

Rhonda Miller - MVLWB

From: Lindsey Cymbalisy [lindsey@mvlwb.com]
Sent: April-06-11 9:17 AM
To: 'Rhonda Miller'
Subject: FW: MV2011C0005 - Peregrine Diamonds Ltd., Mineral Exploration, Lac de Gras area
Attachments: MV2011C0005 Peregrine Diamonds, Mineral Exploration, DFO Comments.pdf; Water Withdrawal Protocol - June 21 2010.pdf

For registry. DFO Comments on Renewal Application.

From: Walbourne, Rick [mailto:Rick.Walbourne@DFO-MPO.GC.CA]
Sent: April-04-11 12:41 PM
To: Lindsey Cymbalisy
Cc: shirley@pdiam.com
Subject: MV2011C0005 - Peregrine Diamonds Ltd., Mineral Exploration, Lac de Gras area

Good afternoon Lindsey,

Please find attached DFO's comments on Land Use Permit application MV2011C0005 - Peregrine Diamonds Inc., Mineral Exploration (DFO file #: 11-HCAA-CA6-00028). Should have any questions or comments, feel free to contact me at your convenience.

Regards,

Rick

<<MV2011C0005 Peregrine Diamonds, Mineral Exploration, DFO Comments.pdf>> <<Water Withdrawal Protocol - June 21 2010.pdf>>

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Government of Canada | Gouvernement du Canada

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2. Do not modify the instructions or the column headings (i.e. the top three rows).
- 3. Each comment must have an associated recommendation.**
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5. If necessary, adjust the cell width and height in order to view all text.

TOPIC

COMMENT

RECOMMENDATION

Be as specific as you think is appropriate; for example a section or page of the document, a recommendation #, general comment, etc.

Comments should contain all the information needed for the proponent and the Board to understand the rationale for the accompanying recommendation.

Recommendations can be for the proponent or for the Board. Recommendations should be as specific as possible, relating the issues raised in the "comment" column to an action that you believe is necessary.

Mineral Exploration Activities

Impacts to fish and fish habitat can occur during mineral exploration activities through loss of riparian habitat during site clearing, erosion and sedimentation, release of drilling fluids and cuttings into aquatic environments, disturbance to fish and fish habitat during sensitive life stages, and water withdrawals, particularly during low water periods, associated with drilling, surface stripping and camp operations.

Adhere to the DFO Mineral Exploration Operational Statement available at: <http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/provinces-territories-territoires/nt/os-eo24-eng.htm>

Surficial Sediment Sampling

In correspondence dated March 28th, 2011, Peregrine Diamonds Ltd. provided additional information to the Board on "surficial sediment sampling." This activity has the potential to include excavations ranging from 30-70 cm in shallow streams. The activity described has the potential to create sediment disturbance downstream and could be especially harmful to fish during sensitive life stages.

Additional activity specific mitigation measures/techniques should be required by the field crew to ensure that these impacts are minimized.

Water Withdrawal	Water withdrawn from ice-covered waterbodies can impact fish through oxygen depletion, loss of over-wintering habitat and/or reductions in littoral habitat.	Adhere to the DFO Protocol for Winter Water Withdrawal from Ice-Covered Waterbodies in the NWT and Nunavut (attached)
Water Withdrawal	Fish screens at freshwater intakes have the potential to result in direct impacts to fish as a result of entrainment or impingement	Adhere to DFO's Freshwater Intake End-of-Pipe Fish Screen Guideline, available at: http://www.dfo-mpo.gc.ca/library/223669.pdf
Timing Windows	Restricted timing windows have been identified for NWT lakes, rivers, and streams to protect fish during spawning, incubation periods when spawning fish, eggs and fry and vulnerable to disturbance or sediment.	Adhere to DFO's Timing Windows Operational Statement, available at: http://www.dfo-mpo.gc.ca/regions/central/habitat/os-eo/provinces-territories-territoires/nt/pdf/os-eo21_e.pdf

GENERAL INSTRUCTIONS FOR EXCEL TEMPLATE:

TOPIC

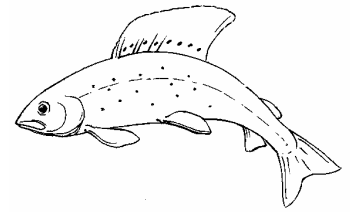
COMMENT

(Be as specific as you think is appropriate; for example a section or page of the document, a recommendation #, general comment, etc.)

(Comments should contain all the information needed for the proponent and the Board to understand the rationale for the accompanying recommendation.)

RECOMMENDATION

(Recommendations can be for the proponent or for the Board. Recommendations should be as specific as possible, relating the issues raised in the "comment" column to an action that you believe is necessary.)



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 100m³ 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:

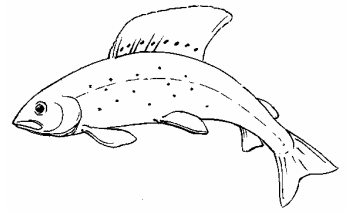
1. In one ice-covered season, total water withdrawal from a single waterbody is not to exceed 10% of the available water volume calculated using the appropriate maximum expected ice thickness provided in Table 1.
2. In cases where there are multiple users withdrawing water from a single waterbody, the 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 $\geq 1.5\text{m}$ 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 water withdrawal.
4. Any waterbody with a maximum expected ice thickness that is greater than, or equal to, its maximum depth (as determined from a bathymetric survey) is exempt from the 10% maximum withdrawal limit (Table 1).

