

From: on behalf of Panel Registry

Subject: FW: Transport Canada's Written Submission on the Prosperity Gold-Copper Mine Project - Topic-Specific Session

Attachments: Prosperity Mine - TC Submission (Topic Specific).pdf

From: Henderson, Michael [mailto:michael.henderson@tc.gc.ca]

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To: Prosperity Review [CEAA]

Cc: Sisler, Robert; Sullivan, Linda; Young, Lori; Mackie, John; Gillen, Ann; Chayer, Luc-Alexandre; McLean, Robyn [CEAA]; Edwards, Ann; Gowe, Bob

Subject: Transport Canada's Written Submission on the Prosperity Gold-Copper Mine Project - Topic-Specific Session

Transport Canada (TC) is pleased to provide the Department's written submission to the Review Panel for the Prosperity Gold-Copper Mine project for the 'Topic-Specific' Sessions to be held in Williams Lake, April 26-30, 2010.

Transport Canada has completed its technical analysis of the documentation on the project based on all information made available to March 25, 2010.

At the 'topic-specific' sessions during the week of April 26-30, 2010 of these panel hearings, John Mackie, TC Navigable Waters Protection Program, and Linda Sullivan, TC Environmental Services will make a presentation during the socio-economic portion on our technical findings in relation to the *Navigable Waters Protection Act* and the *Canadian Environmental Assessment Act*. Both presenters are from TC Pacific Regional Headquarters in Vancouver and are the technical experts in navigation and environmental issues, respectively. The presentation should last about 30 minutes.

Should you have any questions with regard to TC's written submission, please contact Linda Sullivan at linda.sullivan@tc.gc.ca [604-666-1741] or John Mackie at john.mackie@tc.gc.ca [604-775-8890]

Mimi Sukhdeo
A/Regional Director General
Pacific Region
Transport Canada
800 Burrard Street / 800, Rue Burrard, bureau 620
Vancouver, B.C. (C.-B.) V6Z 2J8



REVIEW OF THE ENVIRONMENTAL IMPACT STATEMENT AND ADDITIONAL DOCUMENTATION

(AS OF MARCH 25, 2010)

PROSPERITY GOLD-COPPER MINE

PROPOSED BY

TASEKO MINES LIMITED

TECHNICAL ANALYSIS SUBMITTED BY

TRANSPORT CANADA

Submitted on
APRIL 16, 2010





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1.0 TRANSPORT CANADA'S PARTICIPATION IN THE FEDERAL REVIEW PANEL PROCESS

Transport Canada is participating in the environmental assessment of the Prosperity Gold-Copper Mine Project as a Responsible Authority under the *Canadian Environmental Assessment Act* due to the requirement for regulatory review pursuant to the *Navigable Waters Protection Act*. Transport Canada's Written Submission is based on all information relevant to impacts on navigation made available before April 16, 2010 for the Prosperity Gold-Copper Mine project. It provides the department's further technical analysis of the environmental effects of the project on navigation as committed to in the March 12, 2010 Written Brief to the Review Panel. Transport Canada will be pleased to present this analysis during the topic specific session to be held the week of April 26 2010. To assist the reader in understanding the role of Transport Canada in the Prosperity Gold – Copper project, this submission will distinguish Transport Canada's dual role under the *Navigable Waters Protection Act* and the *Canadian Environmental Assessment Act*.

1.1 Description of Development Proposal

Transport Canada understands that Taseko Mines Limited is looking to develop and operate a gold-copper mine within a 35 km² parcel of provincial Crown land at Fish Lake (Teztan Biny), approximately 125 km south-west of Williams Lake, British Columbia. The project includes a conventional 70,000 tonnes/day open pit mine development with a 20 year operating life, a 125 km transmission line, a 2.8 km mine access road and ancillary on and off-site facilities.

Transport Canada focused its review on the elements of the project that interfere with or have the potential to interfere with navigation. Both Fish Lake, Little Fish Lake and lower Fish Creek at the mine site have been identified as navigable waterways. Interference to navigation on Fish Lake, Little Fish Lake and lower Fish Creek, in the vicinity of Fish Lake, will be permanent and will eliminate any future navigation and associated activities on these waterways. Taseko Mines Limited intends to dewater Fish Lake except for a 7.3ha area that will be used as a water collection and sedimentation pond. During the operation of the mine, Fish Lake will serve as a storage area for overburden, low-grade ore and non-acid generating waste rock. This storage area is expected to reach 60m in height and cover all of Fish Lake, except the 7.3ha pond. Diversion of clean water around the Project area will reduce water flows in lower Fish Creek by 65% during mine operation until year 44 of mine life (i.e. post closure). Off site construction of the transmission line crossings over Big Creek and the Fraser River also has the potential to interfere with navigation.

1.2 Review Panel's request for Transport Canada's expertise

In its February 4, 2010 letter, the Review Panel invited Transport Canada to attend the public hearings and requested that Transport Canada, based on its expertise in matters of navigation, provide an overview of its mandate, roles and responsibilities and its views on the following topics, where applicable:

- key effects of the Project on the proposed mine site and the surrounding environment;
- proposed mitigation and compensation measures;
- conclusions reached by the proponent regarding the significance of the effects;
- proposed monitoring and follow-up programs; and



- extent to which concerns raised by Transport Canada during its review of the proposed project have been addressed.

Transport Canada's March 12, 2010 Written Brief and presentation on March 24, 2010 to the Review Panel provided an outline of the department's roles and responsibilities under the *Navigable Waters Protection Act* and the *Canadian Environmental Assessment Act*. The Brief also offered an overview of Transport Canada's key findings, required mitigation measures (including risks), and a preliminary view on the significance of the effects of the project on navigation.

The Review Panel has indicated that the topic-specific sessions scheduled to begin on April 26, 2010 will provide an opportunity for Transport Canada to present to the Panel the results of the department's technical review of the potential effects of the proposed project, to discuss its findings and to ask questions of the proponent, Taseko Mines Limited.

The purpose of this topic-specific Written Submission is to provide additional analysis of the impacts of the project on socio-economics, particularly navigation, in the following areas of interest to Transport Canada:

- boating activities
- fishing activities
- recreation activities
- mitigation measures (Prosperity Lake and nearby lakes)

1.3 Transport Canada's Technical Review of the Environmental Impact Statement (EIS)

The Environmental Impact Statement (EIS) Guidelines required Taseko Mines Limited to:

- Identify all waterways and water bodies that will be directly affected by the proposed project and provide representative width, depth, gradient, flow and photographs of all potentially affected waterways.
- Identify the Project components that will affect waterways and water bodies and the anticipated direct and indirect effects on the waterways and water bodies.
- Provide information on current and/or historic usage of all waterways and water bodies that will be directly affected by the proposed Project development plan.

