

EXECUTIVE SUMMARY
ENVIRONMENTAL SCREENING
OF THE PROPOSED WASKESIU
RIVER RIFFLE WEIR,
PRINCE ALBERT NATIONAL PARK

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SCOPE OF PROJECT

The proposed project is located in Prince Albert National Park (PANP) and involves the decommissioning of the existing Waskesiu River dam and the construction of a fixed crest weir downstream of the dam. The goals of this project are to obtain a more natural overflow outlet and to improve fish migration in the Waskesiu River, while still maintaining water levels in Waskesiu Lake that are similar to those provided by the existing dam operation. The purpose of the Environmental Screening is to determine the significance of the impacts of this project on the environment and how to mitigate and reduce these impacts.

Following consultations between Parks Canada, Fisheries and Oceans Canada (DFO), and recreational users, it was decided that it was more important to ensure fish passage than to return Waskesiu Lake to natural levels. Consequently, it was decided to leave the dam structure in place to accommodate the existing hiking trail and to construct a riffle weir downstream from the dam in a new location. Details of the design of the fixed crest riffle weir are presented in a separate document prepared by Water Resource Consultants Ltd. Construction of the fixed crest riffle weir is slated for the fall of 2005.

SITE DESCRIPTION

Hydrology

Historical data indicates that the average annual Waskesiu Lake inflow was 36,375 dam³. Evaporation from a large waterbody, like Waskesiu Lake, is an important factor in its hydrological performance. The net evaporation which is the gross evaporation minus precipitation ranges from -206 mm to 612 mm per year with an average of 184 mm.

At its normal level of 532.24 m, the lake has an area of 6,730 ha. The area increases or decreases about 28.5 ha for each decimetre of rise or fall in level. At its normal level it loses an average of 12,400 dam³ of water to net evaporation. That is about a third of the normal inflow. In high evaporation years this loss can rise to about 40,000 dam³ or more than the normal inflow. High evaporation years tend to be associated with low runoff years which tends to exaggerate drought impacts on the lake. In dry years, the inflow is insufficient to meet the evaporation loss and outflow only occurs if the lake is high and water is draining from storage. In extended drought periods when the storage is depleted the outflow drops to zero.

Vegetation and Wildlife

In order to characterize vegetation communities, document rare plants, and assess wildlife occurring, or potentially occurring in the study area, database searches and field surveys were completed. The objectives of these studies were to:

- develop a list of rare vascular plant and wildlife species of the Mid-boreal Upland Ecoregion;

- conduct a data search of rare vascular plant and wildlife reports within 25 km of the Waskesiu River dam; and
- conduct vegetation community, rare plant, and wildlife surveys of a 500 m stretch of the Waskesiu River, 300 m downstream and 200 m upstream of the dam location. The surveys were conducted in August 2004.

Rare Plant Species

In the vicinity of the project area, 24 rare vascular species have been reported. However, five rare plant species were found during the field survey that had not been previously reported within the 25 km search area and were subsequently added to bring the list up to 29 species.

In total, six rare species were recorded during the field surveys. These included marsh bellflower, cyperus-like sedge, white bog adder's-mouth orchid, porcupine sedge, American water lily, and Iowa golden saxifrage.

Vegetation Communities

The 500 m stretch of the Waskesiu River study area; 300 m downstream and 200 m upstream of the dam site, is colonized by many wetland species. Coniferous forest dominates and lines both sides of the river. In general, wetland (marsh) vegetation forms 3 to 8 m wide strips along the river, although in some areas emergent vegetation almost spans the river. In deeper water aquatic vegetation occurs. As one moves further away from the river, a small band of shrubs is followed by mature coniferous forest. A total of 212 vascular plant species were recorded during the survey.

Rare Wildlife Species

Thirty-four wildlife species are considered rare or sensitive within this ecoregion. This includes five mammals, one amphibian, and 28 bird species. Only one of these 34 species has been recorded within a 25 km radius of the study area, the trumpeter swan.

The field survey of the study area was conducted in August 2004. By this date it is post-breeding for the majority of wildlife species, most notably birds, but observations were noted, and 23 species were recorded. No rare or sensitive wildlife species were located during the survey.

Wildlife Communities

Although many wildlife species inhabit or migrate through the park, they may not occur in the project area. This includes grassland species as well as those less tolerant of human activity. Species such as red squirrel, white-tailed deer, elk, and many birds commonly occur in the area.

Of the 23 wildlife species recorded during the field survey, two species were noted utilizing a man-made structure. Bats, most likely little brown myotis, were using the road bridge across the river as a roosting site. The belted kingfisher was using the road bridge or foot bridge over the dam as a foraging perch.

