Iqaluit Water Licence Renewal

Fisheries and Oceans Canada
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Fisheries Protection Program (FPP)

- A national program (previously the Habitat Management Program
- Anyone proposing works, undertakings, or activities in or around water may be in contact with us
- The Program results from the *Fisheries Act* prohibition against causing serious harm to fish that are part of or support a commercial, recreational, or Aboriginal fishery

Serious Harm to Fish

- The death of fish
- The permanent alteration of fish habitat
- The destruction of fish habitat
- Objective is to avoid, mitigate, and, if necessary, offset serious harm

Organizational Structure

- We have shifted from individual office review of all types of projects to specialized units.
- New Units
  - Triage (in Burlington)
  - Mining and Oil and Gas (in Edmonton and Yellowknife)
  - Hydro-electric and Flows (in Winnipeg)
  - Linear Projects (in Regina)
  - Marine and Coastal (in Burlington

Organizational Structure

- Triage
  - Responsible for:
    - Receiving all FPP requests
    - Making sure regional decision are consistent with national direction.
    - Initial review of all projects.
    - Sending those file likely to cause Serious Harm to the appropriate review unit.

How it Works

- Contacting DFO (one-window approach)
  - http://www.dfo-mpo.gc.ca/pnw-ppe/index-eng.html
    - Our website has general information and helps proponents self-assess their proposed projects
  - FisheriesProtection@dfo-mpo.gc.ca
  - 1-855-852-8320
    - Proposed works, undertakings, or activities–or concerns in the Central and Arctic Region should be sent here – this is the 'triage' group.

Outcomes

- A proponent may determine from the website that they are unlikely to cause serious harm and do not require a review by FPP or they may send a project for review to Fisheries Protection) to find out
- Triage may provide advice directly e.g., the proposed project is not likely to cause serious harm if measures to avoid and mitigate are followed
- If sent to a regulatory review unit they might:
  - Provide advice about how to avoid and mitigate serious harm for this particular project (called a letter of advice)
  - Notify the proponent that there will likely be serious harm that requires Authorization under the *Fisheries Act* – an application is then required and regulated timelines come into effect (60 and 90 days)

Authorization

- Requires an application with information to be provided according to a regulation
- DFO has 60 days to see if the application is complete – if not – the 60 days restarts once additional information is provided
- DFO then has 90 days to consider if it will authorize the project – the process can be stopped e.g., for aboriginal consultation

New vs Existing Facilities

- New facilities (e.g., taking water from the Apex River) are often what we think of
- However, existing facilities can be of interest, particularly e.g., in situations like the Iqaluit Water Licence Renewal.
  - Our program considers existing facilities from the point of view of ongoing serious harm that may be a problem when it 'comes to light' – death of fish for example
  - The original 'footprint' is not typically a concern
- Whether a project is new or existing, the process is the same – something is proposed or there is a concern and serious harm is considered

Iqaluit Water Licence Renewal

- DFO potential concerns are for
  - Lake Geraldine
  - The stream flowing out of Lake Geraldine
  - The Apex River

Lake Geraldine

- Are there fish in Lake Geraldine that require *Fisheries Act* protection?
  - Will Lake Geraldine be drawn down to lower than historic levels due to increased Iqaluit water requirements?
  - What will happen to Lake Geraldine if Apex River water is diverted into it?
    - Would fish (e.g., fish eggs) get into the lake?
    - Would the lake levels be the same, or otherwise sufficient to protect fish and fish habitat?
  - Is, or will, Lake Geraldine, for fish, be what people in and around Iqaluit want?