Taseko Mines Limited prepared Volume 6, Section 7 in the EIS to provide an assessment of the Project's effects on navigable waters and has met the above requirements in the EIS Guidelines.

Although the EIS Guidelines did not explicitly require Taseko Mines Limited to describe mitigation of impacts on navigation, the *Canadian Environmental Assessment Act* requires mitigation of any change in the environment that would impact on socio-economic conditions - in this case, navigation. In the EIS, Taseko Mines Limited did not specifically address mitigation of impacts of the Project on navigation.

Without effective mitigation for impacts on navigation, the Project will lead to significant adverse effects due to the total elimination of navigation in Fish Lake and portions of Fish Creek. Possible mitigations will be discussed later in this submission.



1.4 Summary of points raised in March 12, 2010 Written Brief

In its March 12, 2010 Written Brief to the Review Panel, Transport Canada noted that the Environmental Impact Statement prepared by Taseko Mines Limited does not describe mitigation for impacts on navigation at Fish Lake and lower Fish Creek.

Transport Canada indicated that the project, in addition to extinguishing boating, eliminates all fishing and recreation at the mine site. These activities are so closely tied to the enjoyment of navigation at Fish Lake and lower Fish Creek that any mitigation measures for navigation must take these into account. Assuming that Prosperity Lake could serve to mitigate interference on navigation, there is no design information that focuses on reducing or eliminating effects on navigation, including provision for a time lag until it is operational and access for public navigation opportunities during and post-closure of the mine operation.

Transport Canada and Taseko Mines Limited have had limited discussion of mitigation for impacts on navigation. At a minimum, Transport Canada expects Taseko to:

- create Prosperity Lake in a way that mitigates for the loss of navigation and associated activities in Fish Lake, Little Fish Lake, and
- develop additional or enhanced access to other navigable lakes in the area to mitigate the loss of Fish Lake and lower Fish Creek in the interim until access to Prosperity Lake is possible and it is functioning as predicted.

In the March 12, 2010 Written Brief, Transport Canada also noted that the project is not likely to lead to significant adverse environmental effects on navigation provided Taseko is willing and able to successfully mitigate interference to navigation as noted above. Transport Canada identified a number of risks associated with the above mitigation measures due to the need for these to operate in perpetuity without intervention. These risks include, but are not limited to, maintenance of water levels, prevention of erosion of lake banks, prevention of intrusion of groundwater or leachate from the tailings storage facility, and management of other environmental issues.

2.0 NAVIGATION

This part of the submission speaks to the detailed considerations that Navigable Waters Protection Program use in delivery of the *Navigable Waters Protection Act* (NWPA). In reading this document, the Review Panel will gain an understanding of the scope of the NWPA and how the provisions work to address Transport Canada's role and mandate. As well, for the Prosperity Gold – Copper Mine Project, section 2 of this document will describe the process of assessing the applicability of the NWPA, the ongoing navigation impact assessment and the mitigation that is being considered.

2.1 Navigable Waters Protection Program

The Navigable Waters Protection Program of Transport Canada is responsible for the protection of the public right to navigation and the protection of the environment through the administration of the *Navigable Waters Protection Act* (NWPA). Specifically, the Navigable Waters Protection Program:

- regulates any works built or placed in, on, over, under, through or across navigable water in Canada prior to construction of the work(s);
- removes obstructions to navigation including unauthorized works or other obstructions such as sunken or wrecked vessels;
- regulates the provision and maintenance of lights, markers, etc. required for safe navigation during and/or on completion of the construction of certain works;



2.2 Regulatory Framework

The NWPA is a federal law designed to protect the 'public right of navigation'. It ensures that works constructed in navigable waterways are reviewed and regulated to minimize the overall impact upon navigation. The NWPA includes provisions for the removal of unauthorized works or obstructions that render navigation more difficult or dangerous. The Navigable Waters Protection Program is guided by the NWPA and its regulations and is administered by the Minister of Transport, Infrastructure and Communities. Key principles that staff employ when delivering the NWPA reside in 'common law'. Some of these principles will be discussed later in this document.

Application of the NWPA is set out in 'application requirements' located in Annex 1

2.2.1 Review Process Under the *Navigable Waters Protection Act* (NWPA)

From the mid 1990s, the Prosperity Gold-Copper Mine project has been captured, on some level, pursuant to the regulatory provisions of the NWPA. Taseko has remained in contact with staff at Transport Canada from time to time to discuss elements of the project that have undergone refinement. This is an iterative process that continues through the environmental assessment phase and allows for departmental staff to remain current with the proposal. During the EA phase it is expected that elements of the project may be modified. At a point where the EA is concluded and the potential adverse environmental effects have been considered and mitigated successfully, Taseko and Navigable Waters Protection Program staff are then free to discuss the statutory requirements needed to complete the review under the NWPA.

2.2.1.1 Navigability

At the receipt of project information, an assessment of navigability of waterways within the project footprint is conducted by Navigable Waters Protection Program staff. This assessment would include a review of the physical characteristics of the subject waterway, (including initial field inspection). It should be noted an assessment of navigability for the purposes of the NWPA would only be conducted when the project information includes technical drawings of a 'work' in a waterway.

Application of the NWPA and navigability assessment is largely guided by some key principles of 'common law'. Navigable Waters Protection Program's administrative definition of navigability (noted in Transport Canada's general session presentation) captures these principles.

For a further understanding of navigability in common law terms, please see the 'Colman Principles' within Annex 2 at the end of this document.

2.2.1.2 Assessment of Navigability

As previously noted, Transport Canada staff will use a suite of tools to assess the navigability of waterways within a project footprint. These include, but are not limited to:

- Observing the physical characteristics of the subject waterways including flow and volume.
- Determining the level of public access to the subject waterways.
- Consultation with local residents, recreation / commercial groups, Chamber of Commerce and First Nations to determine if a waterway is used for navigation (local knowledge).
- If the waterway is not currently used for navigation purposes, then determining if the subject waterway was used historically or could be used.
- Reviewing officer experience with the subject waterways (personal knowledge).



- A review of publications available for the area such as Land Use Plan documents, nautical charts etc.
- A review of base line information supplied by the proponent.
- Anecdotal information from other sources.

