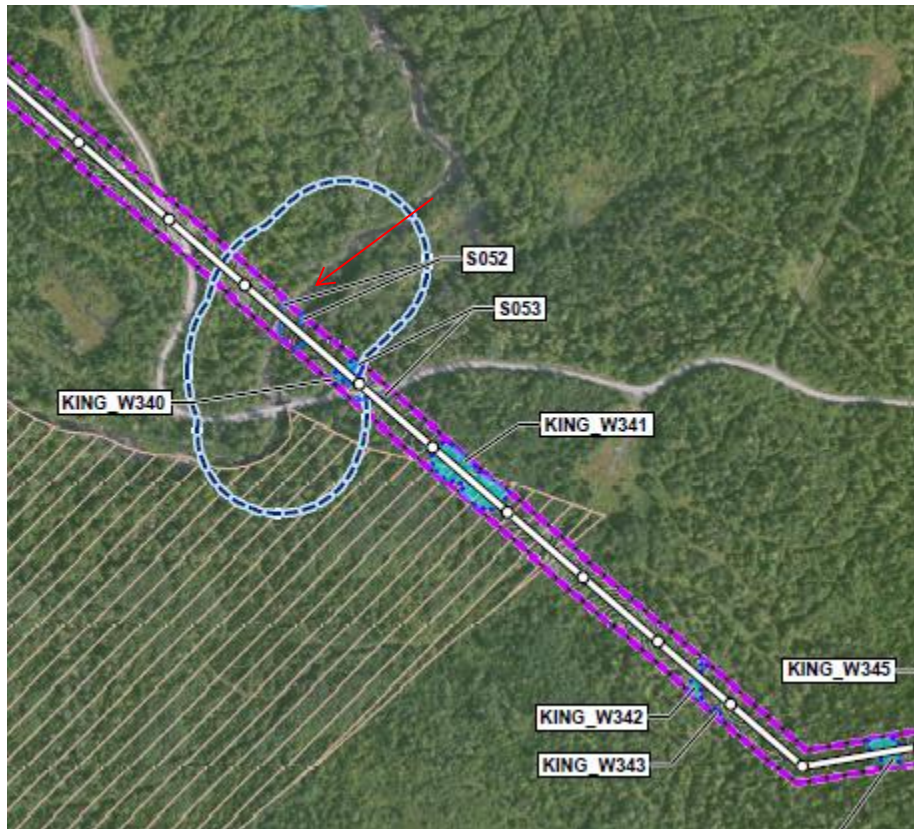
A large, floodplain wetland borders Kingsbury Stream to the northwest of the surveyed limits for the proposed generator lead.

Construction and Maintenance

Construction activities will utilize the existing road to transport construction equipment. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 18: Perennial stream S052, Kingsbury Stream.
Stantec Consulting, May 19, 2010.



Proposed generator lead crossing of stream S052.
From Figure 23 Delineated Natural Resource Map by Stantec Consulting.

**18. S056 – Unnamed Perennial Stream, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S056 is an unnamed perennial stream. The stream is bordered on both sides by a forested wetland.

Stream Characteristics

- Perennial stream.
- Channel substrate is primarily cobble, gravel, and sand.
- Aquatic mosses occur throughout the stream channel.
- Physical characteristics (**Photo 19**):
 - Bankfull width 4 feet;
 - Water depth in December of 2012 was 12 inches;
 - Low gradient riffle complexes;
 - Overhanging mixed forest trees present.

Associated Wetland

A forested wetland dominated by red maple, northern white cedar, and balsam fir borders both sides of the stream. During high-flow events, the stream floods into the wetland. The wetland has been disturbed by recent timber harvesting activities.

Construction and Maintenance

The stream and associated wetland will be crossed by the electrical generator lead corridor. Because this stream does not cross the entire width of the corridor, temporary construction crossing of this resource may not be necessary. If crossing of this stream is necessary during construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. There will be no direct impact to the stream channel. A 100-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 19: Perennial stream S056.
Stantec Consulting, December 8, 2010.



Proposed generator lead crossing of stream S056.
From Figure 24 Delineated Natural Resource Map by Stantec Consulting.

**19. S057 – Unnamed Tributary of Carlton Stream, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S057 is an unnamed perennial stream that flows southeast into stream S058 as mapped by the United States Geological Survey (USGS). The stream is bordered on both sides by forested wetland.

Stream Characteristics

- Perennial stream.
- Channel substrate is primarily cobble, gravel, sand and muck.
- Aquatic mosses occur throughout the stream channel.
- Physical characteristics (**Photo 20**):
 - Bankfull width 4 feet;
 - Water depth in December of 2012 was 3 inches;
 - Low gradient riffle complexes;
 - Overhanging mixed forest trees present.

Associated Wetland

A forested wetland dominated by red maple, black ash, northern white cedar, and speckled alder borders both sides of the stream. During high-flow events, the stream floods into the wetland. The wetland has been disturbed by recent timber harvesting activities.

Construction and Maintenance

The stream and associated wetlands will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. There will be no direct impact to the stream channel. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 20: Perennial stream S057.
Stantec Consulting, September 11, 2013.



Proposed generator lead crossing of stream S057.
From Figure 25 Delineated Natural Resource Map by Stantec Consulting.

**20. S058 – Unnamed Tributary of Carlton Stream, Kingsbury Plantation
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S058 is an unnamed perennial stream that flows south into Carlton Stream as mapped by the USGS. The stream is bordered principally by upland forest with a small forested wetland along its western bank. The forested upland is dominated by American beech, yellow birch, and sugar maple. A discontinued logging road is located approximately 175 feet west of the stream.

Stream Characteristics

- Perennial stream.
- Channel substrate is primarily boulder, cobble, and gravel.
- Aquatic mosses occur throughout the stream channel.
- Physical characteristics (**Photo 21**):
 - Bankfull width 7.5 feet;
 - Water depth in December of 2012 was 2 inches;
 - Low gradient riffle complexes;
 - Overhanging hardwood trees present.

Associated Wetland

A small, forested wetland borders the west bank of the stream. The wetland is dominated by red maple, black ash, and northern white cedar. This wetland has been disturbed by recent timber harvesting activities.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. There will be no direct impact to the stream channel. One pole (structure) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 21: Perennial stream S058.
Stantec Consulting, September 11, 2013.



Proposed generator lead crossing of stream S058.
From Figure 25 Delineated Natural Resource Map by Stantec Consulting.

**21. S060 – Unnamed Tributary of Carlton Stream, Parkman
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S060 is an unnamed perennial stream. From the project corridor, it flows southeast and crosses under 2500 Road before converging with Carlton Stream approximately one mile to the south and east. The stream is bordered on both sides by a large scrub-shrub wetland that has been impacted by beaver activity.

Stream Characteristics

- Perennial stream through large wetland.
- Channel substrate is primarily muck.
- Aquatic vegetation, macro-invertebrates, and fish likely occur throughout the stream channel.
- Physical characteristics (**Photo 22**):
 - Bankfull width 5-7 feet (Average 6 feet);
 - Water depth in December of 2010 was 12-20 inches;
 - Low gradient riffle and run sequences;
 - No overhanging vegetation present.

Associated Wetland

A large, scrub-shrub wetland borders both sides of the stream. The wetland is dominated by speckled alder, northern white cedar, steeplebush, and fowl manna grass. Standing dead trees are present throughout the wetland. There is evidence of recent beaver activity along the stream and throughout the wetland. As a result of the beaver activity, the stream often floods the surrounding wetland during high-flow events.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. Based upon discussions with Maine Department of Inland Fisheries and Wildlife biologist, this stream will not be crossed during construction. Construction access will occur from the east and west and there will be no need to cross the stream. A 100-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15-feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 22: Perennial stream S060
Stantec Consulting, December 17, 2010.



Proposed generator lead crossing of stream S060.
From Figure 26 Delineated Natural Resource Map by Stantec Consulting.

22. S062 –Carlton Stream, Parkman
HUC 10 Watershed: Piscataquis River (1), 0102000401

General Landscape Information

Stream S062, Carlton Stream, is a perennial stream that flows north to Kingsbury Stream, which is located approximately 0.7 mile north of the generator lead corridor. The stream is crossed by Pease Bridge Road. An approximately 35-foot long wooden bridge with cement walls spans the stream channel at the Pease Bridge Road crossing. South of Pease Bridge Road, a large, forested floodplain wetland borders the west side of stream.

Stream Characteristics

- Perennial stream with bridge crossing.
- Channel substrate is primarily boulder and cobble.
- Fish and macro-invertebrates likely occur throughout the stream channel.
- Physical characteristics (**Photo 23**):
 - Bankfull width 35-40 feet (Average 37.5 feet);
 - Water depth in January of 2013 was 3-5 feet;
 - Low to moderate gradient riffle, run, pool, and glide sequences;
 - Sparse overhanging hardwood trees present.

Associated Wetland

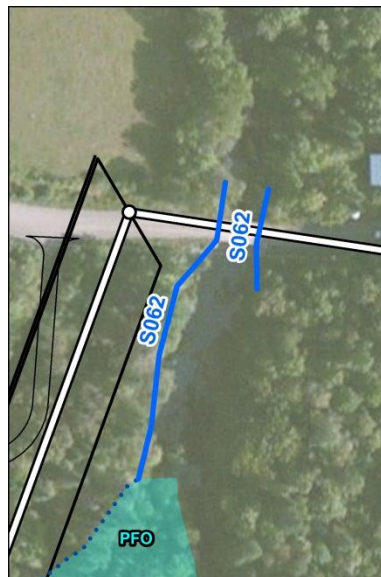
A large, forested floodplain wetland dominated by balsam fir, yellow birch, and red spruce is associated with the west side of the stream. During spring run-off and high flow events, the stream floods into the wetland.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor along Pease Bridge Road. Pease Bridge Road will be used for construction access so there will be no direct impact to the stream channel. One pole (structure) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 23: Perennial stream S062, Carlton Stream.
Stantec Consulting, September 11, 2013.



