



Fisheries and Oceans
Canada

Pêches et Océans
Canada

501 University Crescent
Winnipeg, Manitoba
R3T 2N6

May 23, 2017

Your file Votre référence
EA1415-01

Our file Notre référence
15-HCAA-01626

Mackenzie Valley Environmental Impact Review Board
Attention: Mark Cliffe-Phillips, Executive Director
200 Scotia Centre
Box 938, 5102-50th Ave.
Yellowknife, NT X1A 2N7

Email: mcliffephillips@reviewboard.ca

**Subject: Fisheries and Oceans Canada's Closing Arguments for Canadian Zinc Corporation
Prairie Creek All-Season Road (EA1415-01)**

The Mackenzie Valley Environmental Impact Review Board (the Board) posted a Notice of Proceeding on May 15, 2017 instructing parties to submit closing arguments by May 26, 2017. As requested by the Board, the Fisheries Protection Program (FPP) of Fisheries and Oceans Canada (DFO) submits their closing arguments to the Board for the environmental assessment (EA) of Canadian Zinc Corporation's Prairie Creek all season road.

As described in our response to undertaking #6, submitted on May 9, 2017 (attached), DFO-FPP identified, at the Board's request, which recommendations were for information and which recommendations were for the Board's acknowledgement in the EA phase (i.e., which recommendations will be addressed during the regulatory phase, should the project be approved to proceed).

The Board also requested that parties to provide responses to the following questions for each of the recommendations:

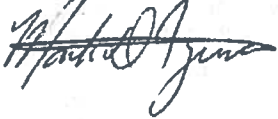
- 1.) *Which specific impact(s) each recommendation is intended to mitigate;*
- 2.) *How that impact would otherwise occur, based on evidence on the public record, or the lack of evidence to support conclusions that no impacts will occur; and*
- 3.) *The characteristics of the impact (spatial extent, duration, magnitude, frequency, reversibility, and likelihood).*

DFO's position is that potential adverse impacts identified during the EA process, can be avoided, mitigated, or offset through the regulatory process; therefore no significant adverse impacts are

anticipated¹ on fish and fish habitat. Consequently, DFO has no recommendations for the Board to incorporate as measures.

If you or any parties have any questions regarding this letter and its attachment, please contact Jessica Taylor by email at Jessica.Taylor@dfo-mpo.gc.ca or by phone at 867-669-4926.

Sincerely,

 on behalf of

Martyn Curtis
Manager of Regulatory Reviews
Central & Arctic Region
Fisheries and Oceans Canada

ATTACHMENT:

1. Fisheries and Oceans Canada's responses to undertaking #5 and 6 - Canadian Zinc Corporation Prairie Creek All-Season Road Public Hearings
2. Fisheries and Oceans Canada's closing arguments for Canadian Zinc (EA1415-01)_

cc. Véronique D'Amours-Gauthier, DFO
Jessica Taylor, DFO

¹ Undertaking #6 dated May 10, 2017, pg. 11, PR #538



Fisheries and Oceans Pêches et Océans
Canada Canada

501 University Crescent
Winnipeg, Manitoba
R3T 2N6

May 9, 2017

Your file *Votre référence*

EA1415-01

Our file *Notre référence*

15-HCAA-01626

Mackenzie Valley Environmental Impact Review Board
Attention: Mark Cliffe-Phillips, Executive Director
200 Scotia Centre
Box 938, 5102-50th Ave.
Yellowknife, NT X1A 2N7

Email: mcliffephillips@reviewboard.ca

Subject: Fisheries and Oceans Canada's Responses to Undertakings #5 and #6 –Public Hearings for Canadian Zinc Corporation Prairie Creek All-Season Road

As presented during the Public Hearings for Canadian Zinc Corporation Prairie Creek All-Season Road, the Fisheries Protection Program (FPP) of Fisheries and Oceans Canada (DFO) submits their responses to undertakings #5 and #6 (attached).

If you or any parties have any questions regarding this letter and its attachment, please contact Jessica Taylor by mail at Jessica.Taylor@dfo-mpo.gc.ca or by phone at 867-669-4926.

Sincerely,

Martyn Curtis
Manager of Regulatory Reviews - Central & Arctic Region
Fisheries and Oceans Canada

ATTACHMENT:

1. Fisheries and Oceans Canada's responses to undertakings #5 and #6 - Canadian Zinc Corporation Prairie Creek All-Season Road Public Hearings

cc. Véronique D'Amours-Gauthier, DFO
Jessica Taylor, DFO

Canada

Fisheries and Oceans Canada's responses to undertakings #5 and #6 - Canadian Zinc Corporation Prairie Creek All-Season Road Public Hearings

Undertaking #5: Fisheries and Oceans Canada and Canadian Zinc Corporation to discuss hydrograph modelling use for Sundog Creek and submit a written response based on these discussions.

Summary notes from discussion regarding hydrograph modelling request.

- Fisheries and Oceans Canada (DFO) understands that Sundog Creek runs dry at a certain point during the year. To gain a further understanding of the fish and fish habitat in Sundog Creek, DFO asked for how long Sundog Creek is usually dry (at what times of year, and what portions of the Creek).
- Tetra Tech discussed expectations with DFO. Information for Sundog Creek includes four or five sets of historical air photos beginning in the late 1940s and first hand observations from Canadian Zinc field programs. This information can be provided during the regulatory phase.
- Tetra Tech showed DFO the Prairie Creek at Cadillac Mine (Station 10EC002) hydrographs on the Water Survey of Canada website. Data are available for 1974-1990 and 2013-2015. Tetra Tech will process Prairie Creek information to assist DFO's understanding of Sundog Creek hydrology. The information and method will be written out in a Memo, and provide to DFO during its regulatory phase.
- Tetra Tech (Canadian Zinc) committed that this information would be provided, together with any adjustments to the already provided flow modelling, to DFO in support of further review during the regulatory phase.