Lake Geraldine's outflow stream

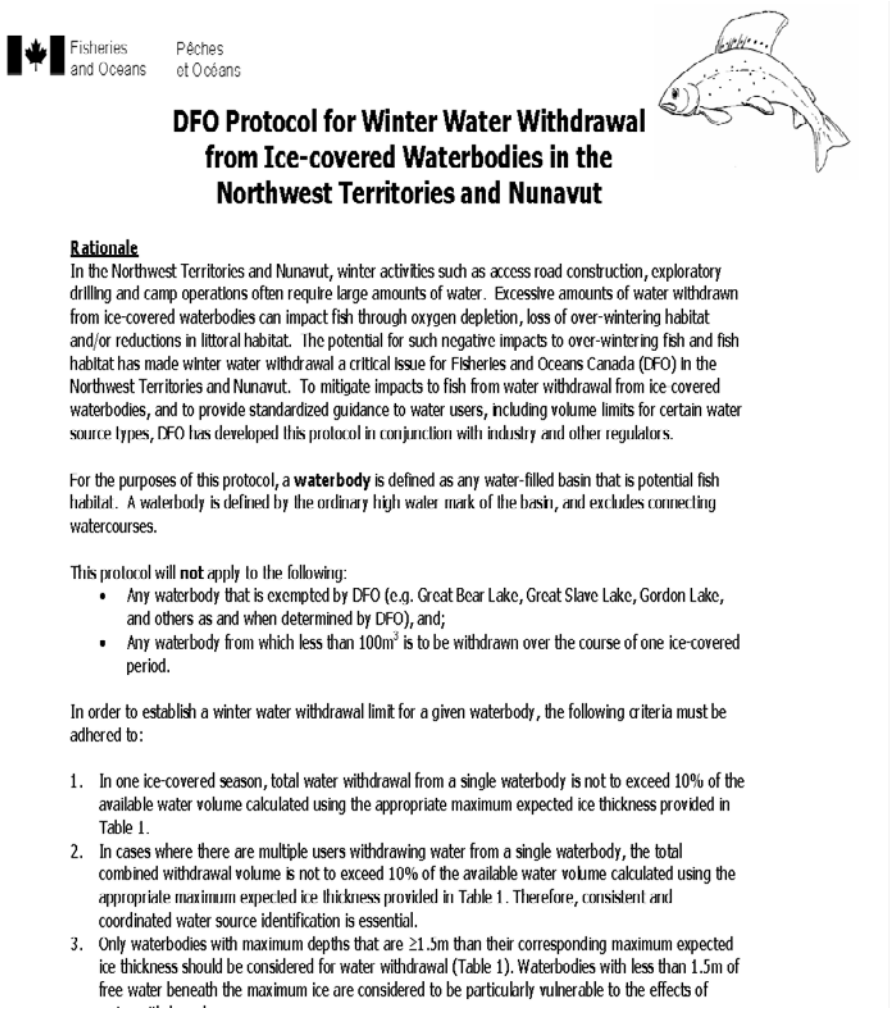
- Because Lake Geraldine is dammed, are the flows in the outlet stream 'ok' – that is - what people who live in and around Iqaluit want?
- With increased water use will outlet stream flows be 'ok?'
- If the Apex River water is diverted into Lake Geraldine, will outlet stream flows be 'ok?'

Apex River

- Are there fish in the Apex River that we should be concerned about if water is taken out of it?
  - If Arctic Char are only known from the mouth of the river are they there because fresh-water mixes the right way with ocean water – so they need it to be there?
  - How much water has to be in the Apex River, or flow out of it, to maintain any value it has for fish and fish habitat?

Advice to Protect Lakes

- DFO protocol for winter water withdrawal in the NWT and Nunavut
  - Only a maximum of 10% of the under ice water volume should be taken to protect fish and fish habitat



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DFO Protocol for Winter Water Withdrawal from Ice-covered Waterbodies in the Northwest Territories and Nunavut

Rationale

In the Northwest Territories and Nunavut, winter activities such as access road construction, exploratory drilling and camp operations often require large amounts of water. Excessive amounts of water withdrawn from ice-covered waterbodies can impact fish through oxygen depletion, loss of over-wintering habitat and/or reductions in littoral habitat. The potential for such negative impacts to over-wintering fish and fish habitat has made winter water withdrawal a critical issue for Fisheries and Oceans Canada (DFO) in the Northwest Territories and Nunavut. To mitigate impacts to fish from water withdrawal from ice covered waterbodies, and to provide standardized guidance to water users, including volume limits for certain water source types, DFO has developed this protocol in conjunction with industry and other regulators.

For the purposes of this protocol, a **waterbody** is defined as any water-filled basin that is potential fish habitat. A waterbody is defined by the ordinary high water mark of the basin, and excludes connecting watercourses.

This protocol will **not** apply to the following:

- Any waterbody that is exempted by DFO (e.g. Great Bear Lake, Great Slave Lake, Gordon Lake, and others as and when determined by DFO), and;
- Any waterbody from which less than $100m^3$ is to be withdrawn over the course of one ice-covered period.