Proposed generator lead crossing of stream S062.
From Figure 26 Delineated Natural Resource Map by Stantec Consulting.

**23. S063 – Unnamed Tributary of Carlton Stream, Parkman
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S063 is a perennial tributary to Carlton Stream. It originates to the southeast of the project corridor and flows northwest crossing under Welts Road and then under Pease Bridge Road. At Pease Bridge Road, the stream is conveyed through a 48-inch corrugated plastic pipe and flows a short distance before its confluence with Carlton Stream. The stream is located in a small valley with steep sides on the north side of Pease Bridge Road. A small forested wetland, between Welts Road and Pease Bridge Road, borders the wetland off-site to the southeast.

Stream Characteristics

- Perennial stream crossing under Pease Bridge Road.
- Channel substrate is primarily boulder, cobble and gravel.
- Physical characteristics (**Photo 24**):
 - Bankfull width 10-12 feet (Average 11 feet);
 - Water depth in January of 2013 was 4-6 inches;
 - Moderate gradient with riffle, run, pool, and small plunge sequences;
 - Overhanging mixed forest trees present.

Associated Wetland

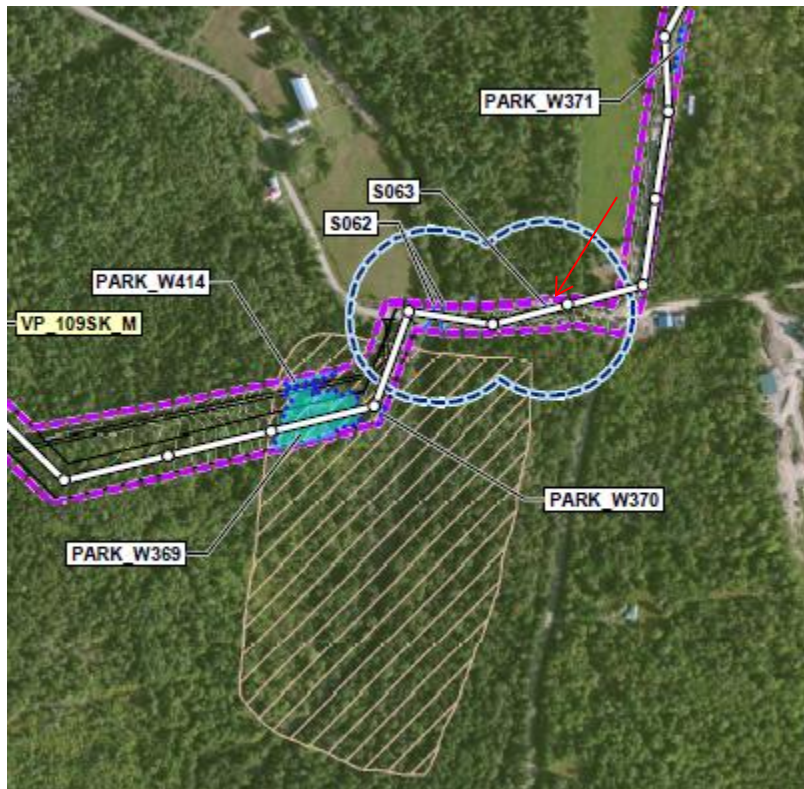
A small, forested wetland is associated with the stream, upslope between Welts Road and Pease Bridge Road. This wetland is located off-site and not within the surveyed limits of the proposed generator lead.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor along Pease Bridge Road. Pease Bridge Road will be used for construction access; therefore, there will be no direct impact to the stream channel. One pole (structure) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 24: Perennial stream S063.
Stantec Consulting, September 11, 2013.



Proposed generator lead crossing of stream S063.
From Figure 26 Delineated Natural Resource Map by Stantec Consulting.

**24. S065 – Unnamed Tributary of Carlton Stream, Parkman
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S065 is a perennial stream that flows northwest to Carlton Stream as mapped by the USGS. The stream crosses under Gales Road, a gravel road maintained by the towns of Abbot and Parkman, through a corrugated metal pipe. It converges with Carlton Stream approximately 800 feet northwest of Gales Road and the electrical generator lead corridor. The stream has an associated forested wetland located off-site east of Gales Road.

Stream Characteristics

- Perennial stream crossing under Gales Road.
- Channel substrate is primarily boulder and cobble.
- Physical characteristics (**Photo 25**):
 - Bankfull width 6-8 feet (Average 7 feet);
 - Water depth in January of 2013 was 3-5 inches;
 - Moderate gradient riffle complexes;
 - Overhanging hardwood trees present.

Associated Wetland

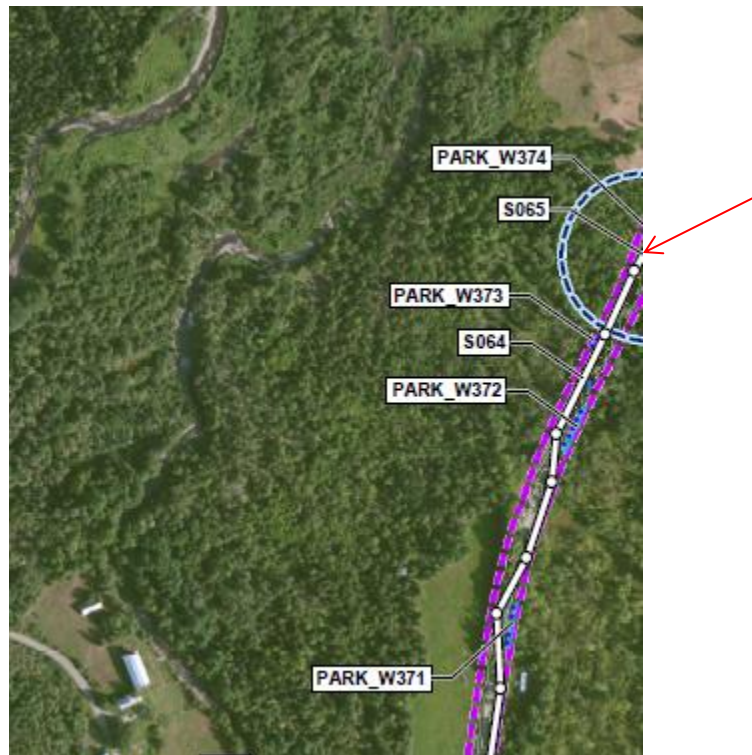
A forested wetland is associated with the stream is located east of Gales Road. This wetland is not located within the surveyed limits for the proposed generator lead.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor along Gales Road. Construction activities will utilize the existing road corridor for the transportation of construction equipment. There are no proposed upgrades to the footprint of the road. One pole (structure) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 25: Perennial stream S065.
Stantec Consulting, September 11, 2013.



Proposed generator lead crossing of stream S065.
From Figure 26 Delineated Natural Resource Map by Stantec Consulting.

**25. S066 – Unnamed Perennial Stream, Abbot
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S066 is an unnamed perennial stream that flows north towards Kingsbury Stream. The stream crosses under Gales Road, a dirt road maintained by the towns of Abbot and Parkman, through a 24-inch corrugated metal pipe. The stream flows through a maintained roadside ditch for approximately 40 feet on the south side of Gales Road where there is an associated forested wetland.

Stream Characteristics

- Perennial stream crossing under Gales Road.
- Channel substrate is primarily boulder and cobble.
- Physical characteristics (**Photo 26**):
 - Bankfull width 6-15 feet (Average 8.5 feet);
 - Water depth in January of 2013 was 2-3 inches;
 - Moderate gradient riffle complexes;
 - Overhanging mixed forest trees present.

Associated Wetland

The forested wetland associated with this stream is dominated by northern white cedar, balsam fir, and speckled alder. Surface ice indicates the wetland periodically floods during periods of high water. Flooding is likely the result of impoundment caused by the road.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor along Gales Road. Construction activities will utilize the existing road for the transportation of construction equipment. There are no proposed upgrades to the footprint of the road. One pole (structure) will be located within 100 feet of this stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 26: Perennial stream S066.
Stantec Consulting, September 11, 2013.



Proposed generator lead crossing of stream S066.
From Figure 27 Delineated Natural Resource Map by Stantec Consulting.

26. S069 – Gales Brook, Abbot

HUC 10 Watershed: Piscataquis River (1), 0102000401

General Landscape Information

Stream S069, Gales Brook, is a perennial stream that flows generally to the north and northeast. The stream is conveyed under Gales Road, a gravel road maintained by the towns of Abbot and Parkman, through a corrugated metal pipe. South of Gales Road the stream is conveyed under a narrow all-terrain vehicle (ATV) trail through an 18-inch corrugated metal pipe. The stream is bordered by a large forested wetland.

Stream Characteristics

- Perennial stream crossing under Gales Road and ATV trail.
- Channel substrate is primarily cobble, gravel, and muck.
- Aquatic mosses occur throughout the stream channel.
- Physical characteristics (**Photo 27**):
 - Bankfull width 5-7 feet (Average 6 feet);
 - Water depth in December of 2012 was 2-3 inches;
 - Low gradient riffle and run;
 - Overhanging softwood standing and overturned trees present.