Undertaking #6: Fisheries and Oceans Canada to identify which recommendations from their technical report address impacts to the environment and distinguish them from the recommendations related to their regulatory process. For recommendations that are related to environmental assessment, describe the impacts those recommendations are addressing.

Before addressing the Mackenzie Valley Environmental Impact review Board's (MVEIRB or Board) request, Fisheries and Oceans Canada (DFO) would like to provide clarification regarding their role during the environmental assessment of any project.

In sub-section 130(2) of the *Mackenzie Valley Resource Management Act*, it stipulates the following:

"Where an environmental impact review of a proposal is ordered under subsection (1), the federal Minister and responsible ministers shall identify any area within or outside the Mackenzie Valley in which the development is likely, in their opinion, to have a significant adverse impact or to be a cause of significant public concern and specify the extent to which that area is affected".

Fisheries and Oceans Canada is considered a responsible minister as per the definition outline in that act.

In order for Fisheries and Oceans Canada to identify whether the development is likely to have significant adverse impact or to cause significant public concern Fisheries and Oceans Canada must first make a preliminary determination on *serious harm to fish*. In the *Fisheries Act*, *serious harm to fish* is defined as the death of fish or any permanent alteration to, or destruction of, fish habitat.

To protect fish and fish habitat efforts should be made to avoid causing serious harm, to mitigate any harm that may be caused and to offset any residual harm. In accordance with our "Fisheries Productivity Investment Policy: A Proponent's guide to Offsetting" (2013), "proponents are responsible for avoiding and mitigating the serious harm to fish that could result from their projects. When proponents are unable to completely avoid serious harm to fish such that some residual serious harm to fish remains, they must seek an authorization under paragraph 35(2)(b) of the *Fisheries Act* to carry on a work, undertaking or activity."

Fisheries and Oceans Canada may request additional information during the environmental assessment phase in an attempt to reduce the level of uncertainty as it relates to serious harm to fish and fish habitat. This type of information is required to determine the extent of the impact on fish and fish habitat and help Fisheries and Oceans Canada identify whether the development is likely, in our opinion, to have a significant adverse impact as it relates to DFO's responsibilities under the *Fisheries Act*.

In light of the information above, you will find the following recommendations have been raised during the environmental assessment process to highlight the areas under DFO's authority that are related to DFO significant environmental impact determination that won't be fully explored until after the Board makes its determination for the project to proceed to the next phase of assessment. DFO will also identify, at the board's

request, which recommendations are for information as it relates to the significance determination in the EA phase and which recommendations are for the Board's knowledge in the EA phase which won't be completed until the regulatory phase is initiated, pending the Board's determination for the project to proceed.

Final Submission/Technical Report, March 10, 2017

- **Recommendation 3.1.1 (high water mark):** The Program recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization for the Project. When submitting, in order to avoid confusion, DFO-FPP recommends habitat within the 1:2 year High Water Mark is not divided into categories as outlined by Hatfield.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase.
- **Recommendation 3.1.2 (high water mark):** DFO-FPP recommends that CZN utilize the terms serious harm, permanent alteration, and destruction as provided in the Fisheries Protection Policy Statement (defined above in Section 2.0 Mandate) instead of using terms such as habitat categories A, B, C, and habitat of low/medium/high importance.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase.
- **Recommendation 3.2.1 (Sundog Creek Channel Realignment):** The Program recommends that the Developer submit a request for Review and/or apply for a *Fisheries Act* Authorization so that DFO-FPP can review proposed mitigation.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the developer directly to address this recommendation in the regulatory phase as the channel realignment is likely to cause serious harm and will require a request for review be submitted by the proponent.
- **Recommendation 3.2.2 (Sundog Creek Channel Realignment):** DFO-FPP recommends that hydrographs, modelling, and detailed designs for the existing channel and the proposed channel are submitted to DFO-FPP during the regulatory phase.

- This recommendation was highlighted for the Board's consideration in the EA phase.
- Based on the proposed plan submitted by the proponent DFO required a commitment to be made during the environmental assessment stage intended to reduce the level of uncertainty/significance of this issue. Without this commitment the level of uncertainty as it relates to a significance adverse impact determination would increase.
- DFO will engage the developer directly to address this recommendation in the regulatory phase as the channel realignment is likely to cause serious harm. The impact addressed is the risk of the channel running dry earlier than it usually does. Undertaking #5 (above) provides a summary of the discussion and commitments made by the proponent related to this recommendation that took place between DFO and the Developer during the Final Hearings.
- **Recommendation 3.2.3 (Sundog Creek Channel Realignment):** Recommendation: DFO-FPP recommends that the Developer implement natural channel design principles into the proposed constructed channel.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is serious harm to fish and fish habitat resulting from the channel realignment, and how to mitigate these impacts.
- **Recommendation 3.3.1 (Water Crossings):** DFO-FPP recommends that the Developer implement all available best management practices to avoid, mitigate, or offset serious harm as defined in the *Fisheries Act* as a result of water crossing construction, operation, and decommissioning. This includes, but is not limited to: appropriate design of water crossings to facilitate passage at both high and low flows; bank stabilization by protecting and replanting riparian vegetation; adhering to timing windows to avoid spawning, incubation, and hatch times for all species using the water courses, and the installation and maintenance of sediment and erosion control measures.
 - This recommendation was highlighted for the Board's consideration in the EA phase.
 - Based on the proposed plan submitted by the proponent DFO required a commitment to be made during the environmental assessment stage intended to reduce the level of uncertainty/significance of this issue. Without this commitment the level of uncertainty as it relates to a significance adverse impact determination would increase.

- DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is serious harm to fish and fish habitat resulting from water crossings, and how to mitigate these impacts.
- **Recommendation 3.3.2 (Water Crossings):** DFO-FPP recommends that an appropriate water crossing maintenance and monitoring plan be in place to ensure that barriers to fish passage do not form over time as a result of crossing damage due to ice blockage, flooding or movement of debris, such as may occur at freshet.
 - This recommendation was highlighted for the Board's consideration in the EA phase.
 - Based on the proposed plan submitted by the proponent DFO required a commitment to be made during the environmental assessment stage intended to reduce the level of uncertainty/significance of this issue. Without this commitment the level of uncertainty as it relates to a significance adverse impact determination would increase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is serious harm to fish and fish habitat resulting from water crossings, and how to mitigate these impacts.
- **Recommendation 3.3.1 (Water Crossings):** DFO-FPP recommends that the Developer provide DFO with detailed engineering plans of all water crossings that are fish bearing, supported by measured or modeled stream flow data, for review prior to construction.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is serious harm to fish and fish habitat resulting from water crossings, and how to mitigate these impacts.
- **Recommendation 3.4.1 (Liard River Crossings):** DFO-FPP recommends that standard best practices are utilized for the design, construction, and decommissioning of the Liard River crossing and consistent terminology.
 - This recommendation was highlighted for the Board's consideration in the EA phase.
 - Based on the proposed plan submitted by the proponent DFO required a commitment to be made during the environmental assessment stage intended to reduce the level of uncertainty/significance of this issue.

Without this commitment the level of uncertainty as it relates to a significance adverse impact determination would increase.

- DFO will engage the Developer directly to address this recommendation in the regulatory phase.

- Recommendation 3.5.1 (Flow in Sundog Creek Realignment): To avoid stranding of fishes, DFO-FPP recommends the Developer incorporate a barrier to upstream fish passage (e.g. steps) into their designs. The barrier would be located upstream of the offsetting pool proposed in the approximate location of km 36.9.

- This recommendation was highlighted for the Board's information at this time, and will be evaluated upon the receipt of more detail during the regulatory phase.
- DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is fish stranding.

- Recommendation 3.5.2 (Flow in Sundog Creek Realignment): DFO-FPP recommends the Developer consider the possibility of a channel readjustment phase and develop a plan to mitigate these potential adverse effects.

- This recommendation was highlighted for the Board's information at this time, and will be evaluated upon the receipt of more detail during the regulatory phase.
- DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is fish stranding.

- Recommendation 3.5.3 (Flow in Sundog Creek Realignment): DFO-FPP recommends that the Developer implement all available best management practices in the design of the proposed constructed channel to avoid and mitigate serious harm to fish as a result of the realignment. This includes, but is not limited to, appropriate design of the new channel to facilitate fish passage at both high and low flows for Arctic Grayling and any other species of fish that may use Sundog Creek at all relevant life stages. Such fish may have different capacities for swimming performance (Gervais & Katopodis, 2015), which may affect the design of the new channel.

- This recommendation was highlighted for the Board's consideration in the EA phase.
- Based on the proposed plan submitted by the proponent DFO required a commitment to be made during the environmental assessment stage intended to reduce the level of uncertainty/significance of this issue. Without this commitment the level of uncertainty as it relates to a significance adverse impact determination would increase.

- DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is fish stranding.
- Recommendation 3.6.1 (Blasting): DFO-FPP recommends that the Developer utilize an instantaneous pressure threshold limit of 50 kPa, which may require appropriate setback distances, in order to develop adequate mitigation measures to address the effects of blasting on fish and reduce the risk of serious harm to fish as a result of the Project.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is instantaneous pressure change (IPC), which can cause injury or mortality to fish.
- Recommendation 3.6.2 (Blasting): DFO-FPP recommends that the Developer avoid blasting during sensitive spawning periods as per DFO's NWT fish spawning timing windows.
 - This recommendation was highlighted for the Board's consideration in the EA phase.
 - Based on the proposed plan submitted by the proponent DFO required a commitment to be made during the environmental assessment stage intended to reduce the level of uncertainty/significance of this issue. Without this commitment the level of uncertainty as it relates to a significance adverse impact determination would increase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is instantaneous pressure change (IPC), which can cause injury or mortality to fish.
- Recommendation 3.7.1 (Offsetting): The Program recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization so that offsetting and monitoring plans can be reviewed in more detail.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase.

Final Technical Report Supplement, March 22, 2017

- Recommendation 3.1.1(Habitat Mitigation of the Side Channel): DFO-FPP recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization for their Project.

- This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase.
- **Recommendation 3.2.1 (Impact on Littoral Habitat):** DFO-FPP recommends that the Developer confirm that the water withdrawal calculations in Table A1.7 "Littoral habitat lost as a result of water withdrawal" reflect the rates proposed (1% at Mosquito and Km 70 lakes; 2% at Km 139 and 141 lakes; and 5% at Km 115 and 121 lakes) in the letter to MVEIRB submitted on August 11, 2016.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact addressed is serious harm to fish and fish habitat (littoral habitat).
- **Recommendation 3.2.2 (Impact on Littoral Habitat):** DFO-FPP recommends that the Developer clarify if water withdrawal, including winter withdrawal, is proposed to occur throughout the construction, operation, maintenance and decommissioning of the road. If so, DFO-FPP requests that the Developer quantify cumulative anticipated water withdrawal and littoral losses for the construction, operation, maintenance and decommissioning of the road, taking into consideration that the Developer quantify cumulative anticipated water withdrawal and littoral losses for the construction, operation, maintenance and decommissioning of the road, taking into consideration that lake discharge and recharge rates may vary from year to year.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact addressed is serious harm to fish and fish habitat (littoral habitat).
- **Recommendation 3.2.3 (Impact on Littoral Habitat):** DFO-FPP recommends that the Developer install water level gauges at Mosquito Lake and lakes at Km 70, Km 139, Km 141, Km 115, and Km 121, and any other lake to be withdrawn from in order to monitor baseline conditions, and discharge and recharge rates.
 - This recommendation was highlighted for the Board's consideration in the EA phase.
 - Based on the proposed plan submitted by the proponent DFO required a commitment to be made during the environmental assessment stage intended to reduce the level of uncertainty/significance of this issue.