Aquatic Assessment

A field survey was conducted in order to obtain more information on the aquatic biota and habitat in the Waskesiu River dam study area. This was completed in August 2004. The following information was obtained:

- fish community assessment; and
- aquatic habitat assessment.

In addition, limnological and river flow data were also obtained.

Fish Communities

The following table summarizes the fish captured during the survey:

Species	Total Number Captured
Juvenile northern pike	1
Juvenile white sucker	13
Brook stickleback	10
Blacknose shiner	4
Fathead minnow	87
Iowa darter	18

No rare or sensitive fish species were located during the survey.

Aquatic Habitat

A detailed assessment of the suitability of the Waskesiu River dam study area for fish habitat, particularly spawning habitat, was completed during the field survey. The assessment area extended approximately 500 m; 300 m downstream and 200 m upstream of the dam.

In summary, the entire study, with the exception of the river section under the bridge, contained potential spawning habitat for northern pike due to the abundance of flooded vegetation, which is their preferred spawning habitat. The most suitable spawning habitat for walleye, lake whitefish, white sucker, and longnose sucker was located in the rocky riffle area approximately 100 m downstream of the dam site. The actual utilization of potential fish spawning habitat in the study area is not known. Fish spawning studies have never been conducted in the Waskesiu River.

Fall spawning fish species known to occur in both Waskesiu Lake and Montreal Lake include lake whitefish and cisco. However, it is considered unlikely that fish will be using the project area for spawning during the slated period of construction in September/October.

Cultural Features

A review of the provincial archaeological database shows that there are 230 previously recorded heritage resources in PANP. Five of these sites are located in the vicinity of the proposed Waskesiu River weir project.

A field survey was conducted in August 2004 to locate potential heritage resource sites within the study area. The area that was surveyed extended approximately 300 m downstream from the Waskesiu River dam, 200 m upstream of the dam, and up to 40 m back from either side of the river.

There were no new heritage resources encountered during the investigation of the proposed Waskesiu River study area. The shovel testing resulted in the relocation of two previously recorded sites.

PROJECT/ENVIRONMENT INTERACTIONS

Vegetation

The location where construction equipment would need to access the river and dam site is already a mowed lawn area, and is dominated by species such as Kentucky blue grass, dandelion, and clovers. Tree removal will not be necessary to accommodate construction. Between the pathway and the river, clearing and grubbing will be required to provide access to the construction site. The native grass, vegetation, and topsoil will be stockpiled and used in the restoration of the site.

Construction of the fixed crest weir will be designed to minimize any direct impacts to aquatic vegetation during the construction process, however, it is noted that some aquatic vegetation will be lost. It is anticipated that disturbed aquatic vegetation would re-establish, contingent on habitat suitability. Since some habitat alteration will take place, a shift in species composition and densities will likely occur. Lower plant densities are expected in the created rocky habitat. Given that current variations in water flow will be maintained upon the removal of the dam, no indirect effects on the native vegetation upstream and downstream of the dam site are anticipated.

Although six rare plant species were identified during the field survey, four species were found to be abundant in the study area. The American water lily was only located in one area, but this was located approximately 200 m downstream of the dam. Therefore, it will not be impacted by construction activities. White bog adder's-mouth orchid was only located in two sites. Although these sites are outside of the area that will be directly impacted by construction activities, fences will be placed around the orchids to ensure that they are not disturbed.

Wildlife

Wildlife already cope with the seasonal and daily cadences of human activities in the study area. They are not expected to show any additional behavioural modifications to cope with changes from the dam to weir structure, except during the period of construction, which will cause a temporary increase in noise and activity levels.

As the study area is in the boreal region, it has limited capability for waterfowl use and production. Many summer residents or migrants avoid areas of human activity if sensitive to noise and disturbance. It is not anticipated that this development will have a significant affect on the bird species that utilize the area. Winter residents will not be affected by the project.

As previously indicated, the area where construction equipment would access the river and dam site is already a mowed lawn area and no trees require removal. Therefore, quality nesting, breeding, or foraging habitat for wildlife species in this area will not be impacted. Construction will be restricted to the post breeding season to minimize any potential stresses or impacts to wildlife.

Fish and Fish Habitat

The addition of the fixed crest riffle weir will alter fish habitat in the study area as well as open up the river to fish passage and this, in turn, may change fish species composition and distribution in the study area. One of the benefits of removing the existing dam is to improve fish passage between Waskesiu Lake and Montreal Lake. In its place, a series of pools and riffles will be constructed to allow fish to move in short bursts up several steps. Due to the similarities in fish species assemblages in Montreal Lake and Waskesiu Lake, no significant impacts are anticipated in the event that a new fish species is introduced into one of the lakes.

