PUBLIC COMMENTS RECEIVED FOR PROPOSED RULE REVISIONS: ROADS AND WATER CROSSINGS

Maine Land Use Planning Commission
Maine Department of Agriculture, Conservation, and Forestry

Published Date: March 6, 2019

Public Comment Deadline: April 5, 2019

Rebuttal Comment Deadline: April 12, 2019

From:	Alex Abbott
To:	Beyer, Stacie R
Cc:	Gallagher, Merry; Sarah Haggerty
Subject:	Comments on Proposed LUPC Crossing Rules
Date:	Wednesday, February 27, 2019 3:06:42 PM
Attachments:	Ch10_RoadCrossings_PostingDraft_AAbbott_Comments.pdf

Stacie,

I did a fairly quick review of the proposed rules and have annotated the attached copy, highlighting sections where I have concerns, and including brief notes for each detailing my concern.

Please let me know if you have any questions.

Regards,

Alex

****
Alex Abbott
c/o Gulf of Maine Coastal Program
U.S. Fish and Wildlife Service
4R Fundy Road
Falmouth, ME 04105
Telephone: 207-781-8364, ext. 21
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DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
MAINE LAND USE PLANNING COMMISSION

CHAPTER 10, LAND USE DISTRICTS AND STANDARDS

Proposed Rule Revisions: Roads and Water Crossings

January 15, 2019 Draft

The following revisions propose amendments to Chapter 10, Land Use Districts and Standards for Areas Within the Service Area of the Maine Land Use Planning Commission. This document only includes the relevant section of Chapter 10. The proposal intends to repeal and replace the existing rule language for Section 10.27,D in its entirety. Therefore, the revisions are not shown in strikeout and underline format. A version of the draft rules with all changes in strikeout and underline format is available upon request.

Where necessary, explanations of some changes have been included in [brackets]. These explanatory notes would not be included in the final rule.

10.27 ACTIVITY-SPECIFIC STANDARDS

D. ROADS AND WATER CROSSINGS

Roads and water crossings not in conformance with the standards of Section 10.27,D may be allowed upon issuance of a permit from the Commission provided that such types of activities are allowed in the subdistrict involved. An applicant for such a permit shall show by a preponderance of the evidence that the proposed activity, which is not in conformance with the standards of Section 10.27,D, will be conducted in a manner that produces no undue adverse impact upon the resources and uses in the area.

The following standards apply to roads and water crossings for any purpose other than land management roads and water crossings on/for land management roads where those uses are regulated by the Maine Forest Service; repair and maintenance of legally existing road culverts or replacement of legally existing road culverts in accordance with 12 M.R.S. §685-B(1-A)(A); and driveways associated with residential structures and uses, except as provided in Section 10.27,H.

[*The Section 10.27,H standards require that water crossings for driveways meet Section 10.27,D,2, below*]

1. Roads, Drainage Ditches, and Turnouts. The following standards apply to construction and maintenance of roads, including the creation of drainage ditches and turnouts:

a. Sediment barriers, such as silt fences or erosion control mix berms, must be properly installed between areas of soil disturbance and downgradient non-tidal waterbodies and wetlands prior to construction. Sediment barriers must be maintained until the disturbed area is permanently stabilized, and removed within 30 days, or as soon as practicable, following final stabilization of the site;

b. Prior to any forecasted storm event and within 7 days following the completion of construction, all cut or fill slopes and areas of exposed mineral soil outside the road surface must be seeded and mulched, or otherwise stabilized to prevent unreasonable soil erosion and sedimentation of non-tidal water bodies or wetlands;

c. Road side slopes must have a slope no steeper than 2 horizontal to 1 vertical;

d. All drainage ditches created as part of the project must be properly stabilized upon completion to prevent unreasonable soil erosion;

e. Roads, drainage ditches, and turnouts must be located, constructed, and maintained to provide an undisturbed filter strip, of at least the width indicated below, between any exposed mineral soil and the normal high water mark of a non-tidal water body or upland edge of a wetland located in a P-WL1 subdistrict:

Average Slope of Land Between Exposed Mineral Soil and Normal High Water Mark (Percent)	**Width of Filter Strip Between Exposed Mineral Soil and Normal High Water Mark** (Feet Along Surface of the Ground)
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Table 10.27,D-1. Filter strip width requirements for roads, drainage ditches, and turnouts.

These filter strip requirements do not apply to road surfaces for approaches to water crossings or wetlands.

f. Drainage ditches may not extend to the resource being crossed. Drainage ditches for roads approaching a water crossing or wetland must be designed, constructed, and maintained to empty into an undisturbed filter strip, of at least the width indicated in the table set forth in Section 10.27,D,1,e above. Where such filter strip is impracticable, appropriate techniques must be used to avoid unreasonable sedimentation of non-tidal water bodies and wetlands. Such techniques may include the installation of plunge pools or settling basins, or the effective use of additional ditch relief culverts and ditch water turnouts placed so as to reasonably avoid sedimentation of the water body or wetland;

g. Ditch relief (cross drainage) culverts, stone-lined drainage dips, water turnouts, and other best management practices must be installed, where necessary, to disperse the volume or velocity of water in drainage ditches into undisturbed filter strips to prevent ditch erosion.

(1) Stone-lined drainage dips may be used in place of ditch relief culverts only where the road grade has a sustained slope of 10% or less;

(2) On roads having sustained slopes greater than 10%, ditch relief culverts must be placed across the road at an angle of approximately thirty-degrees downslope from a line perpendicular to the center line of the road;

(3) Ditch relief culverts, stone-lined drainage dips, and water turnouts must direct drainage into undisturbed filter strips as required in Sections 10.27,D,1,e and f above;

(4) Ditch relief culverts must be sufficiently sized and properly installed to allow for effective functioning, and their inlet and outlet ends must be stabilized with appropriate materials; and

(5) Ditch relief culverts, stone-lined drainage dips, and water turnouts must be spaced along the road at intervals no greater than indicated in the following table:

Road Grade (Percent)	Spacing (Feet)
0-2	500-300
3-5	250-180
6-10	167-140
11-15	136-127
16-20	125-120
21+	100

Table 10.27,D-2. Spacing requirements for ditch relief culverts, drainage dips, and water turnouts.

h. Ditches, culverts, bridges, dips, water turnouts and other water control installations associated with roads must be maintained on a regular basis to assure effective functioning.

i. Maintenance of the above required water control installations must continue until the road is discontinued and put to bed by taking the following actions:

(1) All culverts, open-bottom arches, and bridges must be dismantled and removed in a fashion to reasonably avoid sedimentation of non-tidal water bodies and wetlands. Stream banks must be restored to original conditions to the fullest extent practicable, and disturbed soils must be stabilized to prevent soil erosion.