Without this commitment the level of uncertainty as it relates to a significance adverse impact determination would increase.

- DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact addressed is serious harm to fish and fish habitat (littoral habitat).

- **Recommendation 3.2.4 (Impact on Littoral Habitat):** DFO-FPP recommends that the Developer provide information on littoral habitat (e.g. suitable nursery, rearing, spawning, and foraging habitat) for any fish species that might use the area at any point during their life cycle. This information is to be provided for Mosquito Lake and lakes at Km 70, Km 139, Km 141, Km 115, and Km 121. DFO-FPP also recommends that the Developer provides information on the risk of the formation of barriers to fish passage between lakes, if applicable. This information may be provided during the regulatory phase.

- This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
- DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact addressed is serious harm to fish and fish habitat (littoral habitat).

- **Recommendation 3.2.5 (Impact on Littoral Habitat):** FO-FPP recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization for the Project.

- This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
- DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact addressed is serious harm to fish and fish habitat (littoral habitat).

- **Recommendation 3.3.1 (Crossings):** DFO-FPP recommends that the Developer include in Table A1.9 all impacts to fish and fish habitat that may cause serious harm to fish, including but not limited to water crossings.

- This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
- DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed is anticipated physical impacts to fish and fish habitat of a spatial scale resulting from water crossings.

- **Recommendation 3.4.3 (Offsetting):** If a *Fisheries Act* authorization is required, DFO-FPP recommends that the proponent submits an offsetting plan, and a monitoring plan, which are requirements under the *Fisheries Act*.

- This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
- DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact being addressed here is the loss of a side channel that provides rearing and likely spawning habitat for fish. Presently, the Developer has selected to not construct a side channel of a similar nature in their preliminary offsetting plans. The Developer has agreed to continue working with Fisheries and Oceans Canada regarding offsetting.
- **Recommendation 3.5.1 (Habitat Delineation)** : DFO-FPP recommends that the Developer clarify which return year was used to calculate anticipated serious harm to fish that may result from the construction, operation, maintenance and decommissioning of all water crossings.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase.
- **Recommendation 3.6.1 (Dewatering)**: DFO-FPP recommends that the Developer utilizes terminology provided in the Fisheries Protection Policy Statement for example, serious harm, permanent alteration, and destruction.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase.
- **Recommendation 3.6.2 (Dewatering)**: If the Developer intends to dewater (pump) while constructing the Sundog Creek diversion channel, DFO-FPP recommends that the Developer submit a dewatering plan to the Program. DFO-FPP recommends that all best management practices be incorporated in the dewatering plan, including but not limited to the use of appropriately-sized fish screens as per DFO's Freshwater Intake End-of-Pipe Fish Screen Guideline (1995).
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase.
- **Recommendation 3.6.3 (Dewatering)**: DFO-FPP recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization to DFO-FPP.

- This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
- DFO will engage the Developer directly to address this recommendation in the regulatory phase.
- Recommendation 3.7.1 (Improvement to existing road between KP0 and KP17): DFO-FPP recommends that the Developer confirm that the riparian vegetation to be removed between km 0 and km 17 is above the High Water Mark.
 - This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact addressed is serious harm to fish and fish habitat (riparian habitat).
- Recommendation 3.7.2 (Improvement to existing road between KP0 and KP17): The Program recommends that the Developer incorporate standard best management practices for the removal of riparian vegetation, including but not limited to: minimize the removal of riparian vegetation where practical; install and maintain sediment and erosion controls, and re-stabilize the site immediately.
 - This recommendation was highlighted for the Board's consideration in the EA phase.
 - Based on the proposed plan submitted by the proponent DFO required a commitment to be made during the environmental assessment stage intended to reduce the level of uncertainty/significance of this issue. Without this commitment the level of uncertainty as it relates to a significance adverse impact determination would increase.
 - DFO will engage the Developer directly to address this recommendation in the regulatory phase. The impact addressed is serious harm to fish and fish habitat (riparian habitat).

As stated in the Final Hearings, (DFO): "Depending on the official application, we will determine the extent of serious harm for our own processes. But for the environmental assessment phase, we have enough information to know that Canadian Zinc will be able to mitigate, avoid, and offset the serious harm [...] So there is significant effect of the project, but considering the avoidance, mitigation, and offsetting measures, I do believe that the effect can be resolved¹."

¹ April 27, 2017 (Day 2) transcript, page 141, PR #525

DFO is satisfied with the information submitted to date, through our information requests and commitments from the proponent, as part of the ongoing process to proceed to the next step in the assessment process.

Fisheries and Oceans Canada's Closing Arguments for Canadian Zinc Corporation Prairie Creek all-season road (EA1415-01)

For each of Fisheries and Oceans Canada's (DFO) recommendations submitted to the Mackenzie Valley Environmental Impact Review Board (the Board) as part of our Final Submission/Technical Report (March 10, 2017) and Final Technical Report Supplement (March 22, 2017) for Canadian Zinc Corporation (CZN or the Developer) Prairie Creek all-season road, the following statements will be addressed:

- 1.) Which specific impact(s) each recommendation is intended to mitigate;
- 2.) How that impact would otherwise occur, based on evidence on the public record, or the lack of evidence to support conclusions that no impacts will occur; and
- 3.) The characteristics of the impact (spatial extent, duration, magnitude, frequency, reversibility, and likelihood).