Transport Canada's understanding of navigability of any given waterway is subject to change at any time, depending on circumstances. Any change would be as a result of new information being brought forward for Transport Canada's review.

2.2.1.3 Assessment of the impacts to Navigation, Prosperity Gold – Copper Mine

Once navigability is understood and it is determined that the waterways are indeed navigable for the purposes of the NWPA, the proposed placement of works and the activities associated with these works are assessed to determine the impacts to navigation. This assessment will then guide Navigable Waters Protection Program staff in determining the most appropriate provision of the NWPA that would apply to the project. In addition, this provides Navigable Waters Protection Program staff with an understanding of the impact to navigation.

For the Prosperity Gold-Copper Mine project, waterways within the footprint of the mine were considered. The waterways affected by the project that involve NWPA interest are; Fish Lake, Little Fish Lake, portions of lower Fish Creek, Big Creek and the Fraser River. All of the proposed physical elements (works) within the project footprint were reviewed where they may impact navigation on these waterways. The level of impact (or interference) to navigation was considered and guided Navigable Waters Protection Program staff in determining if the impacts are 'substantial' or 'other than substantial'.

Key elements of the project involve the placement of material in Fish Lake, Little Fish Lake and lower Fish Creek (dam and over burden / low grade ore). These elements are considered a 'substantial' interference to navigation. The transmission lines to be placed over Big Creek and the Fraser River are considered 'other than substantial' interference to navigation.

Lower Fish Creek

The Fish Creek watershed covers approximately 94km² and flows in a northerly direction to the Taseko River. It includes Fish Lake, Little Fish Lake and Wolftrap Lake as well as several smaller unnamed lakes, swamps and creeks. During spring freshet in April average flows in lower Fish Creek are about 1.67 m³/sec whereas for most of the year flows average 0.36 m³/sec.

Fish Lake

Taseko indicates that Fish Lake is located at an elevation of 1457m, is 2050m long and is 541m wide with a surface area of 111ha and an average depth of 4m (maximum depth of 13m). Fish Lake has one large island and four islets; there is a narrow gravel beach at the north end of the lake. Fish Lake has three continuous inflowing streams and seven ephemeral streams (i.e. flows during freshets). Lower Fish Creek is the only outlet stream.

Little Fish Lake

Taseko indicates that Little Fish Lake is located at an elevation of 1527m, is 560m long and is 118m wide with a surface area of 6.6ha and an average depth of 2m (maximum



depth of 4.4m). Little Fish Lake has three inflowing streams. Upper Fish Creek, the only outlet stream, is non-navigable. Therefore, there is no navigable connection between Little Fish Lake and Fish Lake.

Big Creek and the Fraser River

At the crossing sites for the 30-80m right of way transmission line, Big Creek is 20m wide and the Fraser River is 142m wide. The 125km transmission line will connect the mine site with the British Columbia Transmission Corporation grid near Dog Creek on the east side of the Fraser River. Table 7-1 (Volume 6, Section 7) provides the locations for the more than 125 minor stream crossings for the transmission line.

2.2.2 Navigational Use at the Mine Site

The number of recreational users ranged from 188 to 247 in 1995 and 1996, respectively; of the recreational users, roughly 80% were boaters, using hard hulled boats, inflatable craft, canoes, rafts and float tubes (i.e. belly boats).

“Aerial boat counts for the 2006 and 2007 summer seasons indicated Fish Lake to be one of the busier of the 32 lakes on the Chilcotin flight circuit, with regular, but low, use levels” (Volume 6, Appendix 5-E, page 5-88).

Only the portion of Fish Creek downstream of Fish Lake is navigable and, according to Taseko, *“there is occasional use of Fish Creek for kayaking.”* Fish Lake is currently used recreationally, largely during the months of July and August. Fish Lake is only accessible via a rough, unpaved road; there is no recreational boating access to Fish Lake via any navigable waterways due to an 8m falls on lower Fish Creek. Recreational boaters access the lake using the boat launch at the Fish Lake Forest Recreation Site.

2.2.3 Application of the NWPA

The provisions of the NWPA that will apply to this project are:

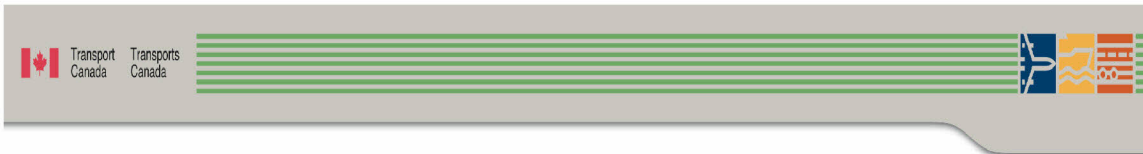
- Section 5(2) for the placement of the dam in Fish Creek,
- Section 5(3) for the placement of the transmission lines over Big Creek and the Fraser River,
- Section 23, Governor in Council exemption, for the placement of the mine overburden and waste rock in Fish Lake and Little Fish Lake

The wording of these provisions of the NWPA may be found in Annex 3. The reasons why these provisions would apply follow.

Section 5(2) of the NWPA speaks to works that are ‘substantial’ interferences to navigation. This provision allows the Minister to approve the interference under any conditions that are deemed appropriate. As may be seen in Taseko’s EIS, the entire navigable portion of lower Fish Creek will be impacted by placement of the dam, diversion of water around the mine site and filling Fish Lake with mine waste. The proposed placement of a dam is considered a ‘substantial’ interference.

Section 5(3) of the NWPA speaks to works that are ‘other than substantial’ interferences to navigation. This provision allows the Minister to approve works that are considered less of an interference to navigation. In the information supplied by Taseko, placement of the transmission lines over navigable waterways are considered ‘other than substantial’ interference.

This consideration may be seen as a subjective assessment of the interference to navigation. Experience with this type of work in the past has shown that if appropriate



design work is conducted and a full understanding of waterway user needs is known, the works can be easily mitigated.

Section 23, Part II of the NWPAs speaks to placement of material (not associated with a work) in a navigable waterway. This provision provides the Governor in Council with the authority to exempt in whole or in part the subject waterway from the 'prohibition' in section 22. As in section 5(2) and 5(3) of the NWPAs, an assessment of the impacts to navigation will be conducted; however, Navigable Waters Protection Program staff will need to follow a different process of review that includes submission of a Regulatory Impact Analysis Statement to the Treasury Board Secretariat of Canada.