Associated Wetland

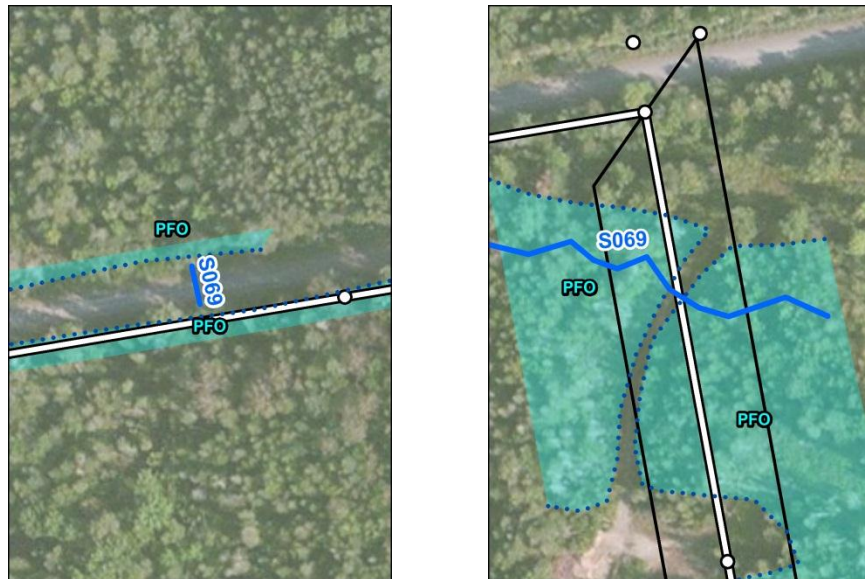
The forested wetland associated with this stream is dominated by northern white cedar, balsam fir, and yellow birch and has deep organic soils. The wetland has been disturbed by recent timber harvesting activities and is crossed by a narrow ATV trail.

Construction and Maintenance

The stream will be crossed twice by the electrical generator lead corridor, once along Gales Road and once south of Gales Road. Where possible, construction activities will utilize the existing road for transportation of construction equipment. South of Gales Road, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream. A 100-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 27: Perennial stream, S069.
Stantec Consulting, December 12, 2012.



Proposed generator lead crossing of stream S069. Note no proposed impact to wetland ABB_W384.
From Figures 27 & 28 Delineated Natural Resource Map by Stantec Consulting.

**27. S070 – Unnamed Tributary of Gales Brook, Abbot
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S070 is an unnamed perennial stream. Topography suggests that it flows northeast to Gales Brook. A narrow ATV trail crosses over the stream. There is no bridge or culvert present at this location, and the stream has washed out a portion of the trail. The stream is bordered by a forested wetland.

Stream Characteristics

- Perennial stream with narrow ATV trail crossing.
- Channel substrate is primarily cobble and gravel.
- Aquatic mosses and macro-invertebrates occur throughout the stream channel.
- Physical characteristics (**Photo 28**):
 - Bankfull width 5-7 feet (Average 5 feet);
 - Water depth in December of 2012 was 1-3 inches;
 - Low to moderate gradient riffle complexes;
 - Overhanging softwood standing and wind-thrown trees present.

Associated Wetland

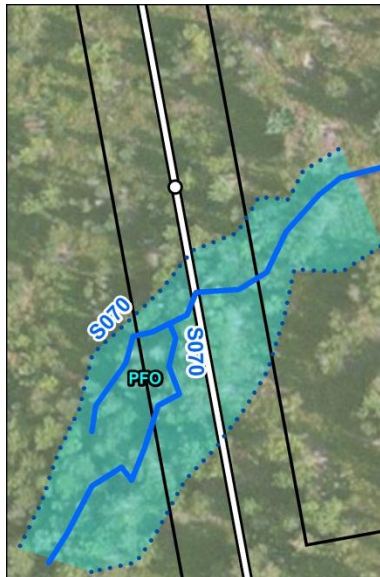
A forested wetland dominated by northern white cedar, balsam fir, and black ash borders the stream. The area surrounding the wetland was recently disturbed by timber harvesting activities and is crossed by the narrow ATV trail.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream and adjacent wetland. There will be no direct impact to the stream channel. One pole (structure) will be located within 100 feet of this stream. Northern spring salamanders were documented in this stream during surveys conducted in 2013. Because of the presence of this species, a 250-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 250-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 28: Perennial stream S070.
Stantec Consulting. September 11, 2013.



Proposed generator lead crossing of stream S070.
From Figure 28 Delineated Natural Resource Map by Stantec Consulting.

**28. S071 – Unnamed Tributary of Gales Brook, Parkman
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S071 is an unnamed perennial stream. Topography suggests it flows north to Gales Brook. Within the project generator lead corridor, the stream occurs principally within a defined topographic drainage that is bordered by upland forest. Beyond this drainage, the stream is associated with a forested wetland.

Stream Characteristics

- Perennial stream with steep banks.
- Channel substrate is primarily bedrock, boulder, cobble, slate, and gravel.
- Aquatic mosses and macro-invertebrates occur throughout the stream channel.
- Physical characteristics (**Photo 29**):
 - Bankfull width 8-14 feet (Average 11 feet);
 - Water depth in December of 2012 was 2-6 inches;
 - Moderate gradient riffle, run, and pool sequences;
 - Overhanging mixed forest trees present.

Associated Wetland

Forested wetlands dominated by northern white cedar, balsam fir, and black ash border the stream. The area surrounding the wetlands and stream has been recently disturbed by timber harvesting activities.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream and adjacent wetland. There will be no direct impact to the stream channel. One pole (structure) will be located within 100 feet of this stream. Northern spring salamanders were documented in this stream during surveys conducted in 2013. Because of the presence of this species, a 250-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the pole (structure) located within the 250-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the pole to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 29: Perennial stream S071.
Stantec Consulting, December 12, 2012.



Proposed generator lead crossing of stream S071.
From Figure 28 Delineated Natural Resource Map by Stantec Consulting.

**29. S074 – Unnamed Tributary of the Piscataquis River, Abbot
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S074 is an unnamed perennial stream that originates at a man-made impoundment and flows north to the Piscataquis River. The stream is located within a defined topographic drainage with a scrub-shrub wetland bordering it to the east.

Stream Characteristics

- Perennial stream originating at man-made impoundment.
- Channel substrate is primarily gravel and muck.
- Aquatic vegetation occurs throughout the stream channel.
- Physical characteristics (**Photo 30**):
 - Bankfull width 3-4 feet (Average 3.5 feet);
 - Water depth in December of 2012 was 3-4 inches;
 - Low gradient, slow riffle complexes;
 - Minimal overhanging shrubs present.

Associated Wetland

A scrub-shrub wetland dominated by red maple, speckled alder, and larch (*Larix laricina*) borders the stream to the east. The wetland abuts a man-made impoundment to the south, and the hydrology and vegetation within the wetland have been altered by construction activities associated with the impoundment.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. It is likely that construction of the generator lead will not involve a temporary crossing of this stream, but that access will occur from either side of the stream. If crossing of this stream is necessary during construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream and adjacent wetland. There will be no direct impact to the stream channel. A 100-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. Herbicide use will not be allowed within this buffer.



Photo 30: Perennial stream S074.
Stantec Consulting, December 11, 2012.



Proposed generator lead crossing of stream S074.
From Figure 29 Delineated Natural Resource Map by Stantec Consulting.

**30. S075 – Unnamed Tributary of the Piscataquis River, Parkman
HUC 10 Watershed: Piscataquis River (1), 0102000401**

General Landscape Information

Stream S075 is an unnamed perennial stream that originates at a culvert outlet under Route 150 and flows north to the Piscataquis River. A large forested wetland borders the stream. An agricultural field is located off-site to the south, and an existing Central Maine Power Company (CMP) transmission line is located to the northeast.

Stream Characteristics

- Perennial stream originating at culvert outlet.
- Channel substrate is primarily boulder, cobble and muck.
- Aquatic vegetation occurs throughout the stream channel.
- Physical characteristics (**Photo 31**):
 - Bankfull width 7-10 feet (Average 9 feet);
 - Water depth in December of 2012 was 6-12 inches;
 - Low gradient, slow riffle complexes;
 - Overhanging softwood standing and wind-thrown trees present.

Associated Wetland

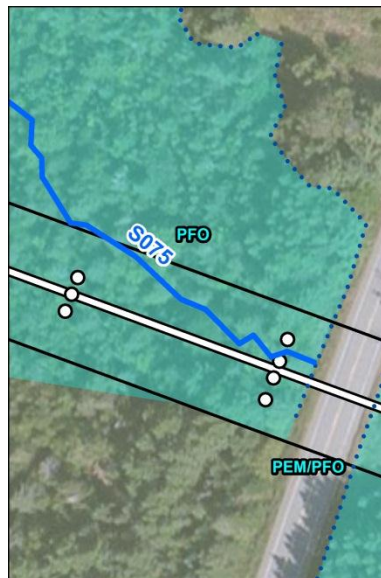
A dense cedar wetland dominated by northern white cedar borders the stream. The wetland has been cleared to northeast along the existing CMP transmission line corridor.

Construction and Maintenance

The stream will be crossed by the electrical generator lead corridor. During construction, a temporary timber mat bridge will be used to allow movement of construction equipment across the stream and adjacent wetland. There will be no direct impact to the stream channel. Two poles (structures) will be located within 100 feet of this stream. To the extent practicable, a 100-foot buffer will be maintained on each side of the stream. During construction and maintenance, capable trees (i.e., those that could grow to within 15 feet of a conductor within 3-4 years) will be topped, but no other vegetation will be cut. If topping individual trees will not leave sufficient foliage to sustain the tree, the tree will be cut at ground level. With regard to the poles (structures) located within the 100-foot buffer, the maximum height of vegetation within the corridor is a function of conductor height. The proximity of the poles to this stream will provide a conductor height that will allow for the establishment of taller vegetation near the stream, which will provide maximum shading of the stream. Herbicide use will not be allowed within this buffer.