(2) Water bars must:

(a) Be constructed across the road at intervals established below:

Road Grade (Percent)	Distance Between Water Bars (Feet)
0-2	250
3-5	200-135
6-10	100-80
11-15	80-60
16-20	60-45
21+	40

Table 10.27,D-3. Spacing requirements for water bars.

(b) Be constructed at an angle of approximately thirty-degrees downslope from the line perpendicular to the center line of the road;

(c) Be constructed so as to reasonably avoid surface water flowing over or under the water bar; and

(d) Extend sufficient distance beyond the traveled way so that water does not reenter the road surface.

j. Extension, enlargement or resumption of use of presently existing roads, which are not in conformity with the provisions of Section 10.27,D, are subject to the provisions of Section 10.11.

2. Water Crossings of Flowing Waters. Except as provided in Section 10.27,D,2,d,(17) for trail crossings, the following standards apply to crossings of flowing waters:

a. All Crossings. All crossings must be installed, and, in the case of temporary crossings, removed during low-flow conditions between July 15 and September 30 in any calendar

year, unless the notice submitted pursuant to Section 10.27,D,5 includes written approval from the Maine Department of Inland Fisheries and Wildlife for an alternative time period.

b. **Fords**. Fords associated with timber harvesting or agricultural management activities must:

(1) Be less than 8 feet in width;

(2) Be lined with geotextile fabric or other equally effective material; and crushed stone, blasted ledge, washed stone, or gabion blankets for erosion control, when the natural streambed does not consist of ledge or rock;

(3) Allow for fish passage and maintenance of normal stream flows at all times of the year;

(4) Not impound water, and

(5) Be removed when no longer in use. Impacts to the streambed or bank must be restored to original condition to the fullest extent practicable.

[Consistent with DEP, PBR Standards for fords]

c. **Temporary Crossings**. Temporary crossings may be used for equipment access across flowing waters. Temporary crossings must:

(1) Be removed within 180 days;

(2) Not use soil materials for construction or stabilization;

(3) Unless constructed in a way that spans the stream channel, with no disturbance to the streambed or banks, involve a culvert installation that meets all the following standards:

(a) Placed on geotextile fabric or other equally effective material where practicable to ensure restoration to the original grade,

(b) Covered with rock large enough in size to allow for easy removal without disturbing the streambed,

(c) Designed and maintained to withstand and pass high flows, such that water height is no higher than the top of the culvert's inlet, a minimum culvert diameter of 24 inches is required to pass debris, and

(d) Aligned to prevent bank erosion or streambed scour; and

(4) Removed upon completion of the work. Impacts to the streambed or bank must be restored to original condition to the fullest extent practicable.

[Consistent with Army Corps standards for temporary crossings.]

d. **Permanent Crossings**.

(1) To the greatest extent practicable, work in the stream must be minimized, and design and construction must allow the stream's natural structure and integrity to remain intact.

(2) If a stream to be crossed is a perennial watercourse and has a sustained slope of more than 2%, a bridge or open-bottom arch must be used to maintain the natural streambed.

(3) If a perennial stream to be crossed is used for navigation, the crossing must consist of a bridge span or open-bottom arch with at least 4 feet of clearance during normal high water for boat passage.

(4) Except as provided in Section 10.27,D,2,d,(5), bridges, open-bottom arches, and culverts must be installed and maintained to provide an opening sufficient in size and structure to accommodate flow from a 25-year frequency storm event, or with a cross-sectional area at least equal to 3 times the cross-sectional area of the flowing water.

(5) Bridges, open-bottom arches, and culverts located in special flood hazard areas must be designed and constructed to provide an opening sufficient in size and structure to accommodate flow from a 100-year frequency storm event.

(6) Footings and abutments for bridges and open-bottom arches must be landward of 1.2 times the width of the channel at normal high water.

(7) Culverts utilized in permanent crossings must:

(a) Not exceed 75 feet in length;

(b) Follow the alignment and grade of the existing stream channel where possible. On perennial streams, the culvert's gradient may not exceed 2%;

(c) Have the bottom of the entire culvert installed below the streambed elevation, as follows:

(i) ≥2 feet for box culverts and other culverts with smooth internal walls,

(ii) ≥1 foot for corrugated pipe arches, and

(iii) ≥1 foot and at least 25% of the culvert diameter for corrugated round pipe culverts;

(d) Have diameters that exceed 1.2 times the width of the channel at normal high water;

(e) Be seated on firm ground, or on geotextiles used to stabilize the ground;

(f) Have soil compacted up the side of the culvert;

(g) Be covered by soil to a minimum depth of 1 foot or according to the culvert manufacturer's specifications, whichever is greater; and

(h) Have the inlet and outlet ends stabilized by rip-rap or other suitable means to reasonably avoid erosion of material around the culvert.

(8) Provided they are properly applied and used for circumstances for which they are designed, methods including but not limited to the following are acceptable to the Commission as means of calculating 25-year and 100-year frequency storm events and thereby determining crossing sizes as required in Section 10.27,D,2:

Summary of Comments on CHAPTER 10 LAND USE DISTRICTS AND STANDARDS

Page: 6

Number: 1 Author: aabbott Subject: Highlight Date: 2/27/2019 2:28:31 PM -05'00'

Number: 2 Author: aabbott Subject: Sticky Note Date: 3/12/2019 10:31:33 AM

"flowing water" is not sufficient to describe the cross-section required. It is referred to in the Maine Forest Service documents as that corresponding to the level of "Normal High Water", while Stream Smart and many of us in stream restoration work refer to as "Bankfull Width", thus "Bankfull Cross-sectional Area" or "cross-sectional area of flow at normal high water" would be better here.

Number: 3 Author: aabbott Subject: Sticky Note Date: 2/27/2019 2:57:42 PM -05'00'

There are steel-reincforced culverts commonly being installed in Maine now that do not require any cover, though often a small amount, perhaps 6" can help extend the life of the structure, but a better suggestion is to follow manufacturers recommendations for cover.

Number: 4 Author: aabbott Subject: Highlight Date: 2/27/2019 2:55:40 PM -05'00'

(a) The USDA Soil Conservation Service (SCS) methods; specifically: "Urban Hydrology for Small Watersheds." (Technical Release #55). USDA Soil Conservation Service (June 1986).