2.2.4 Mitigation for Navigation interference

As already noted, all interferences to navigation were assessed. Future steps for Navigable Waters Protection Program staff would be to determine what mitigation would be most appropriate. In the case of the proposed transmission lines over Big Creek and the Fraser River, provided there is enough vertical clearance between the lowest part of the lines and the seasonal high water of the subject waterways, it is possible to mitigate these during the design phase of the project.

In the case of Fish Lake, Little Fish Lake and Fish Creek, the impacts to navigation are 'substantial' and mitigation for these impacts require Navigable Waters Protection Program staff to consider other possibilities.

Within the Prosperity Gold–Copper Mine EIS, Taseko puts forward creation of Prosperity Lake as compensation for the fisheries impacts of the project. As this project involves the destruction of waterways, it seems that the only available opportunity to mitigate the interference to navigation is to consider this. It should be noted that this form of navigation mitigation is unusual for Transport Canada and would not be the only form of mitigation that will be considered. In addition, the department will be looking to Taseko to propose other forms of mitigation to support their proposal such as, and not limited to:

- Enhanced access to the proposed Prosperity Lake.
- Enhanced access to other waterways within the area near the project.

2.2.5 Navigable Waters Protection Program Technical Analysis

Transport Canada's role in the review of the Prosperity Gold–Copper Mine project proposed by Taseko Mines Limited continues. It is the opinion of Navigable Waters Protection Program staff that elements of the current proposal would result in a substantial interference to the 'public right of navigation'. In an effort to balance the right of navigation with local economic need, it may be possible for Taseko and Navigable Waters Protection Program staff to agree upon a mitigation strategy that would be acceptable to the department.

As already noted, however, the full decision authority within the NWPAs does not reside with Transport Canada; it falls to the Governor in Council to decide if it is appropriate to allow placement of mine material in the lake. In its efforts to provide the Governor in Council with the information needed to make this decision, Transport Canada will add the report generated by the Review Panel.

3.0 ENVIRONMENTAL ASSESSMENT

Section 3 of this submission describes the analysis that Environmental Services staff conducted to identify the effects of any changes in the environment on socio-economic conditions – namely, navigation. The analysis below identifies how the features of the



mine design will extinguish navigation, describes what the outcomes of these actions are and offers suggestions for mitigating the effects. Environmental Services staff capitalized on ideas provided in the EIS to suggest technically and economically feasible means available to Taseko Mines Limited for mitigating impacts on navigation. At this point, Taseko Mines Limited and Transport Canada have not discussed how the impacts of the project on navigation might be mitigated.

3.1 Impacts on Fish Lake, Little Fish Lake and lower Fish Creek

Fish Lake will be drained, leaving a waterbody of 7.3ha in the deepest area close to the mine pit that will be used for water collection and a sedimentation pond during mine operations. Taseko Mines Limited has proposed to use Fish Lake as their preferred overburden¹ and non-acid generating waste rock storage² area, with the stockpile ultimately reaching 60m in height. According to the EIS (Vol. 3, Section 6.3.5) there will be 60 Mt of non-acid generating (non-PAG) overburden material and 102 Mt of non-PAG waste rock extracted from the mine pit during the 20 year mine life.

Little Fish Lake will be inundated by the tailings storage facility by year seven.

Lower Fish Creek will be permanently rendered non-navigable by the dam at the outlet of Fish Lake. Taseko states that since the Fish Creek watershed is only 1% of the Taseko River watershed reduction in flows during mine operation is unlikely to impact the Taseko River. The Fish Creek and Beece Creek watersheds will be reconfigured to capture water for the headpond and the man-made Prosperity Lake above the tailings storage facility. Taseko has stated that post closure water will eventually flow from the tailings storage facility into the mine pit until it is filled. Water will then overflow into lower Fish Creek, increasing flows by 21% over baseline due to the reconfigured watershed. This process may take up to 50 years. The navigable portion of lower Fish Creek will not regenerate after mine closure.

3.2 Impacts on Boating, Fishing and Recreation Activities

It is unusual to find a project where boating (i.e. navigation) is so strongly linked to fishing and recreation. That is, boating on Fish Lake is made desirable by the highly successful fishing opportunities there and made possible by the access to recreation facilities (i.e. campsite and boat launch) in this remote setting. The discussion that follows notes the impacts of the project on boating, fishing and recreation separately, though it is easy to make the connection between them.

3.2.1 Boating

Boating at the mine site is restricted to Fish Lake and the navigable portion of lower Fish Creek. Boaters go to Fish Lake to enjoy the remote location and pristine setting. Boating by itself (e.g. kayaking or canoeing) is currently not the primary purpose of navigation on these water bodies. Boating appears to be secondary to fishing as the majority of boaters go to Fish Lake to take advantage of the fishing opportunities. Access to Fish Lake is difficult due to its remote location and the rough road (4X4 vehicle required). Thus, only small, vessels would be used at Fish Lake.

First Nations indicated during the first week of public hearings that they access the small island in the middle of Fish Lake because it is considered to be a sacred place of healing. They also indicated that the island is a place where they gain their powers.

¹ overburden is defined as soils overlying the ore deposit and stripped prior to mining.

² waste rock is defined as non ore-bearing rock removed during the mining process.



There is a remnant pit house on the island that indicates these practices were undertaken in the past; however, the pit house is in disrepair suggesting that First Nations may not have used the island recently.

Due to the placement of mine waste in Fish Lake, the Project will eliminate all boating activities at Fish Lake and within the mine site area. As the island in the middle of Fish Lake will be covered over with mine waste, First Nations will no longer be able to access this spiritual site.

3.2.2 Fishing

The province of British Columbia's Environmental Assessment report (December 17, 2009) has established that Fish Lake is used recreationally for fishing activities, noting that of the 116 fishing lakes in the Cariboo-Chilcotin area, Fish Lake is ranked 55th in terms of recreational fishing effort. Although Fish Lake represents only about 3% of the total fishing effort in the Cariboo-Chilcotin lakes, most anglers rated the fishing experience at Fish Lake above other lakes in the Cariboo-Chilcotin due to the relative ease with which the fish were caught.

In Volume 6 of the EIS, section 5.3.4.4, page 5-37, Taseko states the following with regard to Fish Lake:

“Although Fish Lake is not a destination for the seasoned sports fisher, it does attract many return visitors. It is known for its high population of fish and the relative ease with which anglers are able to have a successful day. It is also distinctive for its high elevation setting and relatively difficult access (which helps keep fishing pressure low and angling success high).”