Final Submission/Technical Report, March 10, 2017

Recommendation 3.1.1 (high water mark): The Program recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization for the Project. When submitting, in order to avoid confusion, DFO-FPP recommends habitat within the 1:2 year High Water Mark is not divided into categories as outlined by Hatfield.

- 1.) Impact addressed: Defining the spatial scale of *serious harm* to fish and fish habitat.
- 2.) Impact if not addressed: "Consistent terminology and understanding of habitat use is vital in DFO's Regulatory Review to full comprehend potential impacts. Providing this information now will aid DFO in a timely review. If not implemented, DFO is concerned there will be inconsistent comprehension of all potential *serious harm* to fish and fish habitat"¹.
- 3.) Characteristics of the Impact: The purpose of this recommendation was to define the full extent of the spatial scale of impacts to fish and fish habitat throughout the life of the project.

¹ Fisheries and Oceans Canada's Technical Report/Final Submission, March 10, 2017, PR #449

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will be evaluated in more detail during the regulatory phase, should the project be approved. If the project proceeds to the regulatory phase, the Developer has committed to avoid categorizing habitat within the 1:2 year HWM in their *Fisheries Act* Authorization application. **Therefore, no measure is required for this recommendation.**

Recommendation 3.1.2 (high water mark): DFO-FPP recommends that CZN utilize the terms *serious harm*, permanent alteration, and destruction as provided in the Fisheries Protection Policy Statement (defined above in Section 2.0 Mandate) instead of using terms such as habitat categories A, B, C, and habitat of low/medium/high importance.

- 1.) Impact addressed: Defining the spatial scale of *serious harm* to fish and fish habitat.
- 2.) Impact if not addressed: "Consistent terminology and understanding of habitat use is vital in DFO's Regulatory Review to full comprehend potential impacts. Providing this information now will aid DFO in a timely review. If not implemented, DFO is concerned there will be inconsistent comprehension of all potential *serious harm* to fish and fish habitat"¹.
- 3.) Characteristics of the impact: The purpose of this recommendation was to define the full extent of the spatial scale of impacts to fish and fish habitat throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will be evaluated in more detail during the regulatory phase, should the project be approved. If the project proceeds to the regulatory phase, the Developer has committed to use DFO's terminology in their *Fisheries Act* Authorization application. **Therefore, no measure is required for this recommendation.**

Recommendation 3.2.1 (Sundog Creek Channel Realignment): The Program recommends that the Developer submit a request for Review and/or apply for a *Fisheries Act* Authorization so that DFO-FPP can review proposed mitigation.

- 1.) Impact addressed: *Serious harm* to fish resulting from the Sundog Creek realignment.
- 2.) Impact if not addressed: "If appropriate avoidance and mitigation measures are not implemented during design, construction, maintenance and closure, *serious harm* to fish may result"¹.

² Fisheries and Oceans Canada Final Hearing Response to Undertaking #6, May 9, 2017, PR #538

- 3.) Characteristics of the impact: The channel realignment is likely to cause *serious harm* to fish; i.e. significant adverse impacts throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's consideration during the environmental assessment (EA) phase. Should the project be approved, the Developer has committed to submit a *Fisheries Act* Authorization application. **Therefore, no measure is required for this recommendation.**

Recommendation 3.2.2 (Sundog Creek Channel Realignment): DFO-FPP recommends that hydrographs, modelling, and detailed designs for the existing channel and the proposed channel are submitted to DFO-FPP during the regulatory phase.

- 1.) Impact addressed: The risk of the channel drying up earlier than it usually does.
- 2.) Impact if not addressed: "If appropriate avoidance and mitigation measures are not implemented during design, construction, maintenance and closure, *serious harm* to fish may result"¹.
- 3.) Characteristics of the impact: The channel realignment is likely to cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, and will be evaluated in more detail during the regulatory phase, should the project be approved. If the project proceeds to the regulatory phase, the Developer has committed to provide this information. **Therefore, no measure is required for this recommendation.**

Recommendation 3.2.3 (Sundog Creek Channel Realignment): DFO-FPP recommends that the Developer implement natural channel design principles into the proposed constructed channel.

- 1.) Impact addressed: Fish habitat in the proposed constructed channel.
- 2.) Impact if not addressed: "If appropriate avoidance and mitigation measures are not implemented during design, construction, maintenance and closure, *serious harm* to fish may result"¹.
- 3.) Characteristics of the impact: The channel realignment is likely to cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, and will be evaluated in more detail during the regulatory phase, should the project be approved. If this project proceeds to the regulatory

phase, the Developer has committed to provide this information. **Therefore, no measure is required for this recommendation.**

Recommendation 3.3.1 (Water Crossings): DFO-FPP recommends that the Developer implement all available best management practices to avoid, mitigate, or offset *serious harm* as defined in the *Fisheries Act* as a result of water crossing construction, operation, and decommissioning. This includes, but is not limited to: appropriate design of water crossings to facilitate passage at both high and low flows; bank stabilization by protecting and replanting riparian vegetation; adhering to timing windows to avoid spawning, incubation, and hatch times for all species using the water courses, and the installation and maintenance of sediment and erosion control measures.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat resulting from water crossings, and how to mitigate these impacts.
- 2.) Impact if not addressed: "If appropriate avoidance or mitigation practices are not employed in water crossing design, construction, maintenance and decommissioning, *serious harm* to fish may occur"¹.
- 3.) Characteristics of the impact: Water crossings can cause *serious harm* to fish, i.e. significant adverse impact, during the construction, operation and closure if mitigation measures are not implemented properly.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's consideration, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. If the project proceeds to the regulatory phase, the Developer has committed to provide this information. **Therefore, no measure is required for this recommendation.**

Recommendation 3.3.3 (Water Crossings): DFO-FPP recommends that an appropriate water crossing maintenance and monitoring plan be in place to ensure that barriers to fish passage do not form over time as a result of crossing damage due to ice blockage, flooding or movement of debris, such as may occur at freshet.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat resulting from water crossings, and how to mitigate these impacts.
- 2.) Impact if not addressed: "If appropriate avoidance or mitigation practices are not employed in water crossing design, construction, maintenance and decommissioning, *serious harm* to fish may occur"¹.
- 3.) Characteristics of the impact: Water crossings can cause *serious harm* to fish, i.e. significant adverse impact, during the construction, operation and closure if mitigation measures are not implemented properly.