(b) The United States Geological Survey Series; specifically: "Estimating the Magnitude of Peak Flows for Streams in Maine for Selected Recurrence Intervals." (WRI 99-4008). United States Geological Survey, U.S.G.S. Maine Water Science Office (1999).

(9) Except as provided in Section 10.27,D,2,d,(10), water crossings must have natural bottom substrate placed within the structure matching the characteristics of the substrate in the natural channel at the time of construction and over time as the structure has had the opportunity to pass significant flood events. To allow terrestrial passage for wildlife and prevent undermining of footings, crossings must have a bank on both sides of the stream matching the horizontal profile of the natural stream banks.

(10) Installation of substrate material in culverts with diameters (round pipes) or spans (pipe arches or box culverts) of less than 60 inches may not be safe or practicable. In those cases, natural deposition and bed development is allowed.

(11) Wheeled or tracked equipment may not operate in the water. Equipment operating on shore may, where necessary, reach into the water with a bucket or similar extension. Equipment may cross streams on rock, gravel or ledge bottom.

(12) If work is performed in a flowing water that is less than 3 feet deep at the time of the activity and at the location of the activity, the applicant must provide for temporary diversion of flow to the opposite side of the channel while work is in progress.

(a) Diversion may be accomplished by placing sandbags, timbers, sheet steel, concrete blocks, at least 6 mil polyethylene, or geotextiles from the bank to midstream on the upstream side of the activity. No more than two-thirds or 25 feet of stream width, whichever is less, may be diverted at one time.

(b) Any material used to divert water flow must be completely removed upon completion of the activity, and the stream substrate must be restored to its original condition.

(c) A pump may be operated where necessary, for a temporary diversion. The pump outlet must be located and operated such that erosion or the discharge of sediment to non-tidal waterbodies or wetlands is prevented.

(13) All wheeled or tracked equipment that must travel or work in a vegetated wetland area must travel and work on mats or platforms in order to protect wetland vegetation.

(14) All excavated material must be stockpiled either outside the wetland or on mats or platforms. Sediment control barriers must be used, where necessary, to prevent sedimentation.

(15) The use of untreated lumber is preferred. Lumber pressure treated with chromated copper arsenate (CCA) may be used only if necessary, only if use is allowed under federal law and not prohibited from sale under 38 M.R.S.A. §1682, and provided it is cured on dry land in a way that exposes all surfaces to the air for a period of at least

Page: 7

Number: 1 Author: aabbott Subject: Sticky Note Date: 2/27/2019 2:36:07 PM -05'00'
This should be the "Natural Resources Conservation Service (NRCS)"

Number: 2 Author: aabbott Subject: Highlight Date: 2/27/2019 2:35:41 PM -05'00'

Number: 3 Author: aabbott Subject: Highlight Date: 2/27/2019 2:44:59 PM -05'00'

Number: 4 Author: aabbott Subject: Sticky Note Date: 2/27/2019 2:47:53 PM -05'00'
This may be dated and not worth including. An additional approach of using USGS StreamStats (https://www.usgs.gov/mission-areas/water-resources/science/streamstats?qt-science_center_objects=0#qt-science_center_objects) online hydrology tools should be sufficient, but will generally give lower discharges than the NRCS approach, thus causing some confusion and opportunity for abuse of the 25-year and 100-year standards prescribed herein.

Number: 5 Author: aabbott Subject: Highlight Date: 2/27/2019 3:00:35 PM -05'00'

Number: 6 Author: aabbott Subject: Sticky Note Date: 2/27/2019 3:02:28 PM -05'00'
Note that there are many pipe arch and box culvert types out there that may be as wide as 10' at this rise limit (5'), and it would be better to reword this to prescribe substrate material installation "wherever practicable" rather than allowing this categorical exclusion.

21 days prior to construction. Wood treated with creosote or pentachlorophenol may not be used where it will contact water.

(16) Water crossings must be maintained to facilitate passage of aquatic life. Culverts that develop "hanging" inlets or outlets, bed washout, or a stream channel that does not match the characteristics of the natural stream channel, such as substrate mobility and type, and channel slope, stability, and confinement must be repaired to design condition.

(17) Except that Section 10.27,D,4 below always applies, trail crossings of minor flowing waters are exempt from the standards of Section 10.27,D, provided such crossings are constructed in a manner that causes no disturbance to the streambed, and no substantial disturbance to the banks or shoreland areas in the vicinity of the crossing, and provided such crossings do not impede the flow of water or the passage of fish. If properly undertaken, acceptable methods may include, but not be limited to the laying of logs from bank to bank, or placement of bed logs and stringers with decking. This exemption does not extend to the construction of abutments or piers.

Trail crossings not so exempted are subject to the water crossing standards of Section 10.27,D.

[Most proposed revisions are consistent with DEP's PBR standards except standards relating to crossing width and natural substrate in the crossing, which are consistent with Army Corps standards for crossings.]

3. Wetland Crossings. The design and construction of roads, other than those located in areas below the normal high-water mark of standing or flowing waters, must avoid wetlands unless there are no reasonable alternatives, and must maintain the existing hydrology of wetlands.

To maintain the existing hydrology of wetlands, road drainage designs must provide cross drainage of the water on the surface and in the top 12 inches of soil in wetlands during both flooded and low water conditions so as to neither create permanent changes in wetland water levels nor alter wetland drainage patterns. This must be accomplished through the incorporation of culverts or porous layers at appropriate levels in the road fill to pass water at its normal level through the road corridor. Where culverts or other cross-drainage structures are not used, all fills must consist of free draining granular material.

To accomplish the above, the following requirements apply:

a. Wetland crossings on mineral soils or those with surface organic layers up to 4 feet in thickness.

(1) Fill may be placed directly on the organic surface compressing or displacing the organic material until equilibrium is reached. With this method, culverts or other cross-drainage structures are used instead of porous layers to move surface and subsurface flows through the road fill material.

(a) For road construction on mineral soils or those with surface organic layers less than 16 inches in thickness, culverts or other cross-drainage structures must be appropriately sized and placed at each end of each wetland crossing and at the lowest elevation on the road centerline with additional culverts at intermediate low points as necessary to provide adequate cross drainage. Culverts or other cross-drainage structures must be placed at maximum intervals of 300 feet.

Page: 8

Number: 1 Author: aabbott Subject: Highlight Date: 2/27/2019 2:50:03 PM -05'00'

Number: 2 Author: aabbott Subject: Sticky Note Date: 2/27/2019 2:54:20 PM -05'00'

Note that if many crossings are designed only to pass the 25-year storm event with discharge data from USGS StreamStats, and especially if the new structure has a bottom and is installed at an inappropriate elevation relative to the true stream bed elevation (absent sediments that may have been retained by previously undersized structures), it is likely that such a structure may develop a "hanging" outlet over time, which points to the inadequacy of the design, which should not simply be replicated, but upgraded to allow for greater flows.