In the early 80s and 90s Fish Lake supported between 388 and 653 angler days, compared with an average of 904 angler days for other lakes in the Cariboo-Chilcotin area during the same time period. Anglers catch about 4100 to 4900 trout annually at Fish Lake. These rainbow trout are considered small (about 200-400g) but easy to catch. While Fish Lake provides an enjoyable fishing experience, there are no commercial guided fishing tenures operating there.

Placement of mine waste in Fish Lake and other mine activities will eliminate all sport fishing activities at Fish Lake and the mine site area. Sport fishing pressure in other Cariboo-Chilcotin lakes is expected to increase slightly due to the displaced fishers (increase of 0.4% of angler effort in other lakes).

3.2.3 Recreation

The Ministry of Forests maintains the Fish Lake Forest Recreation Site (i.e. campsite) located at the north end of Fish Lake. The campsite is 'rustic', having no running water (i.e. potable water), electrical hook-ups or sewage disposal. It has five graveled pads, pit privies, two picnic tables and a boat launching area. Generally speaking, camping takes place from early June until mid-October due to the access road being impassable until spring thaw. Not surprisingly, this timing coincides with boating and fishing activities at Fish Lake. Due to Fish Lake being remote, the recreation facilities are necessary to support the public engaging in fishing and boating activities at Fish Lake.

Construction of the mine will result in a permanent loss of the Fish Lake Forest Recreation Site due to the placement of mine waste in Fish Lake and the surrounding area. This will mean the loss of the boat launch ramp, camping sites and opportunities for overnight stays.



3.3 Mitigation Options for Impacts on Navigation

Options for mitigating impacts on navigation normally include specifying lighting, marking navigation hazards, providing portage routes, and so on at the site of interference. Due to the proposal by Taseko Mines Limited to extinguish navigation at Fish Lake and lower Fish Creek, the sites of interference, other mitigation options must be considered. The mitigation identified by Taseko Mines Limited in the EIS has not specifically targeted impacts on navigation. Transport Canada has identified a number of options that could be used for this purpose.

3.3.1 General Mitigation

Taseko indicates that displaced boating, fishing and recreation users at Fish Lake can take advantage of the many other Cariboo-Chilcotin lakes without adversely affecting existing users. In a December 4, 2009 letter to the Ministry of the Environment Taseko made a number of commitments with respect to fish and fish habitat, including establishing Fish Lake stock in at least one recipient lake and maintaining the genetic line in a hatchery. Taseko states in Volume 6, Section 5.3.6.4, page 5-52 that “the creation of new recreational amenities outside the mine area will replace the existing recreation site on Fish Lake.” In Volume 6, Section 5.3.6.4, page 5-53, Taseko says, “there is believed to be ample capacity at other recreation sites and parks in the LSA³. ... As long as the proposed mitigation strategies are implemented and minimize disruptions to recreation groups, the effects on public recreation are predicted to be not significant.”

It is not clear from the above options laid out in the EIS whether Taseko will be taking any active steps towards implementing or encouraging development of these, or will be relying passively on action by the public and First Nations to take advantage of boating, fishing and recreation opportunities that already exist throughout the Cariboo-Chilcotin. Section 3.3.4 discusses ways Taseko Mines Limited may capitalize on these opportunities to mitigate impacts on navigation.

3.3.2 Prosperity Lake

The most ambitious mitigation option presented by Taseko is the construction of Prosperity Lake to compensate for the loss of fish and fish habitat (fishing opportunities) in Fish Lake. Taseko intends to construct Prosperity Lake as one of the first undertakings in development of the mine site. The south embankment of the tailings storage facility serves as the Prosperity Lake dam (Volume 3, Section 6.7.1, page 6-53). The surface area of Prosperity Lake is proposed to be larger than Fish Lake (132ha versus 111ha) and deeper on average (6.2m versus 3.7m). Water from the headwater pond will flow into and fill Prosperity Lake; it is anticipated that two seasons of freshet will be required to fill the lake. As part of the independent functioning of the lake, spawning channels will be constructed at the south bank.

The normal elevation of the lake will be 1557m or 1m above the tailings storage facility adjacent to it. In years of low water, both the tailings storage facility and Prosperity Lake water levels are predicted to drop. In periods of high water levels, overflow water from Prosperity Lake will be directed to Wasp Lake.

Based on the assumption that Fish Lake rainbow trout are ‘stressed’ due to overcrowding, making them smaller on average for their age, Taseko plans to “*place 20,000 Fish Lake stock in Prosperity Lake (i.e., with fish ranging in size up to 1kg) until such time as Prosperity Lake provides a trout fishery of at least a similar character to*

³ LSA – Local Study Area is the Project components, with an emphasis on the mine site and buffer



what is supported by Fish Lake under current conditions.” Taseko predicts that a viable trout fishery could be established in Prosperity Lake within approximately seven years of construction due to the time it will take to fill with water, to establish a viable ecosystem and to ensure a self-sustaining trout population.

3.3.3 Ability of Prosperity Lake to mitigate impacts on navigation

As Fish Lake and the navigable portion of Fish Creek will be covered over with mine waste, mitigation of impacts on navigation at the point of interference cannot be achieved. Taseko’s proposal to extinguish navigation cannot be approved by Transport Canada through normal application of the *Navigable Waters Protection Act*. The Governor in Council may approve such a proposal, provided assurances can be given that such an approval would be in the public interest (see Annex 3 for exact wording of section 23).

As noted in section 3.3.2, Taseko Mines Limited has proposed to construct Prosperity Lake to satisfy Fisheries and Oceans Canada’s requirements under the *Fisheries Act*. Transport Canada suggests that Prosperity Lake could also serve as a key mitigation measure for the loss of navigation at Fish Lake provided it is designed to take into account navigation concerns. It is not adequate to create a water body where navigation could occur. In order to mitigate for the loss of navigation, Prosperity Lake must mimic the amenities and resources currently available at Fish Lake that make that water body desirable for boaters and fishers. Access to camping appears to be a requirement for the public to utilize boating and fishing opportunities in a remote location. Thus, recreational amenities are an essential component of the operation of Prosperity Lake once it is considered fully functional for the purposes of fish and fish habitat.