The aquatic habitat assessment conducted in the study area found that riffle habitat was not abundant in the immediate study area. The addition of riffle areas will act to improve fish habitat, particularly spawning habitat for species that utilize rocky areas such as walleye, suckers, and numerous small-bodied fish species. Additionally, improved access by fish to the Waskesiu River will allow the potential utilization of previously inaccessible habitats for spawning, rearing, and overwintering.

Since the study area already has a high degree of accessibility to the public through the vehicle bridge, pedestrian bridge, and walking paths, it is not expected that this project will increase fishing pressure in the river.

Fish habitat could be temporarily disturbed by the addition of suspended solids to the river during construction or the accidental release of contaminants such as fuels. These impacts

will be appropriately mitigated with sediment control structures and proper construction practices.

Cultural Features

There were no new heritage resources discovered during the field investigation. However, two previously recorded sites were relocated. One site is located approximately 85 m downstream from the washrooms and day-use picnic area along the Waskesiu River Trail. If construction and vehicle traffic is confined to the edge of the river (along the walking trail towards the river) then this site will not be impacted. The second site is located on a remnant of a well-defined ridge immediately upstream from the bridge that crosses over the Waskesiu River. Since this site is on the north side of the river upstream from the area where the riffle weir and pools are to be constructed, it will not be impacted by the proposed project.

Socio-economic Impacts

Several options were considered by Parks Canada including repair of the existing dam, replacement with another structure, or returning the Waskesiu River to unregulated flow. Since Parks Canada decided to manage Waskesiu Lake at a water level approximating that of the existing dam operation on the Waskesiu River, the proposed project will not have impacts on the recreation activities on Waskesiu Lake and the Kingsmere River. This is particularly important for boating activities and the use of the Marina on Waskesiu Lake.

The dam site on the Waskesiu River currently prevents passage by crafts between Waskesiu Lake and Montreal Lake. By removing this structure, there is the potential for recreational use of the river if the water levels are sufficiently high.

FOLLOW-UP RECOMMENDATIONS

It is recommended that follow-up environmental surveys be conducted at the site subsequent to the construction of the fixed crest riffle weir. The purpose would be to document changes to aquatic habitat and to determine if fish are utilizing the newly constructed area. It is important to establish under field conditions that fish are able to migrate through the series of riffles and pools. The project may require maintenance and adjustment to improve the performance of the riffles and pools. In addition, the surveys would ensure that there were no long-term impacts to wildlife or vegetation as a result of the construction activities.

PUBLIC COMMENTS AND INTERIM PLANS

When the Parks Canada Agency was evaluating options for the Waskesiu River dam site, two public meetings were held in the park on August 19th, 2003 to present the initial hydrologic and fish information and to discuss the potential options. The public expressed concerns over the level of Waskesiu Lake impacting their boat access and their ability to boat up the Kingsmere River.

Consultation between Parks Canada, DFO, and the recreational users in 2004 resulted in the decision that returning the lake to its natural level was not as critical as ensuring that fish migration was not obstructed. With the option that the Parks Canada Agency chose to pursue (i.e., construction of the fixed crest weir), the water level in Waskesiu Lake will approximate that of the existing dam operation. Therefore, the proposed project addresses the expressed concerns from the public.

In the interim until December 31st, 2004, Parks Canada, in consultation with DFO, plans to increase the water level in Waskesiu Lake by raising the stoplog elevation in one bay of the Waskesiu River dam. The goal of this operation is to increase the water level in Waskesiu Lake, while maintaining sufficient downstream flow in the Waskesiu River for fish and other aquatic species.

The public will have an opportunity to express any concerns they have over this proposed project well in advance of the tentative construction date of September/October 2005.

CONCLUSIONS

The impacts from this project are expected to be minimal and mitigatable. The project will result in a physical alteration to Waskesiu River, however, this should have a positive effect on the environment by improving fish passage and providing additional riffle zones for fish habitat. Negative impacts to the area are expected to be temporary and exist only during the construction period. These could include: siltation of the water; disturbance to fish, vegetation, wildlife, and visitors in the area; and the addition of pollutants from construction. There are no predicted impacts to heritage resource sites in the area. The only long-term potential impact from this project is possible disruption to the shoreline and infrastructure of Waskesiu Lake during future low and high water periods since the water level will be less regulated since the dam is being decommissioned. However, one of the objectives of the project is to restore natural fluctuations in water levels and the riffle weir is designed to, a certain degree, promote such effects. After construction activities, follow-up surveys are recommended to ensure that the area was not negatively disturbed during construction and that the riffle weir is effective in allowing fish movement.