Photo 31: Perennial stream S075.
Stantec Consulting, December 10, 2012.



Proposed generator lead crossing of stream S075.
From Figure 30 Delineated Natural Resource Map by Stantec Consulting.

Intermittent Stream Summary Table

Intermittent Streams Located Within Bingham Project Area and Within Designated Critical Habitat for Atlantic Salmon

Stream ID	Associated Wetland ID	Town or Township	NR Map Number	Latitude	Longitude	Approximate Bankfull Width (Ft.)	Estimated Distance to Nearest Perennial Stream (Ft.)	Nearest Perennial Stream Name	HUC 10 Watershed	Description of Proposed Impact Activity	Current Vegetative Cover Type of Associated Wetland	Proposed Vegetative Cover Type of Associated Wetland
S012	MAY_W122	Mayfield Township	9	45.106086	-69.730309	1.5	160	Unnamed perennial stream	102000401	No proposed changes to the existing culvert. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Forested	Scrub-shrub
S013	MAY_W128	Mayfield Township	9	45.10586	-69.726100	1	140	Unnamed perennial stream	102000401	No proposed changes to the existing culvert. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Forested	Scrub-shrub
S015	No associated wetland	Mayfield Township	9	45.105507	-69.722845	1	665	Unnamed perennial stream	102000401	No proposed changes to the existing culvert. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	No associated wetland	No associated wetland
S016	No associated wetland	Mayfield Township	9	45.105673	-69.720056	1	1,380	Unnamed perennial stream	102000401	No proposed changes to the existing culvert. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	No associated wetland	No associated wetland
S019	MAY_W137	Mayfield Township	9	45.105391	-69.708762	4	1,475	Unnamed perennial stream	102000401	BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Forested/Scrub-shrub	Scrub-shrub
S020	MAY_W137	Mayfield Township	9	45.105178	-69.707916	4	1,260	Unnamed perennial stream	102000401	No proposed changes to the existing culvert. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Forested/Scrub-shrub	Scrub-shrub
S026	MAY_W170	Mayfield Township	11	45.125485	-69.683193	4	0	Unnamed tributary of Kingsbury Pond	102000401	No proposed improvements will be made to the existing 24" culvert. A 100' buffer will be maintained around the stream (removal of capable species).	Forested/Emergent	Scrub-shrub/Emergent
S028	MAY_W175	Mayfield Township	11	45.122933	-69.678500	4	365	Unnamed tributary of Kingsbury Pond	102000401	Limited proposed changes to existing road. Some fill of associated wetland. No proposed impacts to the stream.	Scrub-shrub	Scrub-shrub
S029	No associated wetland	Mayfield Township	11	45.121708	-69.674937	3.5	1,000	Unnamed tributary of Kingsbury Pond	102000401	Limited proposed changes to the existing road, ~75' wide restricted clearing buffer along northeast side of road. No impacts are proposed to this stream.	No associated wetland	No associated wetland
S031	No associated wetland	Mayfield Township	13	45.139101	-69.692031	5	994	Unnamed perennial stream	102000401	No proposed improvements will be made to the existing 24" culvert. A 100' buffer will be maintained around the stream (removal of capable species).	No associated wetland	No associated wetland
S032	MAY_W188	Mayfield Township	14	45.142124	-69.693324	3.5	85	Headwater of Bigelow Brook	102000401	No proposed impact to stream and no proposed project activity within 100' of stream.	Forested	Scrub-shrub
S034	MAY_W189	Mayfield Township	14	45.142122	-69.692287	3.5	40	Headwater of Bigelow Brook	102000401	No changes will be made to the existing culvert. No upgrades to existing road to avoid stream impacts.	Scrub-shrub	Scrub-shrub
S037	KING_W219, KING_W220	Kingsbury Plantation	15	45.153566	-69.665235	3	2,500	Unnamed tributary of Kingsley Bog	102000401	No proposed impact to stream. No proposed project component within 100' of stream.	Forested, Forested/Emergent	Scrub-shrub, Scrub-shrub/Emergent
S038	KING_W245, KING_W246	Kingsbury Plantation	16	45.168343	-69.655803	4	1,170	Unnamed tributary of Bog Brook	102000401	No proposed impacts to stream. Improvements to existing road will impact wetland upslope of stream. Restricted clearing buffer along west side of road.	Forested, Emergent	Scrub-shrub, Emergent
S039	KING_W247	Kingsbury Plantation	15	45.166617	-69.656514	1	1,600	Unnamed tributary of Bog Brook	102000401	No proposed change to existing culvert. Stream occurs downslope of proposed turbine location. Restricted clearing buffer area around turbine overlaps with stream.	Forested/Scrub-shrub	Scrub-shrub
S040	KING_W252	Kingsbury Plantation	16	45.169237	-69.651608	1.75	1,880	Unnamed tributary of Bog Brook	102000401	No proposed impact to this stream. Restricted clearing buffer area along access road overlaps with stream.	Forested	Scrub-shrub
S042	KING_W279, KING_W280, KING_W281	Kingsbury Plantation	17	45.180239	-69.638742	3	2,080	Bog Brook	102000401	No proposed impacts to this stream. Stream occurs north of proposed turbine location. Restricted clearing buffer area around turbine overlaps with a portion of the stream.	Forested, Forested, Emergent	Scrub-shrub, Scrub-shrub, Emergent

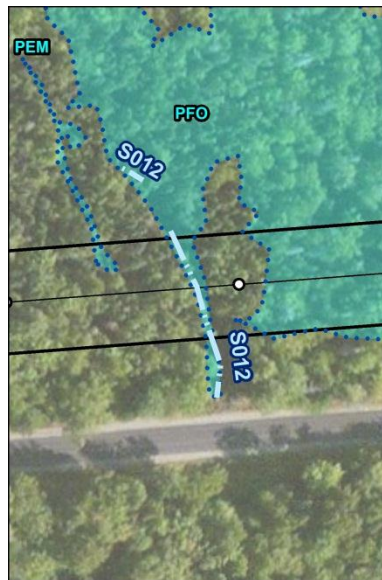
Intermittent Streams Located Within Bingham Project Area and Within Designated Critical Habitat for Atlantic Salmon

Stream ID	Associated Wetland ID	Town or Township	NR Map Number	Latitude	Longitude	Approximate Bankfull Width (Ft.)	Estimated Distance to Nearest Perennial Stream (Ft.)	Nearest Perennial Stream Name	HUC 10 Watershed	Description of Proposed Impact Activity	Current Vegetative Cover Type of Associated Wetland	Proposed Vegetative Cover Type of Associated Wetland
S044	No associated wetland	Kingsbury Plantation	20	45.148967	-69.646544	4	205	Unnamed tributary of Kingsbury Stream	102000401	Stream occurs at edge of corridor, temporary construction crossing not likely needed. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	No associated wetland	No associated wetland
S053	KING_W340	Kingsbury Plantation	23	45.143469	-69.568375	2	150	Kingsbury Stream	102000401	There are no proposed improvements to the existing road. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Scrub-shrub	Scrub-shrub
S054	KING_W346	Kingsbury Plantation	24	45.141094	-69.553216	3.5	800	Cook Brook	102000401	Temporary timber mat crossing proposed for stream and associated wetland. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Forested	Scrub-shrub
S055	KING_W353	Kingsbury Plantation	24	45.142687	-69.542987	6	850	Unnamed tributary of Carlton Stream	102000401	Temporary timber mat crossing proposed for stream and associated wetland. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Forested	Scrub-shrub
S059	PARK_W356	Kingsbury Plantation	25	45.144644	-69.526427	2.5	30	Unnamed tributary of Carlton Stream	102000401	Stream occurs at edge of corridor, temporary construction crossing not likely needed. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Forested	Scrub-shrub
S061	PARK_W367	Parkman	26	45.142306	-69.49541	4.5	970	Kingsbury Stream	102000401	Temporary timber mat crossing proposed for stream and associated wetland. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Forested	Scrub-shrub
S064	PARK_W372, PARK_W373	Parkman	26	45.146078	-69.484923	3.5	425	Unnamed tributary of Carlton Stream	102000401	There are no proposed improvements to the existing road or 24" culvert. Generator lead will parallel west side of existing road.	Forested, Forested	Scrub-shrub, Scrub-shrub
S067	ABB_W377	Abbot	27	45.153685	-69.475387	4.5	640	Unnamed tributary of Kingsbury Stream	102000401	There are no proposed improvements to the existing road or 24" culvert. Generator lead will parallel east side of existing road.	Forested	Scrub-shrub
S068	ABB_W383	Abbot	27	45.15696	-69.463698	4.5	1,090	Gales Brook	102000401	There are no proposed improvements to the existing road or 24" culvert. Generator lead will parallel north side of existing road.	Forested	Scrub-shrub
S073	ABB_W402, ABB_W403	Abbott	29	45.159968	-69.415486	2.5	1,145	Unnamed tributary of Piscataquis River	102000401	Temporary timber mat crossing proposed associated wetland. Stream occurs at edge of corridor, temporary construction crossing not likely needed. BMPs will be applied and a 100' buffer will be maintained around the stream (removal of capable species).	Forested, Forested	Scrub-shrub, Scrub-shrub

Intermittent Stream Photos



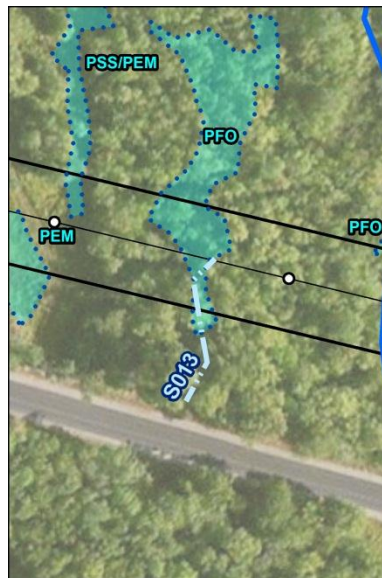
Photo 32: Intermittent stream S012.
Stantec Consulting. October 2, 2012.