The Developer has provided the information during the EA phase. As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's consideration, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. **Therefore, no measure is required for this recommendation.**

Recommendation 3.3.1 (Water Crossings): DFO-FPP recommends that the Developer provide DFO with detailed engineering plans of all water crossings that are fish bearing, supported by measured or modeled stream flow data, for review prior to construction. This recommendation was highlighted for the Board's information at this time, and will be evaluated in more detail during the regulatory phase.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat resulting from water crossings, and how to mitigate these impacts.
- 2.) Impact if not addressed: "If appropriate avoidance or mitigation practices are not employed in water crossing design, construction, maintenance and decommissioning, *serious harm* to fish may occur"¹.
- 3.) Characteristics of the impact: Water crossings can cause *serious harm to fish*, i.e. significant adverse impact, during the construction, operation and closure if mitigation measures are not implemented properly.

The Developer has provided the information during the EA phase. As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. **Therefore, no measure is required for this recommendation.**

Recommendation 3.4.1 (Liard River Crossings): DFO-FPP recommends that standard best practices are utilized for the design, construction, and decommissioning of the Liard River crossing and consistent terminology.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat resulting from the Liard River crossing and how to mitigate these impacts.
- 2.) Impact if not addressed: "If appropriate design, construction, mitigation, and closure are not implemented for the Liard River crossing, *serious harm* to fish may result"¹.
- 3.) Characteristics of the impact: The Liard River barge crossing could cause *serious harm to fish*, i.e. significant adverse impact, during the construction, operation and closure of the project if not constructed, maintained or decommissioned properly.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's consideration, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. Furthermore, the Developer has committed to follow standard best management practices during the construction, operation and closure of the project. **Therefore, no measure is required for this recommendation.**

Recommendation 3.5.1 (Flow in Sundog Creek Realignment): To avoid stranding of fishes, DFO-FPP recommends the Developer incorporates a barrier to upstream fish passage (e.g. steps) into their designs. The barrier would be located upstream of the offsetting pool proposed in the approximate location of km 36.9.

- 1.) **Impact being addressed:** Fish stranding.
- 2.) **Impact if not addressed:** "If appropriate flow mitigation is not implemented during the construction, operation, and decommissioning of the Sundog Creek realignment, *serious harm* to fish may result"¹.
- 3.) **Characteristics of impact:** Flow alteration in Sundog Creek could cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. Furthermore, the Developer has committed to implement measures to avoid stranding of fish. **Therefore, no measure is required for this recommendation.**

Recommendation 3.5.2 (Flow in Sundog Creek Realignment): DFO-FPP recommends the Developer consider the possibility of a channel readjustment phase and develop a plan to mitigate these potential adverse effects.

- 1.) **Impact being addressed:** Fish stranding.
- 2.) **Impact if not addressed:** "If appropriate flow mitigation is not implemented during the construction, operation, and decommissioning of the Sundog Creek realignment, *serious harm* to fish may result"¹.
- 3.) **Characteristics of the impact:** Flow alteration in Sundog Creek could cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. **Therefore, no measure is required for this recommendation.**

Recommendation 3.5.3 (Flow in Sundog Creek Realignment): DFO-FPP recommends that the Developer implement all available best management practices in the design of the proposed constructed channel to avoid and mitigate *serious harm* to fish as a result of the realignment. This includes, but is not limited to, appropriate design of the new channel to facilitate fish passage at both high and low flows for Arctic Grayling and any other species of fish that may use Sundog Creek at all relevant life stages. Such fish may have different capacities for swimming performance (Gervais & Katopodis, 2015), which may affect the design of the new channel.

- 1.) Impact addressed: Fish stranding.
- 2.) Impact if not addressed: "If appropriate flow mitigation is not implemented during the construction, operation, and decommissioning of the Sundog Creek realignment, *serious harm* to fish may result"¹.
- 3.) Characteristics of impact: Flow alteration in Sundog Creek could cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. **Therefore, no measure is required for this recommendation.**

Recommendation 3.6.1 (Blasting): DFO-FPP recommends that the Developer utilize an instantaneous pressure threshold limit of 50 kPa [as per Cott & Hanna, 2005¹], which may require appropriate setback distances, in order to develop adequate mitigation measures to address the effects of blasting on fish and reduce the risk of *serious harm* to fish as a result of the Project.

- 1.) Impact addressed: Instantaneous pressure change, which can cause injury or mortality to fish.
- 2.) Impact if not addressed: "If appropriate avoidance and mitigation practices are not employed in blasting plans and mitigation strategies, *serious harm* to fish may result"¹.
- 3.) Characteristics of impact: Blasting will be required at several locations near fish-bearing water bodies during the construction phase. Blasting could cause *serious harm* to fish, i.e. significant adverse impact during the construction phase if not done properly.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's informational purposes, but will continue to be evaluated in more

detail during the regulatory phase, should the project be approved. **Therefore, no measure is required for this recommendation.**

Recommendation 3.6.2 (Blasting): DFO-FPP recommends that the Developer avoid blasting during sensitive spawning periods as per DFO's NWT fish spawning timing windows.