To further mitigate the impacts of water withdrawal, water is to be removed from deep areas of waterbodies (>2m below the ice surface) wherever feasible, to avoid the removal of oxygenated surface waters that are critical to over-wintering fish. The littoral zone should be avoided as a water withdrawal location. Water intakes should also be properly screened with fine mesh of 2.54 mm (1/10") and have moderate intake velocities to prevent the entrainment of fish. Please refer to the *Freshwater Intake End-of-Pipe Fish Screen Guideline* (DFO, 1995) which is available upon request, or at the following internet address: www.dfo-mpo.gc.ca/Library/223669.pdf.

In order to determine the maximum water withdrawal volume from an ice-covered waterbody, and thereby conform to this protocol, the following information must be provided to DFO for review and concurrence prior to program commencement.

Water Source Identification

1. Proposed water sources, access routes, and crossing locations clearly identified on a map, with geographical coordinates (latitude/longitude and/or UTM) included.
2. Any watercourse connectivity (permanently flowing and/or seasonal) between the proposed water source and any other waterbody or watercourse.



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

3. Aerial photos or satellite imagery of the water sources.
4. Estimated total water withdrawal requirement for work or activity and estimated total water withdrawal per water source (in m³).

Bathymetric Survey Results

1. For all waterbodies: One longitudinal transect, connecting the two farthest shorelines, is to be conducted regardless of waterbody size. Note: a longitudinal transect may be straight or curved in order to accommodate the shape of a lake (see Figure 1).
2. For waterbodies equal to or less than 1 km in length: a minimum of one longitudinal transect and two perpendicular transects are to be conducted. Perpendicular transects should be evenly spaced on the longest longitudinal transect, dividing the lake into thirds (Figure 1).
3. For lakes greater than 1 km in length: a minimum of one longitudinal transect is to be conducted. Perpendicular transects (minimum of 2) should be evenly spaced on the longest longitudinal transect at maximum intervals of 500 m.
4. Additional transects should be run as required to include irregularities in waterbody shape such as fingers or bays (Figure 1).
5. All longitudinal and perpendicular transects are to be conducted using an accurate, continuous depth sounding methodology, such as open water echo sounding or ground penetrating radar (GPR), that provides a continuous depth recording from one shore to the farthest opposing shore (Figure 1). Any alternative technology should be reviewed by DFO prior to implementing for bathymetric surveys.

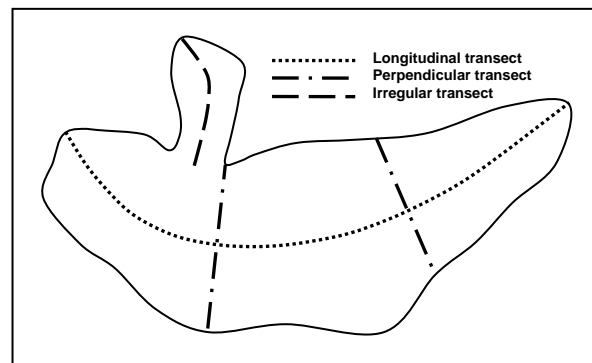
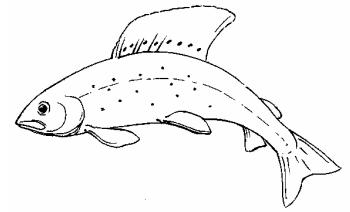


Figure 1. Minimum transect layout for a lake that is less than 1 km in length, with an irregularity.

Volume Calculations

1. Document the methods used to calculate surface area. If aerial photos or satellite imagery were used, provide the date (day/month/year) taken, as surface area may change depending on the time of year. If maps were used, provide the year that they were surveyed.
2. Detail the methods used to determine the total volume of free water, incorporating the relevant bathymetric information.
3. Calculate the available water volume under the ice using the appropriate maximum expected ice thickness, i.e. $Total\ Volume_{lake} - Ice\ Volume_{max\ thickness} = Available\ Water\ Volume$ (see Table 1 for maximum ice thickness).
4. For programs where ice-chipping is used, the total ice volume to be removed from the waterbody should be converted to total liquid volume and incorporated into the estimate of total water withdrawal requirement per water source.



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

Table 1. Maximum expected ice thickness, and corresponding water depth requirements, for different regions in the Northwest Territories.

Area	Maximum Expected Ice Thickness (m)	Minimum Waterbody depth Required for 10% Water Withdrawal (m)
Above the Tree Line	2.0	≥3.5
Below the Tree Line - North of Fort Simpson	1.5	≥3.0
Deh Cho –South of Fort Simpson	1.0	≥2.5

A brief project summary report documenting and confirming total water volume used per water source and corresponding dates should be submitted to DFO within 60 days of project completion. Information should be provided in the following format (this information would also be useful as part of the project description):

Lake ID	number and/or name
Coordinates	latitude and longitude and/or UTM coordinates
Surface area	in ha
Total Lake Volume	in m ³
Under Ice Volume	in m ³ (based on max ice thickness for region)
Max expected ice thickness value used	in m
Calculated 10% Withdrawal volume	in m ³
Total required water volume extracted	in m ³
Aerial photographs of waterbody	PDF format
Bathymetric Map(s) of waterbody	PDF format

Any requests deviating from the above must be submitted to DFO and will be addressed on a site-specific basis.

Beaver and Muskrat

Many species of animals are highly sensitive to water fluctuations. In areas where beaver and muskrat may occur, the appropriate agencies or organizations should be consulted to determine if harmful effects will result from your activities, and whether these effects can be successfully mitigated through modifications to your plans including best management practices.

Please note that adherence to this protocol does not release the proponent of the responsibility for obtaining any permits, licenses or authorizations that may be required.

For more information contact DFO at (867) 669-4915.