Options at Prosperity Lake to mitigate impacts on navigation could include road access to Prosperity Lake, access to boat launch sites, access to healthy fish (i.e. abundant and safe for consumption), and access to recreation facilities (i.e. camp sites, potable water, sewage disposal). This means that, in addition to accommodating a successful fish and fish habitat compensation plan, Prosperity Lake should include the following:

1. Fishing success – A viable trout fishery established where angler effort is comparable to that experienced by current fishers at Fish Lake (e.g. 7.4 fish/angler day) and fish are safe to eat.
2. Recreation facilities – Camping facilities constructed at Prosperity Lake to allow for overnight stays (camp sites, potable water, sewage disposal).
3. Accessibility – A road to Prosperity Lake that is not gated and includes a boat launch site.
4. Pristine and remote setting – Planting native vegetation around Prosperity Lake to screen the active mine site from view.

If Taseko Mines Limited is able to successfully address the above parameters, then Prosperity Lake could function as mitigation for lost navigation at Fish Lake and Fish Creek.

3.3.4 Interim measures - Other Lakes and Water Bodies

As noted in section 3.3.1, there are a number of other lakes and water bodies in the Cariboo-Chilcotin that could provide opportunities to mitigate for the time lag until Prosperity Lake is accessible to the public and First Nations. Taseko indicates in Volume 6, Section 5.3.4.4, page 5-38 that “With the proposed fisheries compensation



programs, the 424 annual angler days (0.4% of total RSA⁴ angling activity) and annual catch that will be displaced at Fish Lake when construction begins will be easily absorbed by existing lakes in the LSA and by new facilities at the Haines Lake chain without any loss of opportunity to the sport fishery.” Further, Taseko has stated on the same page that “the interim period prior to confirmation of a suitable replacement fishery for Fish Lake will include a program for stocking fry from the fish culture facility and/or the transplant of mixed age class of fish from Fish Lake into recipient lakes. These lakes could also be the recipients of access improvements and the construction of recreational facilities (e.g., campsites) to fully realize the recreational potential.”

These statements are not definitive commitments on Taseko's part. Transport Canada will be looking to Taseko to commit to actively take advantage of other lakes and water bodies or other opportunities in the interim while Prosperity Lake is constructed and is established as successful fish habitat that would lead to a trout fishery. Transport Canada looks forward to engaging in discussion with Taseko Mines Limited to determine how Taseko might take advantage of these opportunities to mitigate impacts on navigation.

4.0 TRANSPORT CANADA'S ANALYSIS OF RISK

Transport Canada understands that Taseko Mines Limited and Fisheries and Oceans Canada are in discussion regarding the adequacy of the proposed Fish and Fish Habitat Compensation Plan. By augmenting that Plan, Taseko Mines Limited may also be able to mitigate the impacts on navigation at Fish Lake and lower Fish Creek. As noted in the discussion of mitigation in section 3.3, there may be other options available to Taseko Mines Limited that would satisfy Transport Canada's requirements. Transport Canada looks forward to engaging in discussion of these or other mitigation strategies with Taseko Mines Limited.

Transport Canada has identified a number of risks associated with these opportunities to mitigate impacts on navigation that may reduce or eliminate their effectiveness.

4.1 Technical feasibility of mitigation

Establishment of a viable trout fishery in Prosperity Lake is critical to the mitigation strategy for impacts on navigation due to the close link between fishing and boating. In its presentation to the panel on March 24, 2010, Fisheries and Oceans Canada raised a number of concerns around design and implementation of the fish and fish habitat compensation plan. They raised concerns about the suitability of the design concept (spawning channels, intermediate transfers of fish, groundwater, etc), the population size (i.e. 20,000) in Prosperity Lake, and future mine expansion. Transport Canada shares these concerns as they relate to the success of a mitigation strategy for impacts on navigation related to fishing activities.

4.2 Access to Prosperity Lake for navigation

Currently ice break-up on Fish Lake occurs in mid-May each year, based on creel surveys conducted by Taseko Mines Limited, allowing boaters to access Fish Lake in early June. Transport Canada is concerned that the raised elevation of Prosperity Lake (1557m) relative to Fish Lake (1457m) could mean spring 'break-up' is later for Prosperity Lake. If the mine operates for an additional 13 years, then the level of Prosperity Lake could be raised by an additional 36m, bringing the total elevation change to 136m or roughly 400ft. If these elevation differences (i.e. between Fish Lake

⁴ RSA – Regional Study Area is the Cariboo-Chilcotin



and Prosperity Lake) result in delays in spring break up, then access to navigation would be delayed.

In the current design plans for the mine, the only access road to the mine site will have a fence with “a 10 m wide gate, will be 1.8 m high chain link topped by 3 strands of barb wire and extending 50 m on either side of the road.” (Volume 3, Section 6.1.2, page 6-50). Thus, the public and First Nations would not be able to gain unrestricted access to Prosperity Lake. Taseko Mines Limited could allow access to Prosperity Lake through an independent road; but, this may create health and safety or liability risks for Taseko.

4.3 Trout Fishery

As Fish Lake currently supports 85,000 trout (200-400g), Transport Canada is concerned that stocking Prosperity Lake with less than 25% of the existing trout population may be too low to redress the loss of fishing opportunities currently available in Fish Lake. Taseko Mines Limited has assumed that this lower number will lead to a larger, more viable fish which they feel is a more desirable outcome. Whether a larger fish is more desirable does not seem to be much of an issue for anglers, based on the creel survey conducted by Taseko Mines Limited. Angler enjoyment of the fishery at Fish Lake has been voiced as the relative ease with which fish can be caught (>2.4 fish/hour), not the size of the fish; some groups were able to capture as many as 50 fish in one day. Fish released after capture varied in size from small to large. By reducing the number of fish available for capture, the angler effort would need to increase to capture the same number of fish. This could lead to a less successful fishery and less enjoyable boating/fishing experience. There is a risk that the public and First Nations would cease going to Prosperity Lake altogether.

4.4 Fish Consumption

Another risk is whether fish caught in Prosperity Lake are safe to consume. If the recreational community embraces Prosperity Lake as Taseko predicts they will and begins to use it for boating and fishing, then the public must be assured that the fish are safe to eat. In the fishing activity study Taseko noted that about 70% of the fish caught are consumed by the fishers. In Volume 6, Section 6.3.1.6, page 6-33 Taseko indicates that fish consumption during or post-closure is unlikely to result in any health effects in both toddlers and adults, even after consuming fish for approximately 60 consecutive days. The public are known to fish for only a few days at a time, during the summer months. Thus, if current consumption patterns do not change, and fish tissue remains the same as currently available in Fish Lake, then the risk to human health may be low as found by Health Canada in its March 10, 2010 submission to the Review Panel.

