Environment Canada

Environnement Canada

Environmental Protection Service

Service de la protection de l'environnement

INSPECTION REPORT

on the

LIARD HIGHWAY

MILE 0.0 to MILE 21.5

by

S. Hartwell

Environmental Protection Service

Yellowknife, N.W.T.

October, 1978

INTRODUCTION

On the morning of July 1, 1978, the initial 21.5 miles of the Liard Highway were driven by L. Harding, T. Dafoe and S. Hartwell, of the Environmental Protection Service, Yellowknife. This section, completed in 1971, comprises the stretch from the Mackenzie Highway turnoff (mile 0.0) to the Poplar River crossing. Although the adequacy of the culverts at Poplar River has been the major point of contention on this section of the highway, there has also been concern that general drainage and erosion control structures may not be up to the standards required for the remainder of the highway, currently under construction. Accordingly, these structures were the main focus of attention during the inspection.

OBSERVATIONS

It was immediately obvious that the drainage and erosion control structures were in poor repair, and in some cases ill-planned. Although adequate drainage ditches are present parallel to the highway (plate), and energy dissipating ditch blocks have been constructed, stilling basins are in some cases clogged with silt, causing pooling and flooding of water. Ditch blocks and culvert outlets are often not protected with lining or rip-rap, so that erosion and/or clogging of culvert outlets is also a problem.

Cross drainage structures, in the form of offtake berms and ditches (plates 2, 3) are frequently present to direct water flow through culverts. While the culverts themselves appear to have been well placed, the offtake

berms and ditches are sometimes incorrectly positioned in relation to the culverts. This has resulted in heavy sedimentation in the immediate vicinity of the culvert, and subsequent clogging of the intake (plate 4), a condition aggravated by lack of rip-rap to protect the intake. The problem has been recognized, but repairs appear to have been limited to a cursory shovelling out of the area immediately adjacent to the culvert, rather than full scale dredging, or relocation of the offtake ditch.

The Poplar River culverts, contentious since their initial design, obviously obstruct upstream fish movement with their rapid water flow and elevated outlets (plate 5). A new factor to emerge, however, was the presence of a stone weir on the upstream side of the culverts (plate 6). This weir, apparently built as a temporary measure at some time in the past, stretches over two-thirds of the width of the Poplar River, and does not appear to be in current use. It is an obvious obstruction to fish movement.

RECOMMENDATIONS

The rock weir upstream of the Poplar River crossing should be removed as soon as possible; such obstruction of fish passage is contrary to sections 24 and 27 of the Fisheries Act. Parties obtaining water authorizations for stream crossings under the Northern Inland Waters Act are normally required to remove <u>all</u> debris and temporary structures from the stream bed as soon as construction of the permanent crossing is complete. One would expect government departments to exhibit exemplary rather than recalcitrant behavior in such matters.

It is also recommended that DPW be urged to institute a program of maintenance and repair in order to upgrade the drainage and erosion control structures on this section of the highway to meet the standards proposed for the remainder of the road. In many cases, this will simply involve routine maintenance and restorative procedures, i.e. dredging of stilling basins; repair to ditch lining and rip-rap at culvert outlets following spring breakup; clearing of clogged culverts, etc. In other instances, errors in design and construction require correction.

Minor oversights such as failure to place rip-rap at culvert outlets or over ditch blocks should be easily handled during routine maintenance. More major errors (e.g. incorrect placement of offtake ditches) will require careful diagnosis and greater expenditures of time and money. As DPW currently has no funds scheduled for such a capital project, but is planning to upgrade drainage structures in 1981 (personal communication, R. Rollefson, DIAND), perhaps it will not be possible for them to complete these repairs until then. Prompting is nevertheless suggested, as a survey of necessary repair work could be conducted in the interim.

