

FISHERIES HABITAT MITIGATION FOR THE
OLDMAN RIVER DAM PROJECT

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ABSTRACT

The Oldman River Dam is being constructed on the Oldman River approximately 10 kilometres northeast of the Town of Pincher Creek. Traditionally, 60 percent of the annual flow on the Oldman River occurs between mid-May and mid-July. As part of water management in the South Saskatchewan River Basin in southern Alberta, the Oldman River Reservoir will conserve this spring runoff to allow a more gradual release throughout the year to meet the needs of downstream municipal and agricultural users. The reservoir is scheduled to begin filling during the spring of 1991.

The government of Alberta has set an objective of "no net loss of recreational fishing opportunities as a result of the Oldman River Dam project". In May of 1988, a further commitment was made by the government to fund the fisheries mitigation plan to its completion, over an anticipated 10 year program.

Alberta Environment has developed a fisheries mitigation plan through ongoing consultation with Fish and Wildlife Division of Alberta Forestry, Lands and Wildlife, a Local Advisory Committee, and a Pincher Creek Municipal District Fish and Wildlife Subcommittee.

As part of the baseline studies for the fisheries mitigation plan, approximately 200 kilometres of river was surveyed above the damsite; the upstream study boundaries were the Livingstone River confluence on the Oldman North Fork River, Crowsnest Lake on the Crowsnest River, and the West Castle River confluence on the Castle River. Downstream of the damsite, the study area extended to the confluence of the Little Bow River, a distance of about 220 kilometres. Sampling of fish populations, mainly through an extensive electrofishing program, was carried out to determine sportfish species distributions, relative abundance, movements and habitat utilization within the study area. As well, a comprehensive habitat inventory data base was established upstream of the damsite within the study area in order to facilitate the quantification of habitat losses for the primary sportfish species (rainbow trout, brown trout, and mountain whitefish), and to identify potential reaches for habitat enhancement above reservoir full supply level (FSL). Habitat was classified according to fourteen discrete types, including variations of rapids, riffles, runs, pools and flats. Important or critical habitat was defined based on degree of use and availability within the study area.