In order to establish a winter water withdrawal limit for a given waterbody, the following criteria must be adhered to:

1. In one ice-covered season, total water withdrawal from a single waterbody is not to exceed 10% of the available water volume calculated using the appropriate maximum expected ice thickness provided in Table 1.
2. In cases where there are multiple users withdrawing water from a single waterbody, the total combined withdrawal volume is not to exceed 10% of the available water volume calculated using the appropriate maximum expected ice thickness provided in Table 1. Therefore, consistent and coordinated water source identification is essential.
3. Only waterbodies with maximum depths that are ≥1.5m than their corresponding maximum expected ice thickness should be considered for water withdrawal (Table 1). Waterbodies with less than 1.5m of free water beneath the maximum ice are considered to be particularly vulnerable to the effects of

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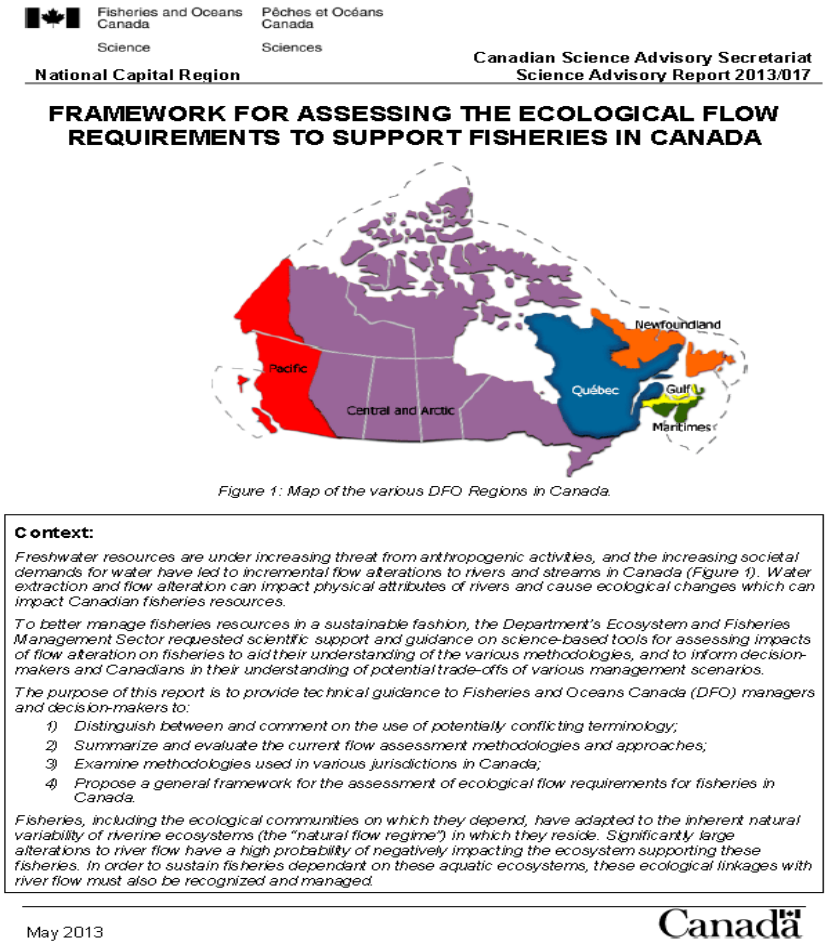
Advice to Protect Streams

- DFO (Science) advice for environmentally protective stream flows:
  - +/- 10 % of instantaneous flow – only adjust the flow by up to this much to protect fish and fish habitat
  - 30% of Mean Annual Discharge (MAD) 'floor' –don't take water if the natural flow is this low
- Use other recognized methods, when the low risk flows can't be achieved, to see what the effects might be



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Canadian Science Advisory Secretariat
Science Advisory Report 2013/017

FRAMEWORK FOR ASSESSING THE ECOLOGICAL FLOW REQUIREMENTS TO SUPPORT FISHERIES IN CANADA

Figure 1: Map of the various DFO Regions in Canada.

Context:

Freshwater resources are under increasing threat from anthropogenic activities, and the increasing societal demands for water have led to incremental flow alterations to rivers and streams in Canada (Figure 1). Water extraction and flow alteration can impact physical attributes of rivers and cause ecological changes which can impact Canadian fisheries resources.

To better manage fisheries resources in a sustainable fashion, the Department's Ecosystem and Fisheries Management Sector requested scientific support and guidance on science-based tools for assessing impacts of flow alteration on fisheries to aid their understanding of the various methodologies, and to inform decision-makers and Canadians in their understanding of potential trade-offs of various management scenarios.

The purpose of this report is to provide technical guidance to Fisheries and Oceans Canada (DFO) managers and decision-makers to:

1) *Distinguish between and comment on the use of potentially conflicting terminology;*
2) *Summarize and evaluate the current flow assessment methodologies and approaches;*
3) *Examine methodologies used in various jurisdictions in Canada;*
4) *Propose a general framework for the assessment of ecological flow requirements for fisheries in Canada.*

Fisheries, including the ecological communities on which they depend, have adapted to the inherent natural variability of riverine ecosystems (the "natural flow regime") in which they reside. Significantly large alterations to river flow have a high probability of negatively impacting the ecosystem supporting these fisheries. In order to sustain fisheries dependant on these aquatic ecosystems, these ecological linkages with river flow must also be recognized and managed.