- 1.) Impact addressed: Instantaneous pressure change, which can cause injury or mortality to fish.
- 2.) Impact if not addressed: "If appropriate avoidance and mitigation practices are not employed in blasting plans and mitigation strategies, *serious harm* to fish may result"¹.
- 3.) Characteristics of impact: Blasting will be required at several locations near fish-bearing water bodies during the construction phase. Blasting could cause *serious harm* to fish, i.e. significant adverse impact during the construction phase if not done properly.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's consideration, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. Furthermore, the Developer has committed to blast in accordance with DFO's spawning timing windows. **Therefore, no measure is required for this recommendation.**

Recommendation 3.7.1 (Offsetting): The Program recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization so that offsetting and monitoring plans can be reviewed in more detail.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat resulting from the project.
- 2.) Impact if not addressed: "If this recommendation is not implemented, *serious harm* to fish may result"¹.
- 3.) Characteristics of impact: The proposed all-season road has the potential to cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. Furthermore, the Developer has committed to submit a *Fisheries Act* authorization application or 'DFO Request for Review'. **Therefore, no measure is required for this recommendation.**

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Recommendation 3.1.1 (Habitat Mitigation of the Side Channel): DFO-FPP recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization for their Project.

- 1.) Impact addressed: The proposed road prism covers a side channel between kp 37.55 and 37.77 that provides rearing and likely spawning habitat.
- 2.) Impact if not addressed: “If appropriate avoidance measures are not implemented during design, construction, maintenance, and closure of the Project, *serious harm* to fish may result”³.
- 3.) Characteristics of impact: The proposed all-season road has the potential to cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO’s responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board’s information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. Furthermore, the Developer has committed to submit a *Fisheries Act* Authorization application. **Therefore, no measure is required for this recommendation.**

Recommendation 3.2.1 (Impact on Littoral Habitat): DFO-FPP recommends that the Developer confirm that the water withdrawal calculations in Table A1.7 “Littoral habitat lost as a result of water withdrawal” reflect the rates proposed (1% at Mosquito and Km 70 lakes; 2% at Km 139 and 141 lakes; and 5% at Km 115 and 121 lakes) in the letter to MVEIRB submitted on August 11, 2016.60,026

- 1.) Impact addressed: *Serious harm* to fish and fish habitat (littoral habitat) resulting from water withdrawal.
- 2.) Impact if not addressed: “Providing this information will aid in Fisheries and Oceans Canada’s determination of *serious harm* to fish. If appropriate avoidance and mitigation measures are not implemented for water withdrawal, *serious harm* to fish may result”³.
- 3.) Characteristics of impact: Impacts on littoral habitats at several locations will occur. Changes to littoral habitat could cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

³ Fisheries and Oceans Canada’s Technical Report Supplement, March 22, 2017, PR #466

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. If the project proceeds to the regulatory phase, the Developer has committed to correcting this information. **Therefore, no measure is required for this recommendation.**

Recommendation 3.2.2 (Impact on Littoral Habitat): DFO-FPP recommends that the Developer clarify if water withdrawal, including winter withdrawal, is proposed to occur throughout the construction, operation, maintenance and decommissioning of the road. If so, DFO-FPP requests that the Developer quantify cumulative anticipated water withdrawal and littoral losses for the construction, operation, maintenance and decommissioning of the road, taking into consideration that the Developer quantify cumulative anticipated water withdrawal and littoral losses for the construction, operation, maintenance and decommissioning of the road, taking into consideration that lake discharge and recharge rates may vary from year to year.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat (littoral habitat) resulting from water withdrawal.
- 2.) Impact if not addressed: "Providing this information will aid in Fisheries and Oceans Canada's determination of *serious harm* to fish. If appropriate avoidance and mitigation measures are not implemented for water withdrawal, *serious harm* to fish may result"³.
- 3.) Characteristics of impact: Impacts on littoral habitats due to water withdrawal could occur. Changes to littoral habitat could cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. **Therefore, no measure is required for this recommendation.**

Recommendation 3.2.3 (Impact on Littoral Habitat): DFO-FPP recommends that the Developer install water level gauges at Mosquito Lake and lakes at Km 70, Km 139, Km 141, Km 115, and Km 121, and any other lake to be withdrawn from in order to monitor baseline conditions, and discharge and recharge rates.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat (littoral habitat) resulting from water withdrawal.
- 2.) Impact if not addressed: "Providing this information will aid in Fisheries and Oceans Canada's determination of *serious harm* to fish. If appropriate avoidance and

mitigation measures are not implemented for water withdrawal, *serious harm* to fish may result”³.

- 3.) Characteristics of impact: Impacts on littoral habitats due to water withdrawal could occur. Changes to littoral habitat could cause *serious harm* to fish, i.e. significant adverse impact, throughout the life of the project.

As stipulated in DFO’s responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board’s information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. **Therefore, no measure is required for this recommendation.**

Recommendation 3.2.4 (Impact on Littoral Habitat): DFO-FPP recommends that the Developer provide information on littoral habitat (e.g. suitable nursery, rearing, spawning, and foraging habitat) for any fish species that might use the area at any point during their life cycle. This information is to be provided for Mosquito Lake and lakes at Km 70, Km 139, Km 141, Km 115, and Km 121. DFO-FPP also recommends that the Developer provides information on the risk of the formation of barriers to fish passage between lakes, if applicable. This information may be provided during the regulatory phase.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat (littoral habitat) resulting from water withdrawal.
- 2.) Impact if not addressed: “Providing this information will aid in Fisheries and Oceans Canada’s determination of *serious harm* to fish. If appropriate avoidance and mitigation measures are not implemented for water withdrawal, *serious harm* to fish may result”³.
- 3.) Characteristics of impact: Impacts on littoral habitats due to water withdrawal could occur. Changes to littoral habitat could cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO’s responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board’s information, but will continue to be evaluated in more detail during the regulatory phase, if the project is approved. **Therefore, this recommendation doesn’t need to be incorporated as a measure.**

Recommendation 3.2.5 (Impact on Littoral Habitat): FO-FPP recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization for the Project.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat (littoral habitat) resulting from water withdrawal.

