

# PROJECT SHARE RESTORATION WORKING GROUP

*Cherryfield, Maine*

## BMP GUIDELINES FOR ROADS IN ATLANTIC SALMON WATERSHEDS

*SEPTEMBER 2004*

*Prepared by:*

***Kleinschmidt***  
*Energy & Water Resource Consultants*

*Pittsfield, Maine*

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## ***EXECUTIVE SUMMARY***

Best Management Practices, or BMPs, were researched and developed to provide guidance to state and federal agencies, NGOs, local governments, landowners, and contractors in the design, placement, construction and permitting of roads, as well as the repair and maintenance of existing roads, that cross or parallel Maine Atlantic salmon rivers. Existing, independently developed BMPs have inconsistencies and had not previously been evaluated relative to Atlantic salmon habitat protection. These guidelines distill the most applicable elements of existing BMPs.

The most common roadway impact in these watersheds is related to secondary (paved or unpaved) road crossings of tributary streams. These small streams are relatively fragile and collectively comprise the majority of stream miles and drainage area of each watershed. Impacts to these waters result in degraded water quality, loss of habitat and migration blockages.

New road crossings should preferably be located away from sensitive Atlantic salmon habitat in straight, stable channel areas. Although crossings should be avoided if at all possible, if a crossing must be developed, it should take the form of a culvert or bridge that promotes unimpeded bank to bank water flow. Permanent secondary roads most frequently cross streams via culverts. If culverts are used, they must be satisfactorily sized and designed to minimize stream impacts by accounting for maximum and minimum stream flow, hydraulics and stream slope. This can be accomplished by calculating and designing for these specific criteria, installing a no-slope design that is as wide as the stream channel and/or by installing a no-bottom culvert design. Culvert crossings should cross at straight, stable sections of streams whenever possible, and be oriented parallel to flow. Temporary crossings are not preferred and should be avoided if possible.

Roads with bridges should be designed with piers positioned above bankfull elevation to avoid debris buildup, bank erosion and downstream channel degradation.

Road and culvert construction practices must be properly timed and designed to avoid impacting or affecting Atlantic salmon and related habitat. For construction, this requires timing construction or maintenance activities to avoid seasons when materials are wet, loose and difficult to control and when the Atlantic salmon life cycle is most sensitive. Habitat characteristics (such as shading, large woody debris recruitment) should be emphasized in all BMP designs in Atlantic salmon watersheds.

This document consists of four volumes:

Volume I – Introduction consists of the Statement of Purpose, definition of BMPs, disclaimer and background information on Atlantic salmon and habitat requirements.

Volume II – Planning consists of pre-design planning tools such as a site visit checklist for documenting the problem in the field, determining the cause of the problem, a decision flow chart for selecting the appropriate BMP based on the results from the checklist, and essential permitting information.

Volume III – Implementation consists of BMPs and their applications to crossings, roads and streambank restoration.

Volume IV – Appendices consists of the literature cited, glossary, acronyms, culvert mitigation measures, permitting and technical guidance call list, and funding and technical assistance contact list.

## ACKNOWLEDGEMENTS

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Technical review and input was received from the members of the Restoration Working Group of Project SHARE:

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