(b) For road construction on surface organic layers in excess of 16 inches but less than 4 feet in thickness, cross drainage must be provided by placing culverts at each end of each wetland crossing and at the lowest elevation on the road centerline with additional culverts at intermediate low points as necessary to provide adequate cross drainage. Culverts or other cross-drainage structures must be placed at maximum intervals of 300 feet. Culverts must be a minimum of 24 inches in diameter, or the functional equivalent, and buried at least 6 inches below the soil surface.

(c) Where necessary to maintain existing water flows and levels in wetlands, ditches parallel to the road centerline must be constructed along the toe of the fill to collect surface and subsurface water, carry it through the culvert(s) and redistribute it on the other side. Unditched breaks must be left midway between culverts to prevent channelization.

(2) Alternatively, a porous layer may be created to move surface and subsurface flows through the road fill materials. If a porous layer is used, geotextile fabric must be placed above and below fill material to increase the bearing strength of the road and to preserve the bearing strength of fill material by preventing contamination with fine soil particles.

b. Wetland crossings on soils with organic layers in excess of 4 feet in thickness.

(1) Such construction must only take place under frozen ground conditions.

(2) Geotextile fabric must be placed directly on the soil surface. Road fill or log corduroy must then be placed on the geotextile fabric.

(3) Cross drainage must be provided by either a continuous porous layer, or appropriate placement of culverts or other cross-drainage structures and ditching as specified below:

(a) A continuous porous layer or layers must be constructed by placement of one or more layers of wood corduroy, large stone, or chunkwood separated from adjacent fill layers by geotextile fabric placed above and below the porous layer(s) such that continuous cross drainage is provided in the top 12 inches of the organic layer; or

(b) Cross drainage culverts or other cross-drainage structures must be placed at points where they will receive the greatest support. Culverts or other cross-drainage structures must be a minimum of 24 inches in diameter, or the functional equivalent, and buried at least 6 inches below the soil surface. Where necessary to maintain existing water flows and levels in wetlands, ditches parallel to the roadbed on both sides must be used to collect surface and subsurface water, carry it through the culvert(s), and redistribute it on the other side. Such ditches must be located three times the depth of the organic layer from the edge of the road fill. Unditched breaks must be left midway between culverts to prevent channelization.

4. Erosion and Sedimentation Control. In addition to the foregoing minimum requirements, provision must otherwise be made in the construction and maintenance of roads and water crossings in order to reasonably avoid sedimentation of non-tidal water bodies and wetlands.

5. Written Notice Required. Written notice of all road and water crossing construction activities, except level A road projects and exempt trail crossings as provided in Section 10.27,D,2,d,(17) above, must be given to the Commission prior to the commencement of such activities. Such notice must conform to the requirements of Section 10.16 and must state the manner in which the water crossing size requirements of Section 10.27,D will be satisfied.

From: Clement, Jay L CIV USARMY CENAE (US)
To: Beyer, Stacie R
Subject: Comments as requested
Date: Monday, March 18, 2019 11:11:53 AM
Attachments: Ch10_RoadCrossings_PostingDraft.pdf

Let me know if these don't come through Stacie.

Jay

DEPARTMENT OF AGRICULTURE, CONSERVATION AND FORESTRY
MAINE LAND USE PLANNING COMMISSION

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[*The Section 10.27,H standards require that water crossings for driveways meet Section 10.27,D,2, below*]

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b. Prior to any forecasted storm event and within 7 days following the completion of construction, all cut or fill slopes and areas of exposed mineral soil outside the road surface must be seeded and mulched, or otherwise stabilized to prevent unreasonable soil erosion and sedimentation of non-tidal water bodies or wetlands;

c. Road side slopes must have a slope no steeper than 2 horizontal to 1 vertical;

d. All drainage ditches created as part of the project must be properly stabilized upon completion to prevent unreasonable soil erosion;

e. Roads, drainage ditches, and turnouts must be located, constructed, and maintained to provide an undisturbed filter strip, of at least the width indicated below, between any exposed mineral soil and the normal high water mark of a non-tidal water body or upland edge of a wetland located in a P-WL1 subdistrict:

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These filter strip requirements do not apply to road surfaces for approaches to water crossings or wetlands.

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g. Ditch relief (cross drainage) culverts, stone-lined drainage dips, water turnouts, and other best management practices must be installed, where necessary, to disperse the volume or velocity of water in drainage ditches into undisturbed filter strips to prevent ditch erosion.

(1) Stone-lined drainage dips may be used in place of ditch relief culverts only where the road grade has a sustained slope of 10% or less;

(2) On roads having sustained slopes greater than 10%, ditch relief culverts must be placed across the road at an angle of approximately thirty-degrees downslope from a line perpendicular to the center line of the road;

(3) Ditch relief culverts, stone-lined drainage dips, and water turnouts must direct drainage into undisturbed filter strips as required in Sections 10.27,D,1,e and f above;

(4) Ditch relief culverts must be sufficiently sized and properly installed to allow for effective functioning, and their inlet and outlet ends must be stabilized with appropriate materials; and

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(2) Water bars must:

(a) Be constructed across the road at intervals established below:

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11-15	80-60
16-20	60-45
21+	40

Table 10.27,D-3. Spacing requirements for water bars.

(b) Be constructed at an angle of approximately thirty-degrees downslope from the line perpendicular to the center line of the road;

(c) Be constructed so as to reasonably avoid surface water flowing over or under the water bar; and

(d) Extend sufficient distance beyond the traveled way so that water does not reenter the road surface.

j. Extension, enlargement or resumption of use of presently existing roads, which are not in conformity with the provisions of Section 10.27,D, are subject to the provisions of Section 10.11.

2. Water Crossings of Flowing Waters. Except as provided in Section 10.27,D,2,d,(17) for trail crossings, the following standards apply to crossings of flowing waters:

a. All Crossings. All crossings must be installed, and, in the case of temporary crossings, removed during low-flow conditions between July 15 and September 30 in any calendar

year, unless the notice submitted pursuant to Section 10.27,D,5 includes written approval from the Maine Department of Inland Fisheries and Wildlife for an alternative time period.

b. Fords. Fords associated with timber harvesting or agricultural management activities must:

(1) Be less than 8 feet in width;

(2) Be lined with geotextile fabric or other equally effective material; and crushed stone, blasted ledge, washed stone, or gabion blankets for erosion control, when the natural streambed does not consist of ledge or rock;

(3) Allow for fish passage and maintenance of normal stream flows at all times of the year;

(4) Not impound water, and

(5) Be removed when no longer in use. Impacts to the streambed or bank must be restored to original condition to the fullest extent practicable.