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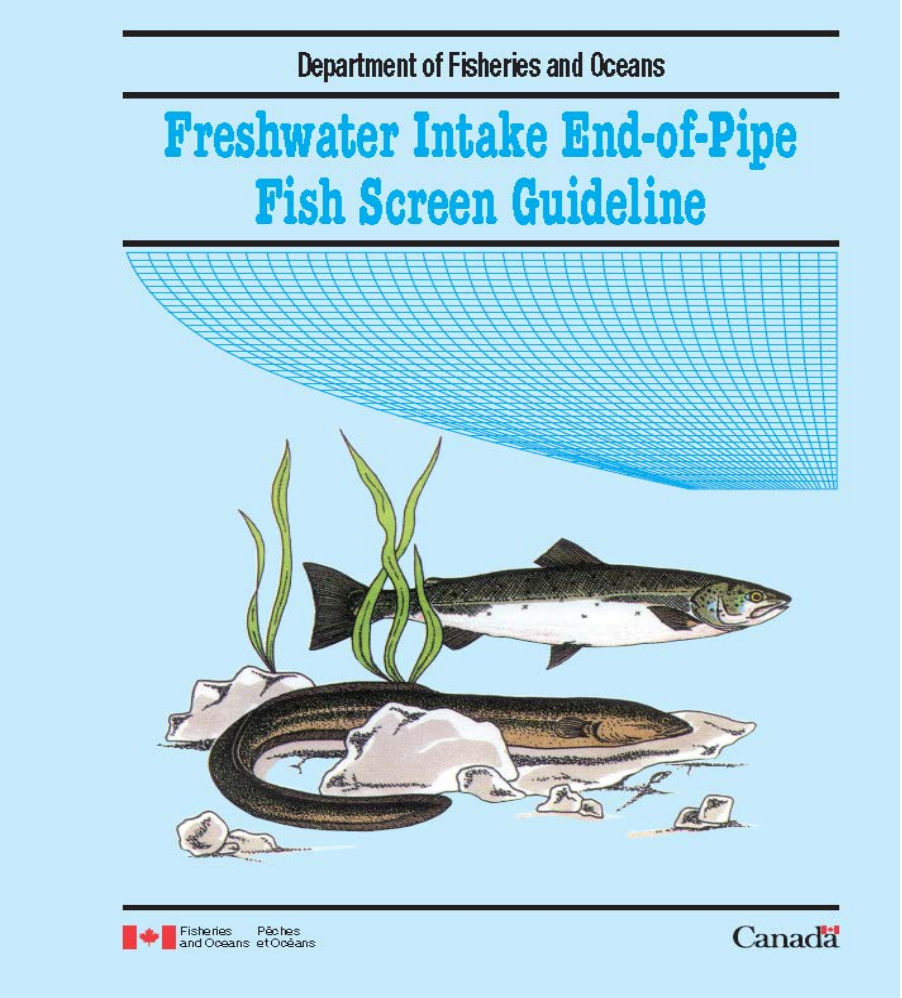
Fish Screens

- DFO Fish Screen guidelines
  - Help prevent fish from getting into intake pumps and being killed (entrainment)
  - Help prevent fish from being killed by getting stuck on the screens (impingement)
  - These could be required for an intake transferring water from the Apex River or for water taking from Lake Geraldine



Climate Change

- When lake levels and streamflows may be affected, consider how climate change may affect predictions
  - Traditionally, historic lake level or flow records have been used to predict the future
  - Predictions of what will happen in future should consider how good those predictions are given the best available local climate change effects information

Monitoring and Adaptive Management

- Lake level and stream flow monitoring stations should be established to ensure desirable lake levels and stream flows are maintained (for example only 10% of the flow is taken or flow is not taken when the flow is equal or less than 30% of mean annual discharge)
- If DFO agrees to ‘authorize’ lake level impacts or stream flow alterations that result in serious harm, monitoring what happens will help adjust requirements

Other

- DFO “Measures to Avoid Causing Harm to Fish and Fish Habitat”
  - DFO’s website has best management practices that, if implemented, avoid serious harm
  - These apply to all aspects of the work
  - They should be used in conjunction with DFO ‘Pathways of Effects’ for the common types of activities that occur in and around water – avoidance, mitigation, and, if required, offsetting can be used to ‘break’ a pathway to unwanted effects

Questions?