From Figure 9, Delineated Natural Resource Map by Stantec Consulting.



Photo 33: Intermittent stream S013.
Stantec Consulting. October 2, 2012.



From Figure 9, Delineated Natural Resource Map by Stantec Consulting.

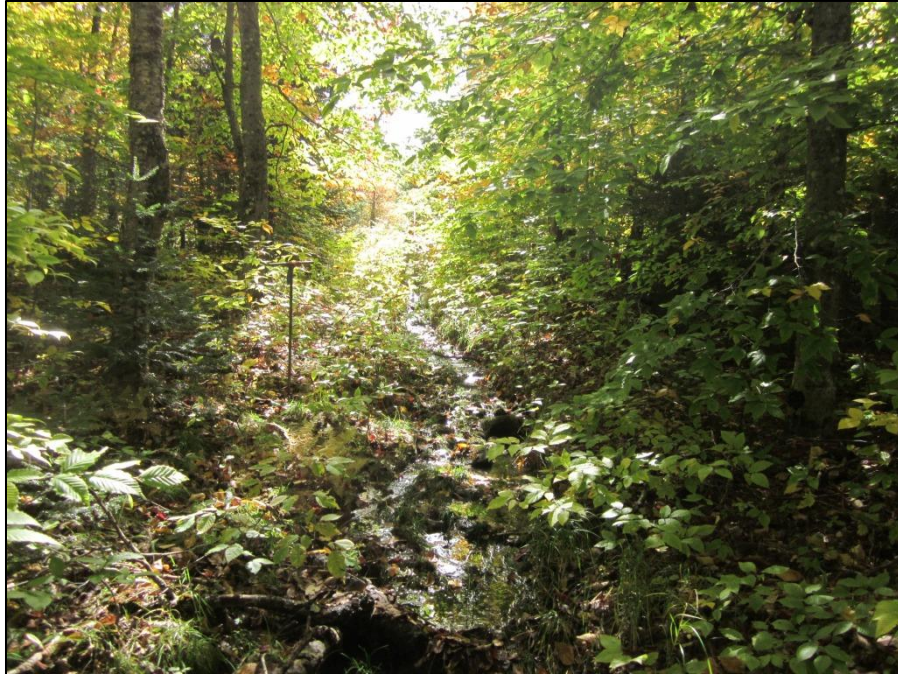


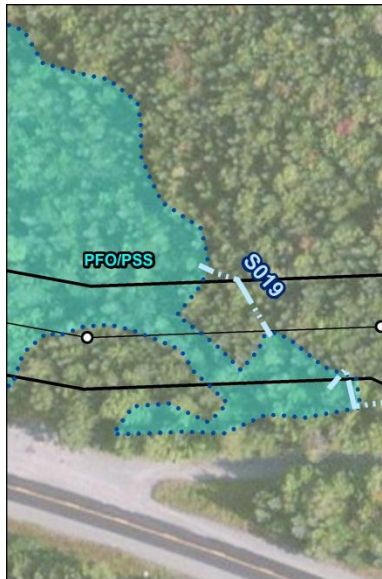
Photo 34: Intermittent stream S015.
Stantec Consulting. October 2, 2012.



Photo 35: Intermittent stream S016.
Stantec Consulting. October 2, 2012.



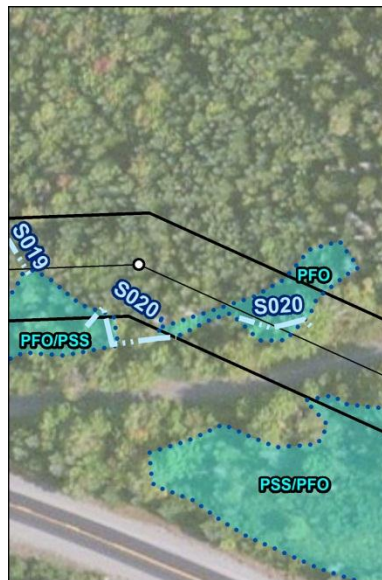
Photo 36: Intermittent stream S019.
Stantec Consulting. October 3, 2012.



From Figure 9, Delineated Natural Resource Map by Stantec Consulting.



Photo 37: Intermittent stream S020.
Stantec Consulting. October 27, 2010.



From Figure 9, Delineated Natural Resource Map by Stantec Consulting.

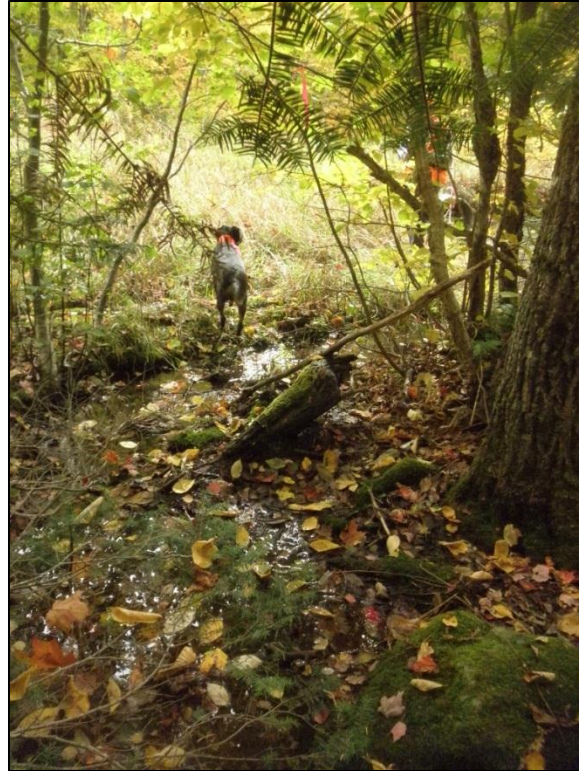
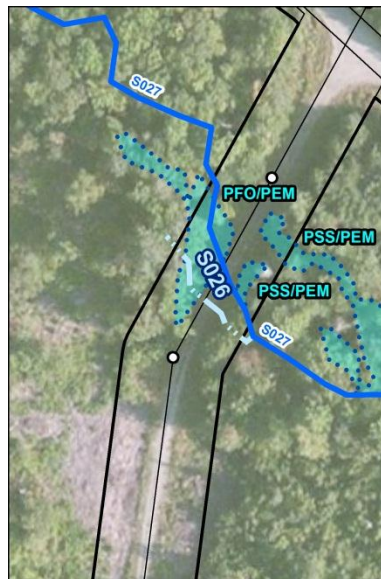


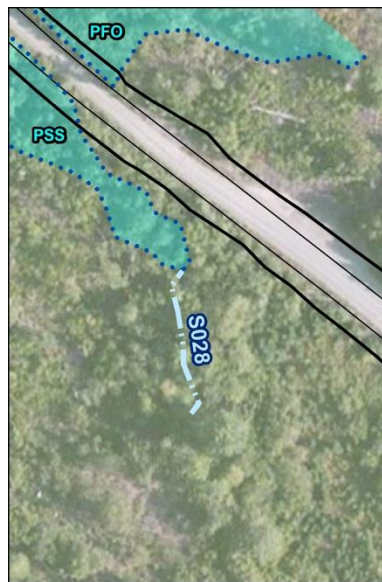
Photo 38: Intermittent stream S026.
Stantec Consulting. October 3, 2012.



From Figure 11, Delineated Natural Resource Map by Stantec Consulting.



Photo 39: Intermittent stream S028.
Stantec Consulting, September 27, 2013.



From Figure 11, Delineated Natural Resource Map by Stantec Consulting.



Photo 40: Intermittent stream S029.
Stantec Consulting. August 24, 2010.



Photo 41: Intermittent stream S031.
Stantec Consulting. September 22, 2010.



Photo 42: Intermittent stream S032.
Stantec Consulting, September 25, 2012.



From Figure 14, Delineated Natural Resource Map by Stantec Consulting.