What remains is a perceived risk that fish caught in Prosperity Lake, due to its proximity to the tailings storage facility, would not be safe to consume. Both the public and First Nations expressed this concern during the General Sessions in March. In addition, Health Canada observed that subsistence fishing for First Nation communities may exceed the values studied by Taseko and advised the Review Panel that the subjects tested may not have been representative of this most vulnerable group. Due to predictions that groundwater seepage from the tailings storage facility will reach Big Onion Lake (Volume 4, Section 1.2.3.1, page 1-9), First Nations also expressed concern that fish in Big Onion Lake might become contaminated. Health Canada recommended conducting a survey to confirm consumption rates and monitoring to support Taseko’s claim that target species are safe to eat. Transport Canada supports this suggestion, particularly for fish consumption, as the success of a fishery on Prosperity Lake is a key



to mitigating navigation impacts on Fish Lake. Without such validation, the public are likely to remain unconvinced that the fish are safe to eat. Ultimately the effectiveness of Prosperity Lake as mitigation will be suspect, even if it can operate successfully as a man-made waterbody.

4.5 Operation of mitigation post-closure

Taseko expects Prosperity Lake to operate in perpetuity without intervention once it is established as a functioning ecosystem that can sustain fish. This means that water flows into and out of the lake will always be within identified parameters, that water levels in the lake will fluctuate as though it is a natural water body, that the lake ecosystem can withstand normal seasonal fluctuations in weather, and so on. However, Prosperity Lake is a man-made lake with man-made spawning channels. It is perched adjacent to two man-made structures – the dam that separates it from the tailings storage facility (and creates the lake) and the dam that keeps the tailings storage facility secure. Any number of complications could arise after mine closure. A seismic event may affect the integrity of either or both dams. Leakage from either dam could compromise their strength or ability to maintain water levels. If erosion increases leakage over time, Prosperity Lake could drain at a faster rate than the inflows can keep up with, thereby affecting the water level in the lake. There is only 1m elevation difference between Prosperity Lake and the tailings storage facility; thus, if the water level in Prosperity Lake drops due to excess leakage, or reduced inflow, then the water in the tailings storage facility might begin to seep into Prosperity Lake until a 'steady state' is achieved.

4.6 Mine Expansion

Taseko has indicated that mineral reserves may be mined beyond the 20 year mine life - potentially another 13 years. In its February 3, 2010 response to questions raised by Environment Canada regarding the possible extension, Taseko indicated that the height of the embankment for the tailings storage facility could increase by 36m. Since Prosperity Lake will be constructed in the first years of the mine life, Taseko offers several suggestions for dealing with an increase of 36m in the height of the tailings embankment:

- Raise Prosperity Lake by 36m – based on map contours, the surface area of Prosperity Lake would expand and its depth would increase. There is a risk that Prosperity Lake would then become part of the active mine site during the period when the lake is being raised which would mean public access would be prohibited, affecting navigation on the lake. Access to amenities (camp sites, boat launch, etc) created as mitigation for impacts on navigation in Fish Lake would also be affected. There is a risk that the lake would become oligotrophic and less productive; a worst case scenario might be that fishing would no longer be possible due to impacts on fish and fish habitat.
- Raise Prosperity Lake by some intermediary level – the concerns remain the same as the above option. Additional risks may be introduced as noted for leaving Prosperity Lake as is.
- Leave Prosperity Lake as is – there is a risk that water would seep from the tailings storage facility in the direction of Prosperity Lake due to the level of the tailings storage facility being much higher than the water level in Prosperity Lake. This might cause the water flow from Prosperity Lake into the tailings



impoundment area to reverse and recreation facilities in the area to be impacted.

There may also be downstream impacts from this extra water flow.

The focus here is on the implications for navigation that may arise out of mine expansion, due to potential changes in the way Prosperity Lake operates.

5.0 MONITORING AND FOLLOW-UP PROGRAM

Transport Canada will require Taseko to develop a monitoring program in discussion with the Navigable Waters Protection Program staff specifically aimed at impacts of the project on navigation. If the project should proceed, a Follow-up Program, as required under CEAA, will need to be developed to:

- verify the accuracy of the environmental assessment of the project; and
- determine the effectiveness of any measures taken to mitigate the adverse environmental effects of the project

The follow-up program that Taseko has committed to through the BC Environmental Assessment Certificate applies to the Fish and Fish Habitat Compensation Plan. Although this is strongly linked to the success of navigation mitigation, a follow-up program needs to be developed that meets Transport Canada's needs. To ensure a Follow-up Program is implemented, Transport Canada recommends the Government of Canada:

- obtain a Letter of Credit from Taseko to cover any monitoring/auditing costs should Taseko not fulfill its commitments;
- develop an agreement with Taseko to outline how the Letter of Credit will be used and the conditions that would be in place to ensure the Follow-up Program is implemented; and
- participate in the selection of an independent (third party) environmental monitor.

6.0 SUMMARY OF FINDINGS

The Prosperity Gold-Copper Mine will permanently interfere with navigation in Fish Lake and lower Fish Creek such that it will eliminate all boating, fishing and recreation activities there. Although Fish Lake is relatively small, it is a desirable fishing / boating / recreation site in the Cariboo-Chilcotin region due to its remote location and abundance of easily caught fish.

Transport Canada will require Taseko Mines Limited to mitigate interferences to navigation and offered suggestions to assist Taseko Mines Limited in developing mitigation strategies that would be satisfactory to the department. Transport Canada also outlined a number of considerations for any mitigation that may be proposed including – fishing success, recreation facilities, accessibility and setting. There are risks associated with mitigation measures:

- Technical feasibility of mitigation – Transport Canada recognizes that mitigation for complete destruction of navigable waterways carries a risk of technical failure.
- Access to navigation – elevation differences could delay boat access, while unrestricted road access to a lake that is adjacent to an active mine site might pose safety risks.
- Trout fishery – due to stocking of Prosperity Lake with ¼ the number of fish currently in Fish Lake and boaters / fishers may be discouraged from using the site if the catch:effort ratio increases.



- Fish consumption – Taseko will need to address a perception that the fish in Prosperity Lake are not safe for consumption.
- Operation of mitigation post-closure –water levels may not be maintained without intervention if either the tailings storage facility dam or the dam for Prosperity Lake is breached through a seismic event or erosion.
- Mine expansion – the biggest concern from a navigation perspective is the potential for the direction of water flows to change and alter water levels.