Plate 1: Drainage ditches parallel to Liard Highway

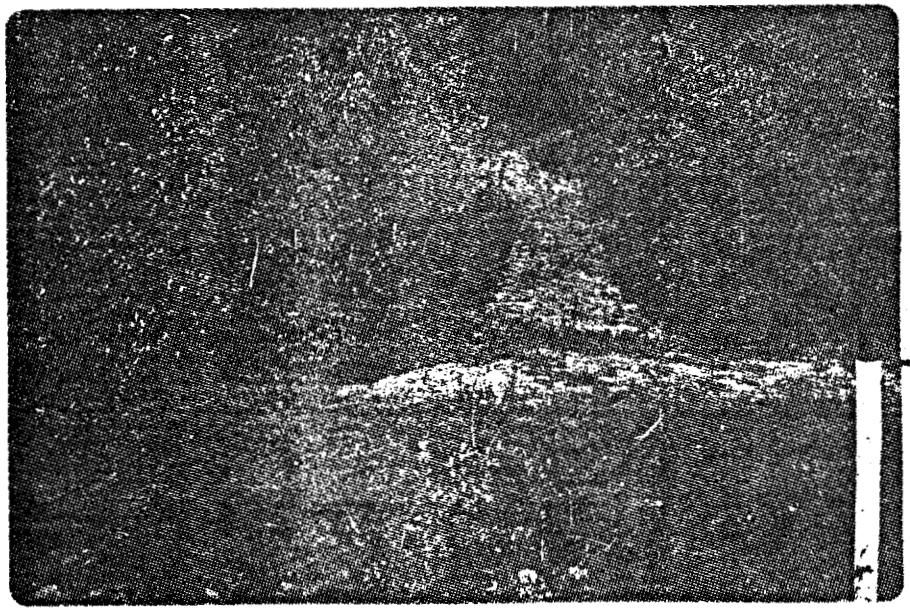


Plate 2: Offtake ditch. Note build-up of sediment in foreground, at Culvert outlet. Such heavy sedimentation may be due to improperly placed ditch blocks (plate 3).

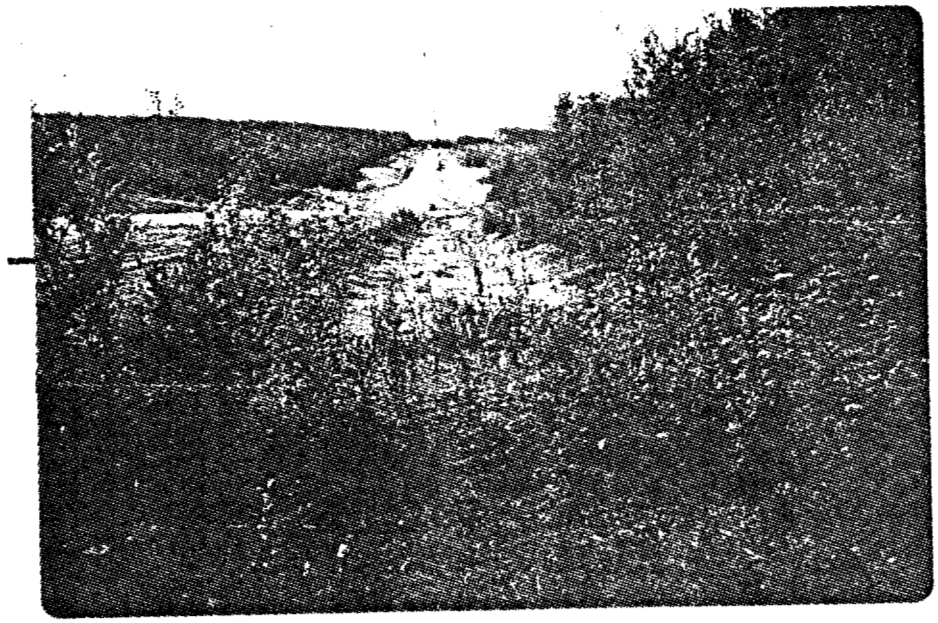
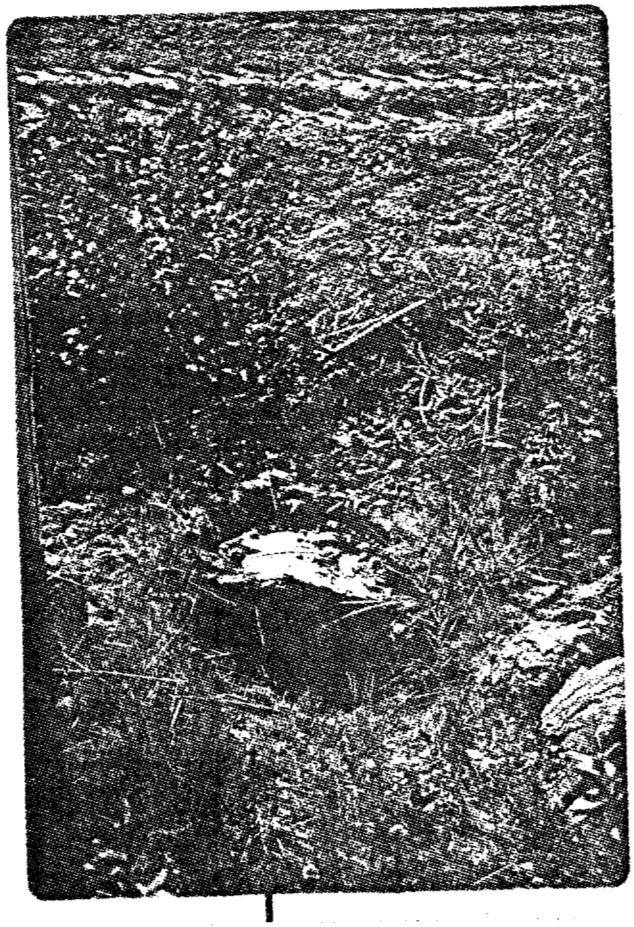


Plate 3: Ditch block to direct water into cross drainage culvert, and offtake ditch. This ditch block has apparently been placed incorrectly, resulting in clogging of the culvert (plate 4).