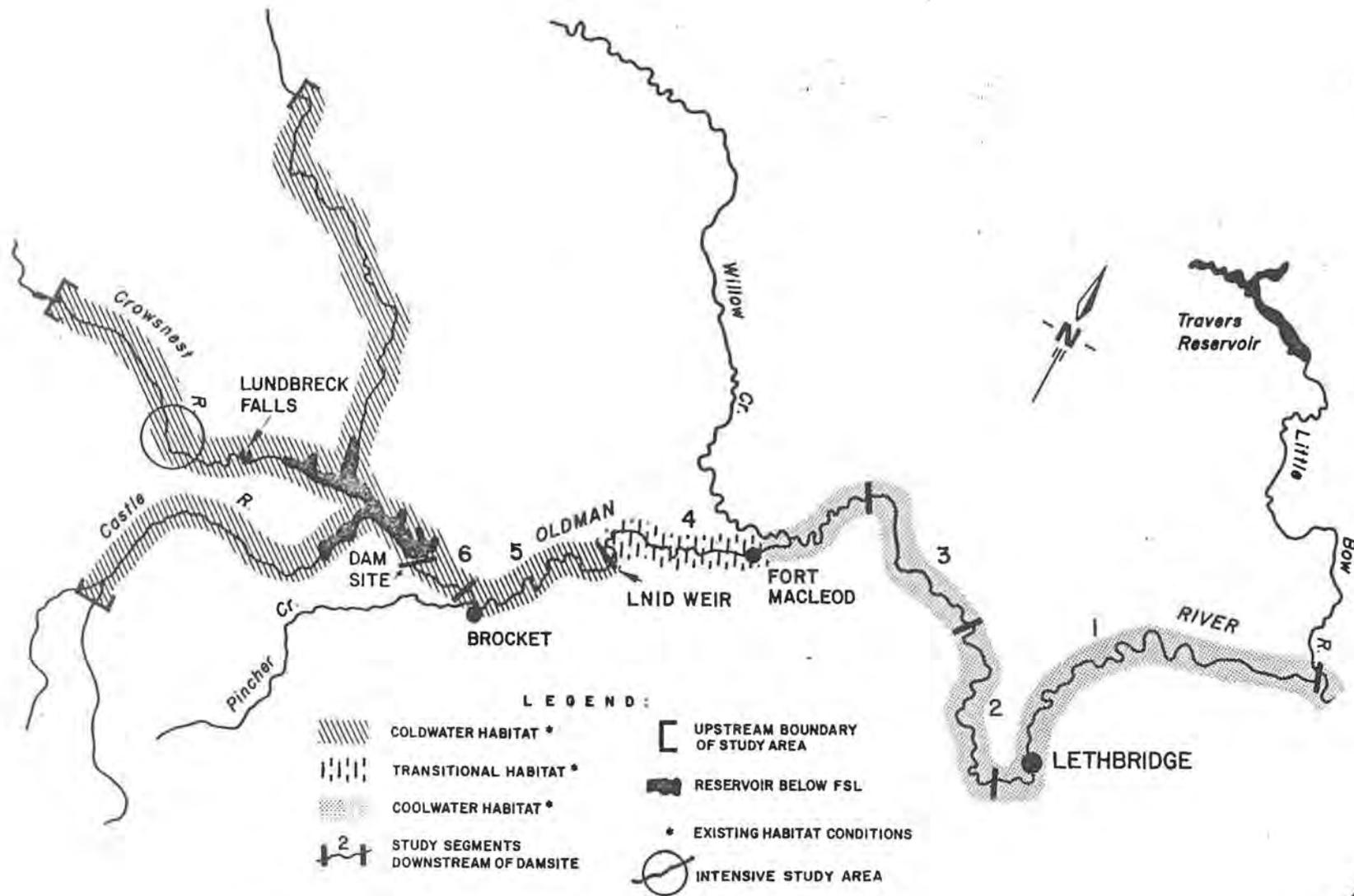
The primary assumption of the upstream mitigation strategy is that the "no net loss" objective means chiefly the replacement, above reservoir FSL, of the high quality riverine habitat which will be lost to flooding. This is accomplished by upgrading habitat of a lower quality to a higher quality through the installation of instream features such as boulder gardens, flow deflectors, rock weirs and pools, and overhanging cover.

Implementation of habitat enhancement projects is being carried out in a phased approach. An ongoing evaluation program is being conducted to monitor the effectiveness of habitat enhancement techniques from both fisheries (size and number of fish) and engineering (hydraulic performance, construction cost and maintenance requirements) perspectives. The results of these evaluations will facilitate the refinement of future habitat enhancement techniques.

Implementation of the "phased approach" to fisheries mitigation has already begun within an approximately 10 kilometre reach of the Crowsnest River between the towns of Blairmore and Burmis termed the Intensive Study Area. This area was chosen for habitat enhancement work because it has excellent river access, and a history of past disturbance by urban and mining activities. During September 1987, a pilot project was carried out just below the Town of Blairmore consisting of a series of boulder gardens, two weirs, and a flow deflector in association with a concrete overhang. During September 1988, three more habitat enhancement projects were carried out downstream of the 1987 works. These projects were comprised of a series of flow deflectors, boulder gardens, rock weirs and log-wall/overhanging platforms. The different types of habitat enhancement structures are currently undergoing fisheries and engineering evaluations. Preliminary fisheries evaluation results regarding the 1987 works indicate significant increases in numbers of catchable sized (greater than 25 cm length) trout and mountain whitefish. Further habitat enhancement projects for the Crowsnest River are scheduled for late summer/early fall of 1989, with possibly some work beginning during the early spring.