- 2.) Impact if not addressed: “Providing this information will aid in Fisheries and Oceans Canada’s determination of *serious harm* to fish. If appropriate avoidance and mitigation measures are not implemented for water withdrawal, *serious harm* to fish may result”³.
- 3.) Characteristics of impact: Impacts on littoral habitats due to water withdrawal could occur. Changes to littoral habitat could cause serious harm to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO’s responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. **Therefore, no measure is required for this recommendation.**

Recommendation 3.3.1 (Crossings): DFO-FPP recommends that the Developer include in Table A1.9 all impacts to fish and fish habitat that may cause *serious harm* to fish, including but not limited to water crossings.

- 1.) Impact addressed: Physical impacts to fish and fish habitat of a spatial scale resulting from water crossings.
- 2.) Impact if not addressed: “If project components are omitted in Table 1.9, reviewers may misinterpret calculations that the Developer has provided on the quantification of impacts to fish and fish habitat that may result from the project”³.
- 3.) Characteristics of impact: Water crossings can cause *serious harm to fish*, i.e. significant adverse impact, during the construction, operation and closure if mitigation measures are not implemented properly.

As stipulated in DFO’s responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. Furthermore, the Developer has committed to correct this information during the regulatory phase. **Therefore, no measure is required for this recommendation.**

Recommendation 3.4.3 (Offsetting): If a *Fisheries Act* Authorization is required, DFO-FPP recommends that the proponent submits an offsetting plan, and a monitoring plan, which are requirements under the *Fisheries Act*.

- 1.) Impact addressed: Creating side channel habitat was not selected in preliminary offsetting proposal.
- 2.) Impact if not addressed: “If appropriate measures to avoid, mitigate, or offset are not implemented, *serious harm* to fish may result”³.

- 3.) **Characteristics of impact:** The loss of a side channel, which provides rearing and likely spawning habitat, is likely to cause *serious harm* to fish, i.e. significant adverse impact throughout the life of the project.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. **Therefore, no measure is required for this recommendation.**

Recommendation 3.5.1 (Habitat Delineation): DFO-FPP recommends that the Developer clarify which return year was used to calculate anticipated *serious harm* to fish that may result from the construction, operation, maintenance and decommissioning of all water crossings.

- 1.) **Impact addressed:** Physical impacts to fish and fish habitat of a spatial scale resulting from water crossings.
- 2.) **Impact if not addressed:** "Consistent terminology and understanding of habitat use is vital in DFO's regulatory Review to fully comprehend potential impacts. Providing this information now will aid DFO in a timely review. If not implemented, DFO is concerned there will be an inconsistent comprehension of all potential *serious harm* to fish and fish habitat"³.
- 3.) **Characteristics of impact:** The purpose of this recommendation was to confirm the spatial scale of impacts.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. Furthermore, the Developer has provided the information during the EA phase. **Therefore, no measure is required for this recommendation.**

Recommendation 3.6.1 (Partial Dewatering): DFO-FPP recommends that the Developer utilizes terminology provided in the Fisheries Protection Policy Statement for example, *serious harm*, permanent alteration, and destruction.

- No longer applicable, as the Developer confirmed that they will not be dewatering in Sundog Creek.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information. The Developer confirmed that they will not be dewatering in Sundog Creek. **Therefore, no measure is required for this recommendation.**

Recommendation 3.6.2 (Partial Dewatering): If the Developer intends to dewater (pump) while constructing the Sundog Creek diversion channel, DFO-FPP recommends that the Developer submit a dewatering plan to the Program. DFO-FPP recommends that all best management practices be incorporated in the dewatering plan, including but not limited to the use of appropriately-sized fish screens as per DFO's Freshwater Intake End-of-Pipe Fish Screen Guideline (1995).

- No longer applicable.

Recommendation 3.6.3 (Partial Dewatering): DFO-FPP recommends that the Developer submit a Request for Review and/or apply for a *Fisheries Act* Authorization to DFO-FPP.

- No longer applicable.

Recommendation 3.7.1 (Improvement to existing road between KP0 and KP17): DFO-FPP recommends that the Developer confirm that the riparian vegetation to be removed between km 0 and km 17 is above the High Water Mark.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat (riparian habitat).
- 2.) Impact if not addressed: "If appropriate avoidance and mitigation measures are not implemented for the removal of riparian vegetation, *serious harm* to fish may result"³.
- 3.) Characteristics of impact: If impacts to riparian vegetation occur, *serious harm* to fish may result.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. The Developer confirmed that these improvements are taking place on the upslope side of the road, above the HWM. **Therefore, no measure is required for this recommendation.**

Recommendation 3.7.2 (Improvement to existing road between KP0 and KP17): The Program recommends that the Developer incorporate standard best management practices for the removal of riparian vegetation, including but not limited to: minimize the removal of riparian vegetation where practical; install and maintain sediment and erosion controls, and re-stabilize the site immediately.

- 1.) Impact addressed: *Serious harm* to fish and fish habitat (riparian habitat).
- 2.) Impact if not addressed: "If appropriate avoidance and mitigation measures are not implemented for the removal of riparian vegetation, *serious harm* to fish may result"³.
- 3.) Characteristics of impact: If impacts to riparian vegetation occur, *serious harm* may result.

As stipulated in DFO's responses to undertaking #6 (May 9, 2017)², this recommendation was highlighted for the Board's information, but will continue to be evaluated in more detail during the regulatory phase, should the project be approved. The Developer confirmed that these improvements are taking place on the upslope side of the road, above the HWM. **Therefore, no measure is required for this recommendation.**