[Consistent with DEP, PBR Standards for fords]

c. Temporary Crossings. Temporary crossings may be used for equipment access across flowing waters. Temporary crossings must:

(1) Be removed within 180 days;

(2) Not use soil materials for construction or stabilization;

(3) Unless constructed in a way that spans the stream channel, with no disturbance to the streambed or banks, involve a culvert installation that meets all the following standards:

(a) Placed on geotextile fabric or other equally effective material where practicable to ensure restoration to the original grade,

(b) Covered with rock large enough in size to allow for easy removal without disturbing the streambed,

(c) Designed and maintained to withstand and pass high flows, such that water height is no higher than the top of the culvert's inlet, a minimum culvert diameter of 2[illegible] inches is required to pass debris, and

(d) Aligned to prevent bank erosion or streambed scour; and

(4) Removed upon completion of the work. Impacts to the streambed or bank must be restored to original condition to the fullest extent practicable.

[Consistent with Army Corps standards for temporary crossings.]

d. Permanent Crossings.

(1) To the greatest extent practicable, work in the stream must be minimized, and design and construction must allow the stream's natural structure and integrity to remain intact.

Summary of Comments on CHAPTER 10 LAND USE DISTRICTS AND STANDARDS

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Number: 1 Author: E6CORJLC Subject: Sticky Note Date: 3/27/2019 2:17:57 PM

Would LUPC ever review crossings that are in DMR's purview e.g. for smelt or alewives, perhaps on one of the islands or downeast somewhere? Maybe you should add 'and/or DMR'?

Number: 2 Author: E6CORJLC Subject: Sticky Note Date: 3/18/2019 11:01:37 AM

DEP is reportedly not a fan of fords and tends not to permit them (according to Dawn Hallowell). Should you be encouraging them, albeit subtley?

Number: 3 Author: E6CORJLC Subject: Sticky Note Date: 3/18/2019 11:04:56 AM

I know the GP says a minimum of 24" but that might have been a little short sighted. Any way to go up to 3'? 180 days encompassing spring flows, fall rains, or summer thunderstorms and hurricanes could easily overcome a 2' culvert as you well know.

(2) If a stream to be crossed is a perennial watercourse and has a sustained slope of more than 2%, a bridge or open-bottom arch must be used to maintain the natural streambed.

(3) If a perennial stream to be crossed is used for navigation, the crossing must consist of a bridge span or open-bottom arch with at least 4 feet of clearance during normal high water for boat passage.

(4) Except as provided in Section 10.27,D,2,d,(5), bridges, open-bottom arches, and culverts must be installed and maintained to provide an opening sufficient in size and structure to accommodate flow from a 25-year frequency storm event, or with a cross-sectional area at least equal to 3 times the cross-sectional area of the flowing water.

(5) Bridges, open-bottom arches, and culverts located in special flood hazard areas must be designed and constructed to provide an opening sufficient in size and structure to accommodate flow from a 100-year frequency storm event.

(6) Footings and abutments for bridges and open-bottom arches must be landward of 1.2 times the width of the channel at normal high water.

(7) Culverts utilized in permanent crossings must:

(a) Not exceed 75 feet in length;

(b) Follow the alignment and grade of the existing stream channel where possible. On perennial streams, the culvert's gradient may not exceed 2%;

(c) Have the bottom of the entire culvert installed below the streambed elevation, as follows:

(i) ≥2 feet for box culverts and other culverts with smooth internal walls,

(ii) ≥1 foot for corrugated pipe arches, and

(iii) ≥1 foot and at least 25% of the culvert diameter for corrugated round pipe culverts;

(d) Have diameters that exceed 1.2 times the width of the channel at normal high water;

(e) Be seated on firm ground, or on geotextiles used to stabilize the ground;

(f) Have soil compacted up the side of the culvert;

(g) Be covered by soil to a minimum depth of 1 foot or according to the culvert manufacturer's specifications, whichever is greater; and

(h) Have the inlet and outlet ends stabilized by rip-rap or other suitable means to reasonably avoid erosion of material around the culvert.

(8) Provided they are properly applied and used for circumstances for which they are designed, methods including but not limited to the following are acceptable to the Commission as means of calculating 25-year and 100-year frequency storm events and thereby determining crossing sizes as required in Section 10.27,D,2:

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Number: 1 Author: E6CORJLC Subject: Sticky Note Date: 3/18/2019 11:05:26 AM

".....arch that spans the stream with....."

Number: 2 Author: E6CORJLC Subject: Sticky Note Date: 3/18/2019 11:08:21 AM

As many of us have learned from Stream Smart and other presentations, a 25 year storm event in these days of climate instability is all too common. This standard is a relic now; perhaps you should seek guidance from your or DEP's engineers or your resource agencies.

Number: 3 Author: E6CORJLC Subject: Sticky Note Date: 3/18/2019 10:43:42 AM

We would add 'or in waters that support federal or state listed threatened or endangered species'. And would you want to add brook trout streams from a state perspective?

Number: 4 Author: E6CORJLC Subject: Sticky Note Date: 3/18/2019 10:46:05 AM

This is great but doesn't it conflict with #4 above? Designing for a 25 year storm event will rarely meet the 1.2 x BFW standard.

(a) The USDA Soil Conservation Service (SCS) Methods; specifically: "Urban Hydrology for Small Watersheds." (Technical Release #55). USDA Soil Conservation Service (June 1986).

(b) The United States Geological Survey Series; specifically: "Estimating the Magnitude of Peak Flows for Streams in Maine for Selected Recurrence Intervals." (WRI 99-4008). United States Geological Survey, U.S.G.S. Maine Water Science Office (1999).

(9) Except as provided in Section 10.27,D,2,d,(10), water crossings must have natural bottom substrate placed within the structure matching the characteristics of the substrate in the natural channel at the time of construction and over time as the structure has had the opportunity to pass significant flood events. To allow terrestrial passage for wildlife and prevent undermining of footings, crossings must have a bank on both sides of the stream matching the horizontal profile of the natural stream banks.

(10) Installation of substrate material in culverts with diameters (round pipes) or rises (pipe arches or box culverts) of less than 60 inches may not be safe or practicable. In those cases, natural deposition and bed development is allowed.