Downstream of the reservoir, regulated flows are expected to generally improve fisheries conditions by eliminating extreme low flow events and improving water quality during historically low flow periods. Fisheries mitigation measures are being planned to address limiting habitat for downstream fish populations. The reservoir itself is not expected to be productive for fisheries over the long term; however, stocking is being considered as a mitigation option. Alberta Fish and Wildlife Division have recommended against provision of fish passage at the dam in order to prevent the introduction and establishment of northern pike into the reservoir from the downstream river.

The phased approach of fisheries mitigation planning, implementation and evaluation will continue until the evaluation program produces results indicating the "no net loss" objective has been fully met.



- LEGEND:**
-  COLDWATER HABITAT *
 -  TRANSITIONAL HABITAT *
 -  COOLWATER HABITAT *
 -  STUDY SEGMENTS DOWNSTREAM OF DAMSITE
 -  UPSTREAM BOUNDARY OF STUDY AREA
 -  RESERVOIR BELOW FSL
 -  EXISTING HABITAT CONDITIONS
 -  INTENSIVE STUDY AREA



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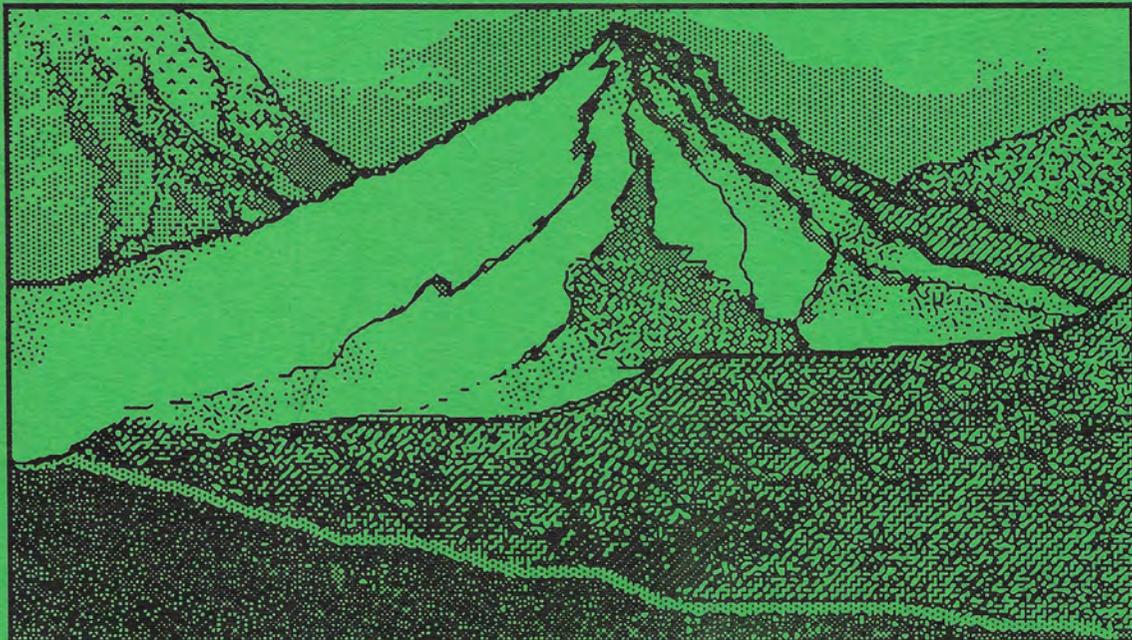
**OLDMAN RIVER DAM PROJECT
FISHERIES STUDY AREA**

Alberta Conservation & Reclamation Conference '88

**Proceedings of a Conference
jointly sponsored by**

the Alberta Chapters of the

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and the
Soil and Water Conservation Society**



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**Held September 22 and 23, 1988
at the Lodge at Kananaskis, Alberta**

C.B. Powter, compiler

1989

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