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**ASSESSMENT OF SUCCESS BIOSTABILIZATION TECHNIQUES ON SELECTED
WATERCROSSINGS IN ALBERTA**

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ABSTRACT

Since the early 1980's TransCanada PipeLines Ltd. (TransCanada) has employed a number of stream bank stabilization measures in an effort to minimize the loss of fish habitat and to reduce the risk of long term erosion and sedimentation. Traditional stream crossing stabilization involved the re-contouring of streambanks to a stable slope (generally 2:1) and then lining the banks with rock armour and seeding. TransCanada began using alternate techniques, primarily log-walls in 1981. Since 1981 TransCanada has evolved the use stream bank stabilization techniques to include bio-stabilization techniques such as live log-walls, fascines, live staking, and brush layering in combination with more traditional structures.

In 2004, TransCanada initiated a two year project to assess the success of biostabilization techniques used on a number of watercrossing throughout the its' Alberta System. A total of 22 stream crossings were assessed in 2004 and 24 in 2005. Sites assessed were located the foothills and boreal forest areas of Alberta. In the majority of cases the biostabilization methods utilized were still intact and

functioning as planned by providing stable streambanks and fish habitat. Several factors appeared to be influencing the value of the measures employed. Cattle grazing on sites where fencing did not exclude cattle from the crossing site resulted in destruction or reduced value of the measures employed. Uncontrolled All Terrain Vehicle activity resulted in a reduced value of the measure employed. Implementation of biostabilization techniques in the winter months (frozen ground conditions) created challenges in implementation of biostabilization measures resulting in less favorable results compared to other sites constructed in early and late fall. Seeding to control surface erosion also appeared to affect overall success of woody vegetation used as part of the biostabilization techniques.

Biostabilization techniques employed by TransCanada have been effective in stabilizing watercrossings and providing fish habitat. In designing biostabilization systems for watercrossings consideration should be given to overall stabilization objectives, stream flow information, fish and fish habitat values, and likelihood of success given the geographic region, timing of construction, and surrounding land-use pressures.