(11) Wheeled or tracked equipment may not operate in the water. Equipment operating on shore may, where necessary, reach into the water with a bucket or similar extension. Equipment may cross streams on rock, gravel or ledge bottom.

(12) If work is performed in a flowing water that is less than 3 feet deep at the time of the activity and at the location of the activity, the applicant must provide for temporary diversion of flow to the opposite side of the channel while work is in progress.

(a) Diversion may be accomplished by placing sandbags, timbers, sheet steel, concrete blocks, at least 6 mil polyethylene, or geotextiles from the bank to midstream on the upstream side of the activity. No more than two-thirds or 25 feet of stream width, whichever is less, may be diverted at one time.

(b) Any material used to divert water flow must be completely removed upon completion of the activity, and the stream substrate must be restored to its original condition.

(c) A pump may be operated where necessary, for a temporary diversion. The pump outlet must be located and operated such that erosion or the discharge of sediment to non-tidal waterbodies or wetlands is prevented.

(13) All wheeled or tracked equipment that must travel or work in a vegetated wetland area must travel and work on mats or platforms in order to protect wetland vegetation.

(14) All excavated material must be stockpiled either outside the wetland or on mats or platforms. Sediment control barriers must be used, where necessary, to prevent sedimentation.

(15) The use of untreated lumber is preferred. Lumber pressure treated with chromated copper arsenate (CCA) may be used only if necessary, only if use is allowed under federal law and not prohibited from sale under 38 M.R.S.A. §1682, and provided it is cured on dry land in a way that exposes all surfaces to the air for a period of at least

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Number: 1 Author: E6CORJLC Subject: Sticky Note Date: 3/18/2019 10:53:22 AM
new and replacement

21 days prior to construction. Wood treated with creosote or pentachlorophenol may not be used where it will contact water.

(16) Water crossings must be maintained to facilitate passage of aquatic life. Culverts that develop "hanging" inlets or outlets, bed washout, or a stream channel that does not match the characteristics of the natural stream channel, such as substrate mobility and type, and channel slope, stability, and confinement must be repaired to design conditions.

(17) Except that Section 10.27,D,4 below always applies, trail crossings of minor flowing waters are exempt from the standards of Section 10.27,D, provided such crossings are constructed in a manner that causes no disturbance to the streambed, and no substantial disturbance to the banks or shoreland areas in the vicinity of the crossing, and provided such crossings do not impede the flow of water or the passage of fish. If properly undertaken, acceptable methods may include, but not be limited to the laying of logs from bank to bank, or placement of bed logs and stringers with decking. This exemption does not extend to the construction of abutments or piers.

Trail crossings not so exempted are subject to the water crossing standards of Section 10.27,D.

[Most proposed revisions are consistent with DEP's PBR standards except standards relating to crossing width and natural substrate in the crossing, which are consistent with Army Corps standards for crossings.]

3. Wetland Crossings. The design and construction of roads, other than those located in areas below the normal high-water mark of standing or flowing waters, must avoid wetlands unless there are no reasonable alternatives, and must maintain the existing hydrology of wetlands.

To maintain the existing hydrology of wetlands, road drainage designs must provide cross drainage of the water on the surface and in the top 12 inches of soil in wetlands during both flooded and low water conditions so as to neither create permanent changes in wetland water levels nor alter wetland drainage patterns. This must be accomplished through the incorporation of culverts or porous layers at appropriate levels in the road fill to pass water at its normal level through the road corridor. Where culverts or other cross-drainage structures are not used, all fills must consist of free draining granular material.

To accomplish the above, the following requirements apply:

a. Wetland crossings on mineral soils or those with surface organic layers up to 4 feet in thickness.

(1) Fill may be placed directly on the organic surface compressing or displacing the organic material until equilibrium is reached. With this method, culverts or other cross-drainage structures are used instead of porous layers to move surface and subsurface flows through the road fill material.

(a) For road construction on mineral soils or those with surface organic layers less than 16 inches in thickness, culverts or other cross-drainage structures must be appropriately sized and placed at each end of each wetland crossing and at the lowest elevation on the road centerline with additional culverts at intermediate low points as necessary to provide adequate cross drainage. Culverts or other cross-drainage structures must be placed at maximum intervals of 300 feet.

(b) For road construction on surface organic layers in excess of 16 inches but less than 4 feet in thickness, cross drainage must be provided by placing culverts at each end of each wetland crossing and at the lowest elevation on the road centerline with additional culverts at intermediate low points as necessary to provide adequate cross drainage. Culverts or other cross-drainage structures must be placed at maximum intervals of 300 feet. Culverts must be a minimum of 24 inches in diameter, or the functional equivalent, and buried at least 6 inches below the soil surface. 1

(c) Where necessary to maintain existing water flows and levels in wetlands, ditches parallel to the road centerline must be constructed along the toe of the fill to collect surface and subsurface water, carry it through the culvert(s) and redistribute it on the other side. Unditched breaks must be left midway between culverts to prevent channelization.

(2) Alternatively, a porous layer may be created to move surface and subsurface flows through the road fill materials. If a porous layer is used, geotextile fabric must be placed above and below fill material to increase the bearing strength of the road and to preserve the bearing strength of fill material by preventing contamination with fine soil particles.

b. Wetland crossings on soils with organic layers in excess of 4 feet in thickness.

(1) Such construction must only take place under frozen ground conditions.

(2) Geotextile fabric must be placed directly on the soil surface. Road fill or log corduroy must then be placed on the geotextile fabric.

(3) Cross drainage must be provided by either a continuous porous layer, or appropriate placement of culverts or other cross-drainage structures and ditching as specified below:

(a) A continuous porous layer or layers must be constructed by placement of one or more layers of wood corduroy, large stone, or chunkwood separated from adjacent fill layers by geotextile fabric placed above and below the porous layer(s) such that continuous cross drainage is provided in the top 12 inches of the organic layer; or

(b) Cross drainage culverts or other cross-drainage structures must be placed at points where they will receive the greatest support. Culverts or other cross-drainage structures must be a minimum of 24 inches in diameter, or the functional equivalent, and buried at least 6 inches below the soil surface. Where necessary to maintain existing water flows and levels in wetlands, ditches parallel to the roadbed on both sides must be used to collect surface and subsurface water, carry it through the culvert(s), and redistribute it on the other side. Such ditches must be located three times the depth of the organic layer from the edge of the road fill. Unditched breaks must be left midway between culverts to prevent channelization.

4. Erosion and Sedimentation Control. In addition to the foregoing minimum requirements, provision must otherwise be made in the construction and maintenance of roads and water crossings in order to reasonably avoid sedimentation of non-tidal water bodies and wetlands.