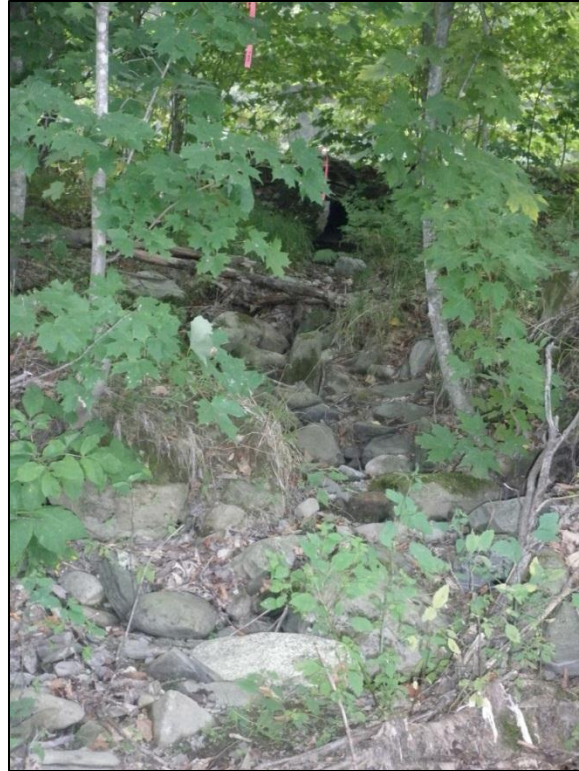


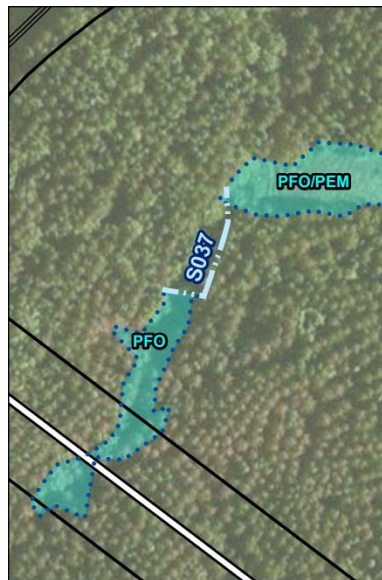
Photo 43: Intermittent stream S034.
Stantec Consulting, September 22, 2010.



From Figure 14, Delineated Natural Resource Map by Stantec Consulting.



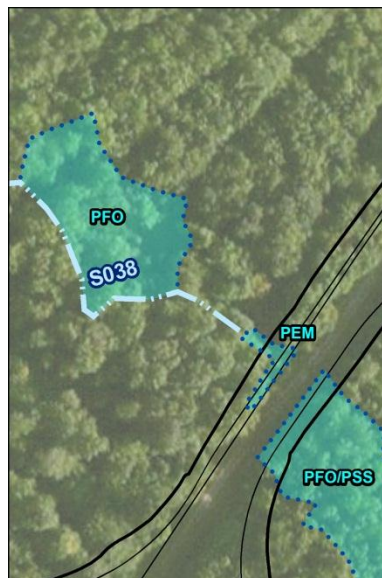
Photo 44: Intermittent stream S037.
Stantec Consulting. May 24, 2011.



From Figure 15, Delineated Natural Resource Map by Stantec Consulting.



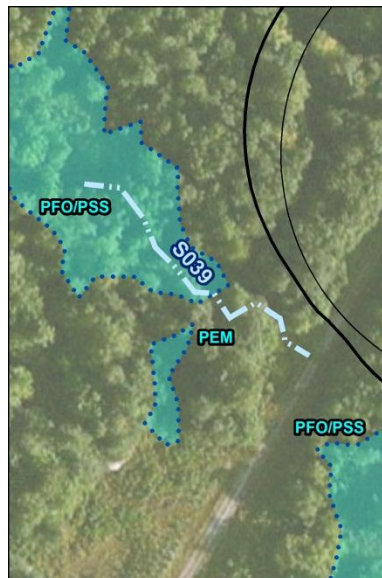
Photo 45: Intermittent stream S038.
Stantec Consulting, September 27, 2013.



From Figure 16, Delineated Natural Resource Map by Stantec Consulting.



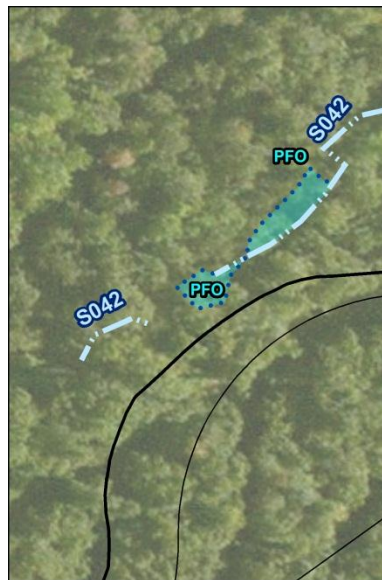
Photo 46: Intermittent stream S039.
Stantec Consulting. June 2, 2011.



From Figure 15, Delineated Natural Resource Map by Stantec Consulting.



Photo 47: Intermittent stream S042.
Stantec Consulting. June 32, 2011.



From Figure 17, Delineated Natural Resource Map by Stantec Consulting.



Photo 48: Intermittent stream S044.
Stantec Consulting. November 10, 2010.



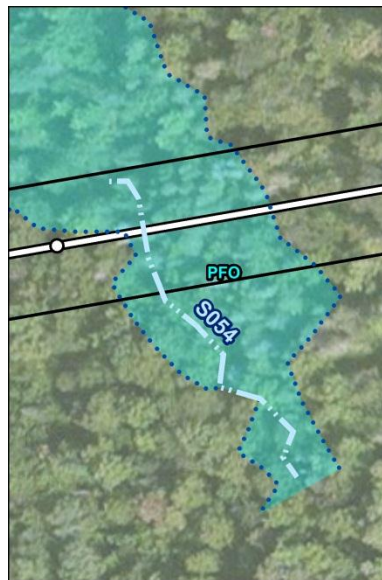
Photo 49: Intermittent stream S053.
Stantec Consulting. December 13, 2012.



From Figure 23, Delineated Natural Resource Map by Stantec Consulting.



Photo 50: Intermittent stream S054.
Stantec Consulting. December 8, 2010.



From Figure 24, Delineated Natural Resource Map by Stantec Consulting.



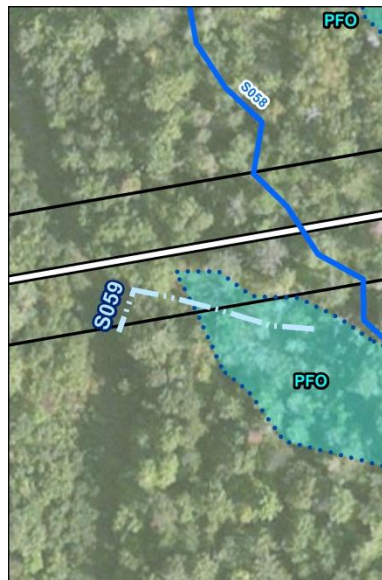
Photo 51: Intermittent stream S055.
Stantec Consulting. December 8, 2010.



From Figure 24, Delineated Natural Resource Map by Stantec Consulting.



Photo 52: Intermittent stream S059.
Stantec Consulting. December 17, 2010.



From Figure 25, Delineated Natural Resource Map by Stantec Consulting.



Photo 53: Intermittent stream S061.
Stantec Consulting. February 12, 1013.



From Figure 26, Delineated Natural Resource Map by Stantec Consulting.



Photo 54: Intermittent stream S064.
Stantec Consulting. January 31, 2013.



From Figure 26, Delineated Natural Resource Map by Stantec Consulting.



Photo 55: Intermittent stream S067.
Stantec Consulting. January 30, 2013.



From Figure 27, Delineated Natural Resource Map by Stantec Consulting.



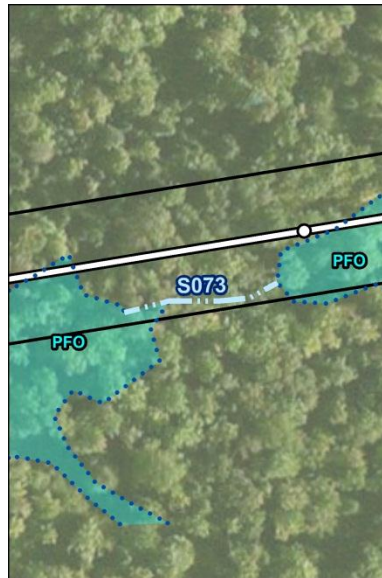
Photo 56: Intermittent stream S068.
Stantec Consulting. January 29, 2013.



From Figure 27, Delineated Natural Resource Map by Stantec Consulting.



Photo 57: Intermittent stream S073.
Stantec Consulting. December 11, 2012.