Plate 4: Clogged culvert. Cleaning has been perfunctory - relocation of ditch block and protection with rip-rap is necessary for a more permanent solution.



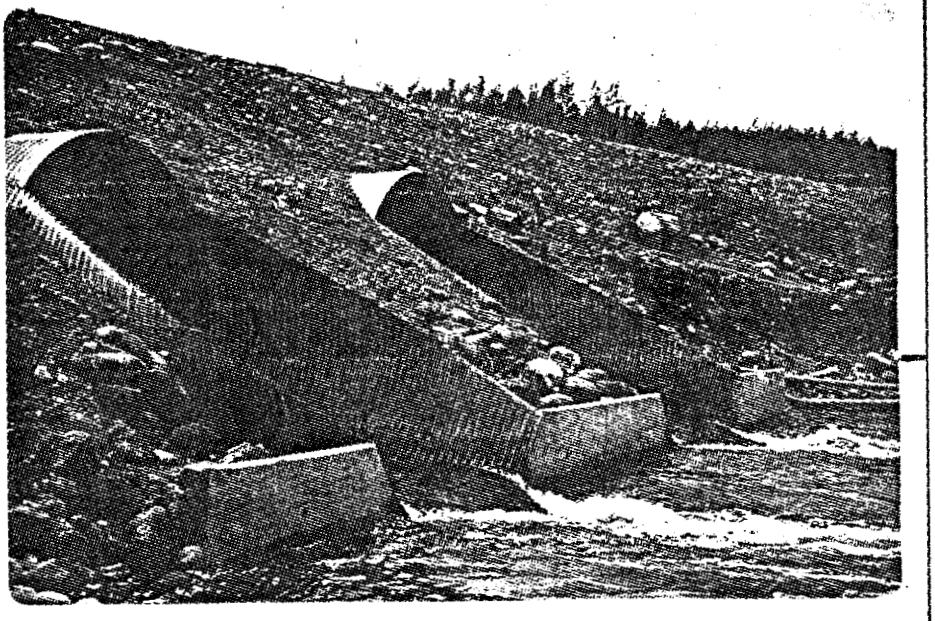


Plate 5: Poplar River culverts: rapid water flow and elevated outlets obstruct fish passage.

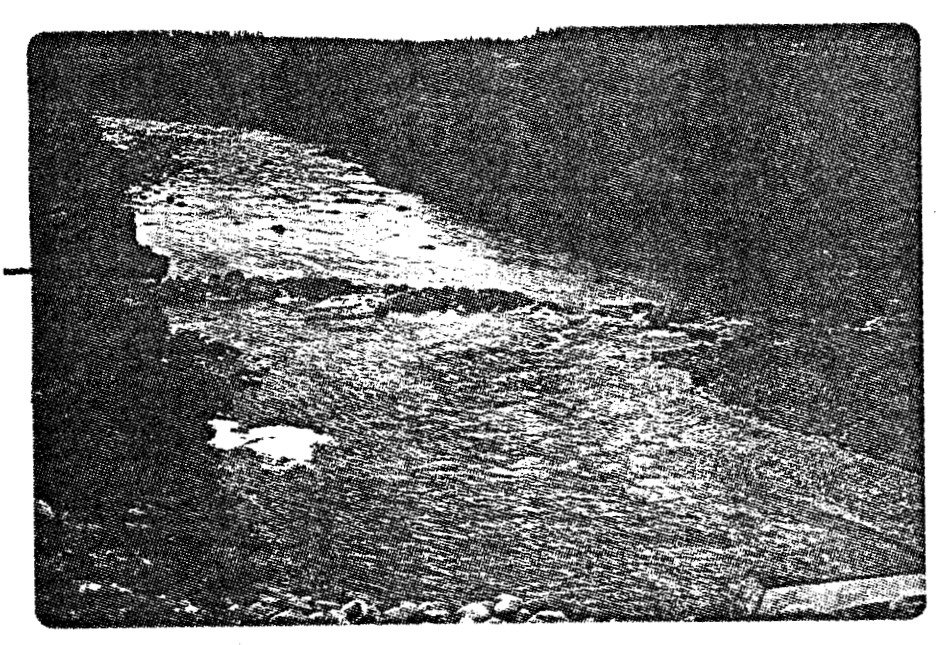


Plate 6: "Temporary" weir upstream of Poplar River crossing: more than two thirds of the channel is obstructed.

590726 I. Petrie

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December 11, 1978

Your file Votre référence

Our file Notre référence

A. E. Ganske
Regional Manager of Land Resources
Dept. of Indian Affairs
P.O. Box 1500
Yellowknife, N.W.T.

Dear ~~Mr.~~ Lee Ganske:

Attached is Ms. S. Hartwells' report on an inspection of the Laird Highway completed in July, 1978. Her observations and recommendations are provided for your information.

Yours truly,

Lee

Lee Harding

LH:bh

c.c. N. Tywoniuk
C. A. Lewis
I. Petrie
G. McKinnon