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Number: 1 Author: E6CORJLC Subject: Sticky Note Date: 3/18/2019 10:56:17 AM

24" is probably the absolute smallest you should accept; our GP recommends 3'. It also recommends cross pipes every 50' for large crossings. One 24" pipe every 300' probably won't cut it over time.

5. Written Notice Required. Written notice of all road and water crossing construction activities, except level A road projects and exempt trail crossings as provided in Section 10.27,D,2,d,(17) above, must be given to the Commission prior to the commencement of such activities. Such notice must conform to the requirements of Section 10.16 and must state the manner in which the water crossing size requirements of Section 10.27,D will be satisfied.

From: Benjamin Matthews
To: Beyer, Stacie R
Subject: Proposed Rule Revisions, Roads and Water Crossings
Date: Monday, April 01, 2019 3:02:28 PM

Hi Stacie,

It's was a pleasure to meet you at the StreamSmart workshop last week, thank you again for your willingness to join us for those workshops and help get the word out about how to get these crossings done in Flood & Fish friendly ways!

I was asked to give the official comments from TNC about the rule revisions for the road and water crossing amendments that are being considered right now, and I have attached a letter detailing our support of these changes, and a couple of suggestions that might help clarify some of the rules. The link below as the official letter and our comments—please don't hesitate to reach out if you have an questions/concerns or if I can clarify any of these comments.

TNC_Comments_LUPC_Road_Water_Crossings_Rule_Change_FINAL4109.docx (open link)

Thanks,

Ben

Ben Matthews
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April 1, 2019

Stacie R. Beyer, Chief Planner
22 State House Station
18 Elkins Lane, Harlow Building
Augusta, Maine 04333-0022

RE: Proposed Chapter 10 Revisions, Roads and Water Crossings

Dear Ms. Beyer:

On behalf of The Nature Conservancy in Maine, I appreciate this opportunity to comment on the Land Use Planning Commission's proposed revisions to Chapter 10 related to roads and water crossings.

The Nature Conservancy is a nonprofit conservation organization dedicated to conserving the lands and waters on which all life depends. Guided by science, we create innovative, on-the-ground solutions to our world's toughest challenges so that nature and people can thrive together. Working in more than 70 countries, we use a collaborative approach that engages local communities, governments, the private sector, and other partners. The Nature Conservancy has been working in Maine for more than 60 years and is the 12th largest landowner in the state, owning and managing roughly 300,000 acres. We also work across the state to restore the rivers and streams that support healthy fish populations, partner with fishermen to rebuild groundfish populations to benefit coastal communities across the Gulf of Maine, and develop innovative solutions to address the impacts of climate change.

Overall, the Commission's proposed changes to Chapter 10 are very positive and represent significant improvements. They will align the Commission's guidance with existing DEP and Army Corps guidance and promote the installation of water crossings that decrease erosion and sedimentation and allow aquatic organism passage at all sites. We appreciate the Commission's efforts to make these improvements.

<u>We recommend that the Commission consider the following additions to further improve the proposed rules:</u>

- We recommend adding language to encourage the avoidance of wetlands when at all possible when building crossings.
- Include references to acceptable methods that can be used to quantify the alignment and grade of the existing stream channel to ensure that accurate metrics are used to develop designs. If these channel measurements are taken near exiting crossing, these

measurements could be wildly inaccurate and result in incorrectly installed crossings. Directly referencing U.S Forest Service (USFS) stream simulation design criteria and/or Stream Smart Guidance could help clarify how/where to measure the stream channel metrics referenced in the rules (i.e., channel slope/grade, bank-full width, stream bed substrate, etc.).

- We recommend that all crossings accommodate a 100-year storm event based on StreamStats regression curves. This is equivalent to Technical Release 55 (TR-55) 25-year storm events. There is a large discrepancy in the outputs of TR_55 and StreamStats, and because of this we recommend using only Streamstats for flow modeling because TR-55 consistently overestimates flows coming out of landscapes with significant forest coverage and permeable soils.
- We recommend removing the 3x cross section area of the "flowing water" sizing option. This language doesn't seem indicate what flow corresponds with " cross sectional area of flowing water" and could allow for undersized crossings to be put in place by basing this calculation on unreasonably low flows.
- Recommend adding language to require equipment to be cleaned of all vegetation and soil before transport to a new job site to prevent spread of invasive species, as well as language to prevent/mitigate spillage of engine fluids from getting into the water or soil.
- The proposed rules require culvert cross drains to be placed every 300 feet in wetland Areas. We recommend conforming to Army Corps guidance, which requires a culvert every 50 feet for new crossings for a Category 1 permit.

<u>We would also like to offer the following suggestions that may help clarify the specific metrics referenced in these rules:</u>

- Clarify whether a ford can be installed in a stream greater than 8 feet in width or cannot extend up/down stream more than 8 feet along the longitude of the stream.
- Specify a minimum depth of water and velocity that must be maintained through a ford in low flow conditions to provide clarity on the "allowing fish passage" criterion.
- Define which indicators are used to assess "Normal High Water." This is used in several places to define widths and depths and could benefit more clarity. We suggest using the term "bank full" to keep consistent with other guidance.
- Clarify how to determine if a stream will be used for navigation and needs the 4 feet of headspace. If referring to federal statutory 'Navigable Waters,' then this could require very small streams to have crossings much bigger than needed.
- Include more explicit guidance on how to characterize the substrate of the natural channel (pebble counts, grab samples) and turn it into a gradated fill specification that can be obtained from a gravel pit. Improperly sized "natural stream bottom substrate"

that is placed inside the structures will come out during higher flow events (this is the number one mechanism of failure or these crossings).

- Suggest removing the allowance for < 60” crossings to be exempt from installing substrate in the crossing. If located on a perennial stream, the crossing must have natural substrate continuously across the bottom for it to serve fish passage and sediment transport functions. Natural deposition and bed development will not happen inside a smooth or corrugated pipe, except at the very lowest slopes.

Thank you again for the opportunity to provide input on the proposed rules. Please let me know if you have any questions now or in the future; I am happy to be of further assistance.