To date, Taseko Mines Limited has not offered any proposals to mitigate interferences to navigation. Transport Canada remains willing to discuss mitigation strategies with Taseko Mines Limited.

7.0 CONCLUSION

Due to the complete destruction of Fish Lake and portions of lower Fish Creek, mitigation is not possible at the site of interference to navigation. Taseko Mines Limited has not offered any options for mitigating these interferences to navigation. Transport Canada finds that the Prosperity Gold-Copper Mine project as proposed will lead to significant adverse effects on navigation unless Taseko Mines Limited provides technically and economically feasible measures that will mitigate impacts on navigation. Transport Canada's assessment of this project may be reconsidered as additional information is brought forward or as the project is amended to address the concerns of stakeholders.

ANNEXES



Annex 1: Application Requirements under the NWPA

The following information should be included in your letter of application. Failure to provide sufficient information may result in delays.

Applicant:

- Name of applicant and, if applicable, name of agent acting on behalf of the applicant, postal address, electronic address, phone number and fax number.

Details of Work:

- Proposed construction schedule
- Description of work
- Status of work (existing, proposed, or both)
- Name of waterway where the work is or will be located including width and depth
- Chart and topographic map number
- Latitude and longitude of the work site
- Legal description (section, lot number, concession, county/township, city/town, province/territory, etc.)
- Environmental assessment documents, if available
- Identification of upland property owners
- Method of construction, i.e., equipment to be used, temporary construction that may impact on navigation.

Plans:

- Drawings done to scale with all dimensions (include any detail of adjacent works in relation to proposal)
- Include the required set of plans as dictated by an NWPP Officer
- Indicate if any of these plans have been registered/deposited at your local land registry, municipal/provincial/territorial office or other recognized location; if so, indicate the Registration/Deposit number
- To avoid having to re-deposit and re-advertise, it is suggested you do not deposit and advertise until advised to do so by an NWPP Officer
- Identify which other government regulatory agencies these plans have been submitted to.

To assist in determination of navigability please provide:

- History of the waterway including all navigational uses
- Characteristics of waterway (depth, width, length, natural obstructions, works currently existing)
- Pictures of work location as well as upstream and downstream views, if possible

Note: You are encouraged to contact your local conservation authority, provincial Ministry of Natural Resources/Environmental/Fisheries and municipal offices to discuss their specific requirements early in the process.



Definition of Terms

Navigable Water: any body of water capable of being navigated by floating vessels of any description for the purpose of transportation, commerce or recreation. This includes both inland and coastal waters. The final authority to determine the navigability of a waterway rests with the Minister of Transport or his/her designated representative.

Lawful Work: any existing work not contrary to the law in force at the place of construction of the work at the time of its construction.

Owner: a person authorizing or otherwise responsible for the erection or maintenance of any work and an actual or reputed owner or person in possession or claiming ownership thereof for the time being.

Work is:

- any bridge, boom, dam, wharf, dock, pier, tunnel or pipe and the approaches or other works necessary or appurtenant thereto;
- any dumping of fill or excavation of materials from the bed of a navigable water;
- any telegraph or power cable or wire; or
- any structure, device or thing, whether similar in character to anything referred to in this definition or not, that may interfere with navigation.



Annex 2: Coleman Principles

(Coleman et al. v. Attorney General for Ontario et al)

1. A stream to be navigable in law must be navigable in fact. That is, it must be capable in its natural state of being traversed by large or small craft of some sort – as large as steam vessels and as small as canoes, skiffs and rafts drawing less than one foot of water.
2. In the context of the Canadian economy where the timber trade has developed, ‘navigable’ also means ‘floatable’ in the sense that the river or stream is used or capable of use of float logs, log-rafts and booms.
3. A river or stream may be navigable over part of its course and not navigable over other parts; its capacity for navigation may therefore be determined by the courts independently at different locations.
4. To be navigable in law, a river or stream need not in fact be used for navigation so long as realistically it is capable of being so used.
5. To be navigable in law, according to the Quebec decisions, the river or stream must be capable of navigation in furtherance of trade and commerce; the test according to the law of Quebec is thus navigability for commercial purposes.
6. The underlying concept of navigability in law is that the river or stream is a public aqueous highway used or capable of use by the public. This concept does not embrace uses such as irrigation, power, fishing, or other commercial or non-commercial uses that do not depend upon its character as a public aqueous highway for passage. In law, a river or stream is not navigable if it is used only for the private purposes, commercial or otherwise, of the owner.
7. Navigation need not be continuous but may fluctuate seasonally.
8. Interruptions to navigation such as rapids on an otherwise navigable stream which may, by improvements such as canals be readily circumvented, do not render the river or stream non-navigable in law at those points.
9. It would seem that a stream not navigable in its natural state may become so as a result of artificial improvements.



Annex 3: Navigable Waters Protection Act, applicable sections

5. (1) No work shall be built or placed in, on, over, under, through or across any navigable water without the Minister's prior approval of the work, its site and the plans for it.

Terms and conditions — substantial interference

(2) If the Minister considers that the work would substantially interfere with navigation, the Minister may impose any terms and conditions on the approval that the Minister considers appropriate, including requiring that construction of the work be started within six months and finished within three years of the day on which approval is granted or within any other period that the Minister may fix.

Terms and conditions — other interference

(3) If the Minister considers that the work would interfere, other than substantially, with navigation, the Minister may impose any terms and conditions on the approval that the Minister considers appropriate, including requiring that construction of the work be started and finished within the period fixed by the Minister

22. No person shall throw or deposit or cause, suffer or permit to be thrown or deposited any stone, gravel, earth, cinders, ashes or other material or rubbish that is liable to sink to the bottom in any water, any part of which is navigable or that flows into any navigable water, where there are not at least twenty fathoms of water at all times, but nothing in this section shall be construed so as to permit the throwing or depositing of any substance in any part of a navigable water where that throwing or depositing is prohibited by or under any other Act.

R.S., c. N-19, s. 20.

Proclamation of exemption

23. The Governor in Council, when it is shown to the satisfaction of the Governor in Council that the public interest would not be injuriously affected thereby, may, by proclamation, declare any rivers, streams or waters in respect of which sections 21 and 22 apply, or any parts thereof, exempt in whole or in part from the operation of those sections, and may revoke the proclamation.

R.S., c. N-19, s. 21.