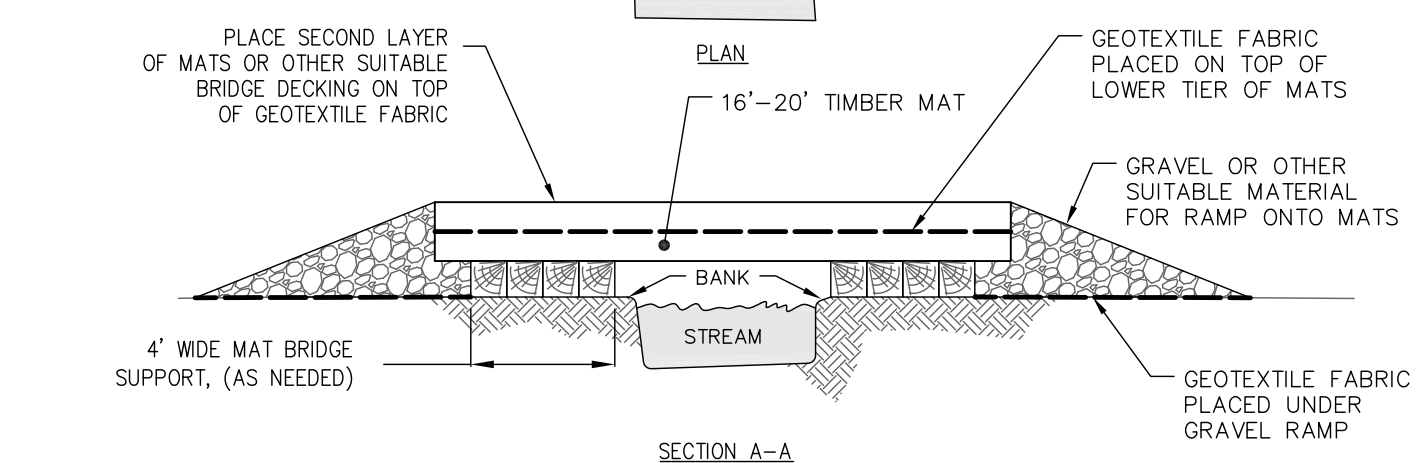
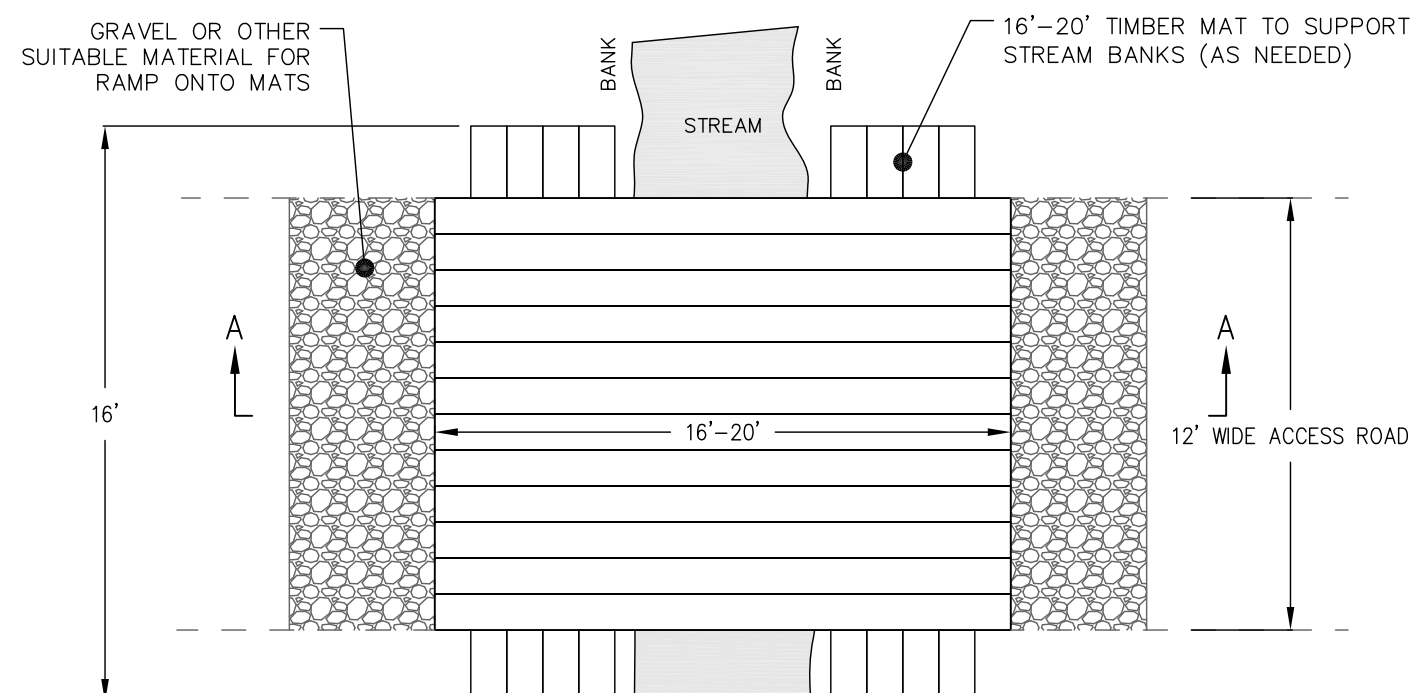
From Figure 29, Delineated Natural Resource Map by Stantec Consulting.



December 6, 2013

Reference: Bingham Wind Project: Data Request – Salmon Streams

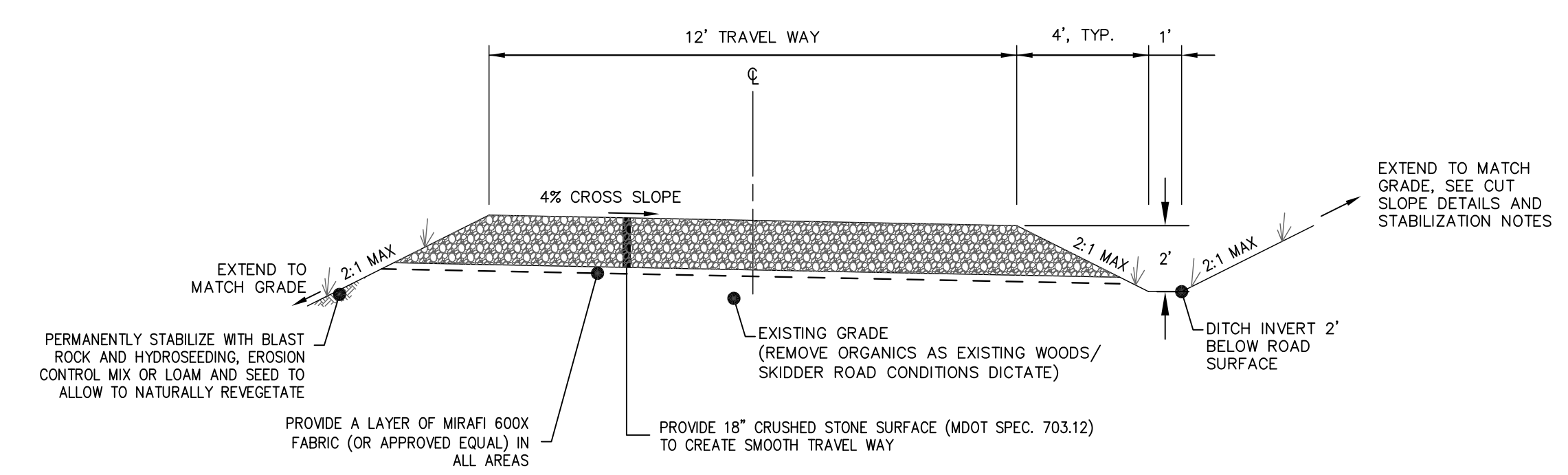
Appendix 3: Schematic depicting construction methods for temporary access across waterbodies, as described in MDIFW's *Recommended Performance Standards for Riparian Buffers in Overhead Utility ROW Projects* (2012).