Sincerely,

Ben Matthews
Watershed Restoration Specialist
The Nature Conservancy in Maine
(207) 513-2817
benjamin.matthews@tnc.org

From:	Sarah Haggerty
To:	Beyer, Stacie R
Cc:	Eliza Donoghue
Date:	Friday, April 05, 2019 1:01:29 PM
Attachments:	MA RoadCrossingRuleChange_FINAL.docx

Comments attached

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Sarah Haggerty// Maine Audubon
Conservation Biologist/GIS Manager

20 Gilsland Farm Road, Falmouth, ME 04105
tel (207) 781-2330 x225

web maineaudubon.org

MAINE AUDUBON

Land Use Planning Commission
Department of Agriculture, Conservation and Forestry
22 State House Station
18 Elkins Lane
Augusta, ME 04333

March 5, 2019

Dear Commission:

Thank you for the opportunity to submit comments on the proposed rule revisions related to road and water crossings within the service area of the Land Use Planning Commission (LUPC). Maine Audubon has worked to improve stream/road crossings across Maine for a number of years with multiple federal, state, local, and non-profit partners, and we are happy to see the LUPC addressing improvements to road crossing standards too.

Stream/road crossings, when properly designed and constructed, allow aquatic systems such as rivers and streams to function naturally while providing safe and stable transportation infrastructure. A naturally functioning aquatic system allows fish and other aquatic organisms to move freely within the system, unimpeded by the crossing structure or changes associated with it. A properly functioning aquatic system also allows for the natural movement of materials—water, sediment, coarse woody material, boulders, etc.—necessary for the maintenance of the system and associated habitats. When a crossing structure is improperly designed or constructed, the natural function of the system can break down, wildlife movement can be hampered, and habitats can be affected. Undersized culverts can alter the flow of water by increasing the velocity within the structure, creating a backup of water above the culvert, or by creating low flows and physical barriers when blocked. Improperly constructed and undersized crossings can lead to "perched" culverts in which the outfall ends up higher than the stream bed because of scour caused by high velocity water leaving the culvert. A perched culvert can make movement upstream difficult to impossible for fish and other aquatic organisms. Undersized and improperly constructed crossing structures also leave the roadway vulnerable to impairment or failure—increased maintenance, overtopping of the roadway with water, or even collapse. Failing roads increase non-point source pollution, impair fish and wildlife movements across the landscape, are unsafe, and are costly.

Revising the LUPC rules related to road and water crossings to meet the standards currently required by the Maine Department of Environmental Protection (DEP) and/or the U.S. Army Corps of Engineers (ACOE) will improve water quality, fish and wildlife passage, and road safety within the service area of the LUPC. However, not all of the revisions would bring the rules up to the standards currently required by DEP and the ACOE for permanent crossings under the DEP's Chapter 305:Permit By Rule (PBR) and the Department of the Army General Permit for the State of Maine and Best

Management Practices (BMPs). Therefore, we recommend addressing the inconsistencies as noted below.

Specific Comments

(1) *Proposed Section 10.27,D,2,d,(4)* requirements for "Permanent Crossings". Section (4) addresses opening size requirements, but requires "…an opening sufficient in size and structure to accommodate flow from a 25-year frequency storm event, or with a cross-sectional area at least equal to 3 times **the cross-sectional area of the flowing water**". The DEP PBR states, "A bridge or culvert must provide an opening with a cross-sectional area at least equal to 3 times **the cross-sectional area of the stream channel** or sufficient size to accommodate 25-year frequency water flows." The "cross-sectional area of the flowing water" and the "cross-sectional area of the stream channel" are not necessarily equivalent at all times. Measurements of the cross-sectional area of the flowing water taken during the late summer, when water flows are at their lowest, would grossly underestimate the sufficient opening size. The stream channel, however, is based on the defined banks of a stream, not on the water flowing within those banks. The ACOE BMPs use the "Bankfull Width" to describe the channel width at high flows, and section *10.27,D,2,d,(6)* and *10.27,D,2,d,(7)(d)* of the proposed rules also describe the "…width of the channel at normal high water." We recommend revising the sizing requirement to match the channel width that encompasses the normal high flow for the stream, rather than where the flowing water happens to be at the time.

(2) *Proposed Section 10.27,D,2,d,(8)(a)* requirements for "Permanent Crossings". Section (8)(a) references the USDA Soil Conservation Service, however, that agency was renamed the Natural Resources Conservation Service (NRCS) in 1994 in an effort to better reflect the breadth of the agency.

(3) *Proposed Section 10.27,D,2,d,(10)* requirements for "Permanent Crossings". Section (10) addresses placing substrate inside culverts where it may not be safe or practicable. Rather than defining a specific size exclusion of 60 inches, below which natural deposition would be allowed, we recommend mirroring the ACOE General Permit for Maine language that is more general: "Installation of substrate material within smaller culverts may not be safe or practicable. In these cases, it may be necessary to allow for natural deposition and bed development unless alternative methods are identified." In this way, the default for all crossings is to include placed substrate, unless there is reason to believe it is not safe or practicable. We recommend mirroring the language in the ACOE General Permit.

(4) *Proposed Section 10.27,D,2,d,(16)* requirements for "Permanent Crossings". Section (16) addresses the maintenance of the crossing to facilitate passage of aquatic life. As written, Section 16 would allow a crossing that no longer facilitated the passage of aquatic life to be repaired back to the original design. This will undoubtedly lead to a repeat of the poor condition again, over time. The ACOE addresses this issue by requiring the poor performing crossing be repaired and maintained *to meet the condition of aquatic organism passage*, not to simply meet the design standard that resulted in the deterioration of the condition in the first place. The ACOE General Condition 45(a) states: "All permanent crossings of rivers, stream, brooks, etc. (hereon referred to as "streams") shall be suitably culverted, bridged, or otherwise designed to i) withstand and to prevent the restriction of high flows… and ii) not obstruct the movement of or not substantially disrupt the necessary life-cycle movements of those species of aquatic life indigenous to the waterbody, including those

species that normally migrate through the area…" We recommend requiring the maintenance of the crossing structure to facilitate the passage of aquatic life, rather than to meet design standards that may have led to and may again lead to the deterioration of the ability of aquatic organisms to move through the crossing.

Conclusion

Overall, we are very supportive of the proposed rule revisions related to road and water crossings within the service area of the Land Use Planning Commission (LUPC). By raising the standards to meet those required by the DEP and ACOE for stream/road crossings, the LUPC will help further protect Maine's water quality, fish and wildlife habitat, and road safety. However, specific items noted above could reduce the effectiveness of the rule changes. Without addressing these issues, the LUPC risks undermining the overall benefits of the proposed rule changes. We support and appreciate the effort these revisions make towards protecting Maine's wildlife, water quality, and roadway safety, and we urge the Commission to adopt the recommendations noted above and otherwise support the revisions to the rule related to road and water crossings.

Signed,

Sarah Haggerty
Conservation Biologist