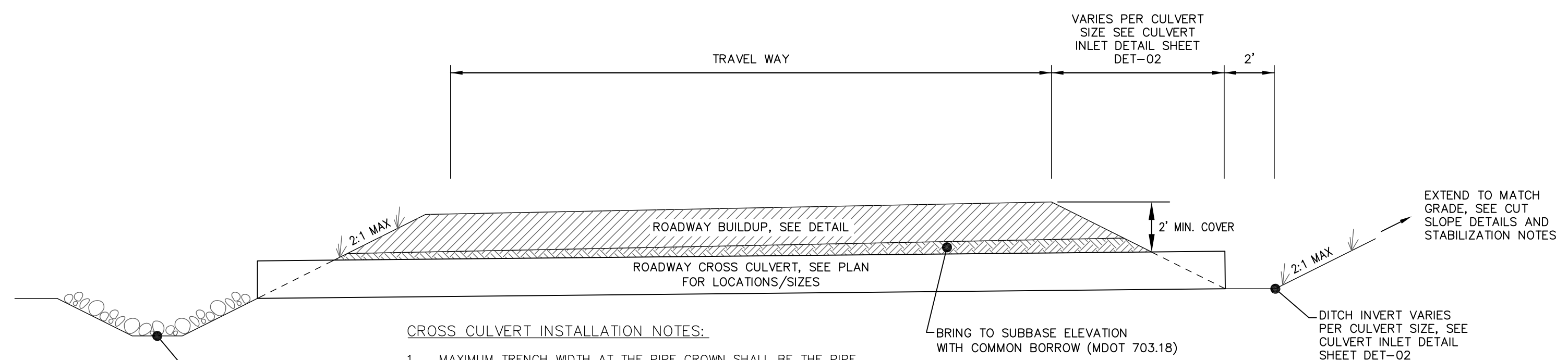
NOTES

1. DEPLOY EROSION CONTROLS AS NEEDED TO MINIMIZE EROSION.
2. MATS SHALL BE POSITIONED TO RETAIN THE NATURAL STREAM CHARACTERISTICS.
3. PROVIDE BOTTOM LAYER OF MATS TO SERVE AS PRIMARY BRIDGE DECKING. PLACE GEOTEXTILE FABRIC ON TOP OF MATS TO PREVENT SEDIMENT TRANSPORT THROUGH THE MATS INTO THE WATER RESOURCE. PLACE SECOND LAYER OF MATS (OR OTHER SUITABLE BRIDGE DECK) ON TOP OF GEOTEXTILE FABRIC TO SECURE FABRIC AND PROVIDE A SUITABLE TRAVEL WAY.
4. POSITION MATS TO CROSS STREAMS AT RIGHT ANGLES TO THE CHANNEL AT A LOCATION WITH FIRM BANKS AND LEVEL APPROACHES AS SITE CONDITIONS DICTATE.
5. MATS LAID PERPENDICULAR TO THE STREAM CAN BE SUBSTITUTED WITH PRE-FABRICATED BRIDGE STRUCTURES AS SPAN LENGTHS DICTATE OR AT THE PREFERENCE OF THE CONTRACTOR.
6. EXTEND STRINGERS AT LEAST TWO FEET ONTO FIRM BANKS OR SEVERAL FEET INTO THE UPLAND EDGE OF A WETLAND.
7. PLACE MATS AND STONE RAMP ON TOP OF GEOTEXTILE FABRIC AND PROVIDE A SMOOTH TRANSITION FOR EQUIPMENT TRAVEL FROM THE ADJACENT GROUND.
8. INSTALL ROUGH STONE AREAS AT BOTH ENDS OF THE BRIDGE TO PROMOTE CLEANING OF VEHICLE TIRES.
9. TEMPORARY BRIDGES WILL BE REMOVED AS SOON AS THEY ARE NO LONGER REQUIRED FOR PROJECT ACCESS.
10. PERFORM ROUTINE INSPECTION AND MAINTENANCE TO INCLUDE:
 - 10.1. REMOVAL OF ACCUMULATED SOIL MATERIAL FROM BRIDGE DECK AND RAMPS.
 - 10.2. SPREAD REMOVED SOIL MATERIAL AT A STABILIZED UPLAND LOCATION AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR (E).
 - 10.3. INSPECT STREAM BANKS FOR STABILITY.
 - 10.4. INSPECT FOR SIGNS OF MATERIAL BEING DEPOSITED INTO THE WATER RESOURCE.
 - 10.5. REPLACE TIMBERS OR BRIDGE DECKING IN POOR CONDITION AS SOON AS DETERIORATION IS OBSERVED.
 - 10.6. ENVIRONMENTAL INSPECTOR (IE) TO BE RESPONSIBLE FOR REGULAR INSPECTIONS AND WILL MAINTAIN A LOG OF CHANGES, MAINTENANCE, AND IMPROVEMENTS BEING PERFORMED.

TYPICAL "SWAMP MAT" TEMPORARY BRIDGE
NOT TO SCALE



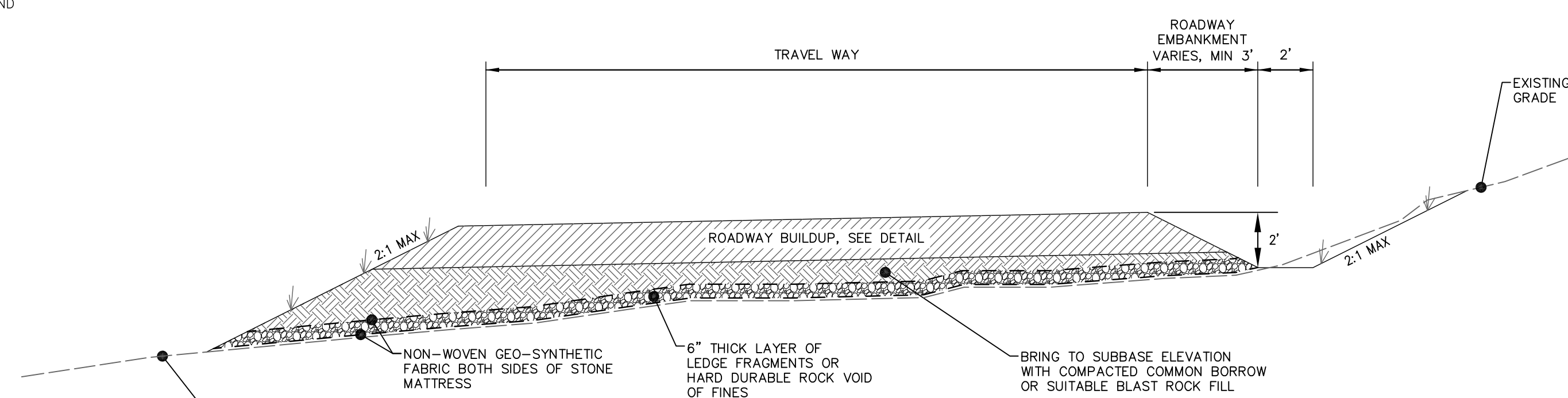
12' TRANSMISSION LINE ACCESS ROAD CROSS-SECTION DETAIL
NOT TO SCALE



CROSS CULVERT INSTALLATION NOTES:

1. MAXIMUM TRENCH WIDTH AT THE PIPE CROWN SHALL BE THE PIPE OUTSIDE DIAMETER PLUS 2 FEET.
2. PIPE SHALL BE BEDDED IN COMMON BORROW (MDOT 703.18) REACHING A MINIMUM 6 INCHES BELOW THE BOTTOM OF THE PIPE AND 6 INCHES ABOVE THE TOP OF THE PIPE.
3. ALL ROAD CULVERTS TO BE HDPE, DOUBLE WALL, SMOOTH INTERIOR BORE, OUTSIDE CORRUGATED, ADS N-12 ST IB OR EQUAL, SIZE VARIES PER PLAN.
4. ANY CULVERT INSTALLED ON THE PROJECT SHALL HAVE THE APPROPRIATE INLET AND OUTLET PROTECTION INSTALLED WITHIN 7 DAYS FOR CULVERTS IN NON-CRITICAL AREAS AND WITHIN 48 HOURS OR PRIOR TO ANY STORM EVENT, WHICHEVER OCCURS FIRST, FOR CULVERTS IN CRITICAL AREAS. A CRITICAL AREA IS ANY AREA WITHIN 75 FEET OF A WETLAND, RIVER/STREAM/BROOK, SHORELINE, OR VERNAL POOL.

TYPICAL ROADWAY CROSS CULVERT DETAIL
NOT TO SCALE



ROCK MATTRESS INSTALLATION NOTES:

1. ROCK MATTRESS TO BE USED AS APPROPRIATE IN AREAS WHERE SIGNIFICANT UNANTICIPATED GROUNDWATER SEEPS ARE ENCOUNTERED DURING CONSTRUCTION.

TYPICAL ROCK MATTRESS DRAINAGE DETAIL
NOT TO SCALE

ROADWAY CROSS SECTION NOTES:

1. VERTICAL ROADWAY GEOMETRY FOR REFERENCE PURPOSES ONLY AND TO CONFIRM DRAINAGE PATTERNS. FINAL FINISHED GRADE ELEVATION AND VERTICAL CURVE GEOMETRY TO BE DETERMINED AS FIELD CONDITIONS DICTATE.
2. ROADWAY GRAVEL TO EXTEND TO EDGE OF THE DITCH/FILL SLOPE.
3. ALL ROADWAY MATERIALS TO BE PLACED IN 2 FOOT MAXIMUM LIFTS COMPACTED TO 95%.
4. IN AREAS OF EXISTING VEGETATION/ORGANIC MATERIAL, ROAD AREA SHALL BE GRUBBED TO A DEPTH SUFFICIENT TO REMOVE ALL ORGANICS (2 FEET MAXIMUM). BRING TO SUBGRADE WITH COMMON BORROW OR SUITABLE BLAST ROCK FILL.
5. GEOTEXTILE FABRIC TO BE PLACED BENEATH ROAD SUBBASE IN ALL AREAS.
6. LIMIT ROADWAY CLEARING TO THE EXTENT PRACTICABLE. TYPICALLY, CLEARING SHOULD BE LIMITED TO 10' FROM THE BOTTOM OF FILL SLOPES AND 5' FROM THE TOP OF CUT SLOPES.
7. IN AREAS WHERE EXISTING ROADS ARE BEING IMPROVED, RE-CONSTRUCTED, OR WIDENED, THE ADEQUACY OF EXISTING ROADWAY BASE AND SURFACE MATERIALS TO BE REUSED SHALL BE AS DETERMINED OR AGREED TO BY ENGINEER OR OTHER AUTHORIZED OWNER'S REPRESENTATIVE. IF EXISTING MATERIAL IS FOUND TO BE INADEQUATE OR OF INSUFFICIENT DEPTH, EXISTING ROADWAY MATERIALS ARE TO BE REMOVED, REPLACED, AND IMPROVED TO MEET THE SPECIFICATION OF THE ROADWAY DETAILS AS SHOWN ON THIS SHEET.
8. ROADSIDE SWALES ARE TO BE FINISHED PER THE DETAILS ON SHEET DET-01. AS INDICATED, SWALES ARE TO BE GRASS LINED FOR ROAD SLOPES OF 6% OR LESS. SWALES WITH SLOPES GREATER THAN 6% ARE TO BE FINISHED PER THE STONE LINED SWALE DETAIL.

NO.	REVISIONS:	DATE:
0	ISSUED FOR REVIEW	03/20/13
1	MAINE DEP SUBMITTAL	03/20/13
2	RESPONSE TO ME DEP COMMENTS	07/09/13
3	REVISED TEMPORARY MAT BRIDGE DETAIL	10/29/13

SGC ENGINEERING, LLC
 • Civil Design & Survey Engineering
 • Environmental & Regulatory Permitting
 • Electrical Power Systems Engineering

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 20 Collinsville, Maine 04847
 Phone: 207.848.4300
 Fax: 207.848.4301

100 Park Street, Suite 205
 Bangor, Maine 04401-2005
 Phone: 207.688.2000
 Fax: 207.688.2005

SERVING OUR CLIENTS IN THE U.S.A. & CANADA

Drawn: NRP/TMH
 Design: NRP/TMH
 Date: 03-20-2013
 Scale: 1"=10'

ACCESS ROAD DETAILS
 ROADWAY DETAILS
 115KV GENERATOR LEAD
 MAYFIELD TWP TO PARKMAN, MAINE
 BLUE SKY WEST II, LLC
 c/o First Wind Energy, LLC
 129 Middle Street, 3rd Floor, Portland, ME 04101

firstwind.
 CLEAN ENERGY. MADE HERE.

The information contained herein is confidential and is the sole property of the project owner.