

INDIAN AND NORTHERN AFFAIRS CANADA

**TECHNICAL REPORT TO THE
MACKENZIE VALLEY ENVIRONMENTAL IMPACT REVIEW BOARD**

on the

**PROPOSED DEZE ENERGY CORPORATION LTD.
TALTSON HYDROELECTRIC EXPANSION PROJECT
EA0708-007**

December 11, 2009

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1. SUMMARY

Indian and Northern Affairs Canada (INAC)'s technical report on Dezé Energy Corporation Ltd.'s (Dezé) Taltson Hydroelectric Expansion Project (the Project) contains recommendations intended to minimize adverse impacts from the project's use of land and water and deposits of waste.

INAC has responsibilities to protect land and water, and to promote environmental stewardship in the Northwest Territories. INAC's legislated responsibilities for water management and protection stem from *Northwest Territories Waters Act*. INAC's responsibilities related to disposition, management and protection of Crown lands in the Northwest Territories stem from the *Territorial Lands Act*, Territorial Land Use Regulations and the *Federal Real Property and Federal Immovables Act*. INAC also provides expert advice and renders decisions as a Responsible Minister under the *Mackenzie Valley Resource Management Act*.

In preparing its technical report, INAC has reviewed information provided by Dezé, including the Developer's Assessment Report, Baseline Water Data, Flood Frequency Analysis, Draft Environmental Monitoring Program, Commitments and information provided in response to information requests at the Technical Sessions held in Lutselk'e and Yellowknife between September 29 and October 3 2009. INAC's review is organized into areas related to: water quality; water quantity; terrain and permafrost; closure and reclamation; management plans and access.

1.a. INAC Recommendations:

RECOMMENDATION #1:

INAC recommends that Dezé be required to continue calibration and verification of its Taltson River Basin Model during the regulatory phase but most importantly during the initial years of operations such that further operational adjustments can be implemented to reduce potential impacts. This calibration and verification should take into consideration, to the extent possible, precipitation information within the basin to help improve forecasting ability.

RECOMMENDATION #2:

INAC recommends that Dezé implement its mitigation commitments to control the release of water from Nonacho Lake to reduce ice break-up and water level drops in the near shore area which can affect access and safety.

RECOMMENDATION #3:

INAC recommends that Dezé be required to monitor and report on water level, ice formation and ice thickness at agreed upon locations throughout the Taltson Watershed and that these requirements be conditions of its Environmental Monitoring Program.

RECOMMENDATION #4:

INAC recommends that Dezé moderate and control water releases through Trudel Creek to the extent possible during power outages, shutdowns and restarts to reduce impacts from a relative quick increase in flow and water level.

RECOMMENDATION #5:

INAC recommends that Dezé use the most recent version of its hydrological model for Taltson River, particularly during the initial years of operation, to make operational adjustments during these outages, shutdowns and restarts such that the effects of water fluctuations in Trudel Creek are minimized.

RECOMMENDATION #6:

INAC recommends that more evidence be provided that supports the recommendation that a winter minimum flow of 4 m³/s will maintain the ecology of Trudel Creek. Dezé should also establish minimum flow requirements for other seasons for Trudel Creek.

RECOMMENDATION #7:

INAC recommends that more work be done to determine if minimum flow requirements are necessary for Tronka Chua Gap to ensure there are no significant ecological effects.

RECOMMENDATION #8:

INAC recommends that Dezé Implement all commitments and mitigation measures as outlined in its Commitments 2009 document (October, 2009) when conducting activities in-stream and near-stream to ensure the contamination of surface waters is reduced or avoided.

RECOMMENDATION #9:

INAC recommends that Dezé be required to submit a Blast Management Plan during the regulatory process that details the procedures for placing explosives in wet holes outside the near-stream set back zone (10 meters

from the edge of water) such that effects to surface and groundwater are avoided.

RECOMMENDATION #10:

INAC recommends that Dezé consider using cofferdams when conducting other in-stream activities such as dam improvements and canal and spillway construction to prevent water contamination and sedimentation.

RECOMMENDATION #11:

INAC recommends that Dezé incorporate monitoring for ammonia and nitrate residues as part of the proposed Environmental Monitoring Program and for acid rock drainage and metal leaching from blast rock stockpiles as part of their Surveillance Network Program. The information from these monitoring programs should be used to adapt aspects of project construction and operation such that background water quality is not adversely affected. INAC is willing to assist Dezé in the development of such monitoring plans.

RECOMMENDATION #12:

INAC recommends that Dezé gather all information necessary to address the data gaps identified in the Draft Environmental Monitoring Program (October 2009) such that Dezé can provide adequate characterization of baseline conditions. These characterizations should be used to verify the assumptions used to model the environment and predict impacts.

RECOMMENDATION #13:

INAC recommends that Dezé gather additional information on DO levels in winter for all areas of interest and that these data be used to further calibrate and validate the model used to calculate the DO levels under the two expansion scenarios to assist in the assessment of effects for the project.

RECOMMENDATION #14:

INAC recommends that this revised DO model be used along with any revisions to the power generation model and the Taltson River Basin model to identify a preferred operational scenario for both generation and environmental effects mitigation.

RECOMMENDATION #15:

INAC recommends that DO and Mercury be monitored and reported as part of the Environmental Monitoring Plan and that the results of this monitoring be

used to adaptively manage operations at the facility to mitigate effects. INAC is willing to assist Dezé in the development of this monitoring plan.

RECOMMENDATION #16:

INAC recommends that Dezé implement its commitments in regards to waste and sewage storage, treatment and disposal as proposed in the Commitments 2009 document (October, 2009).

RECOMMENDATION #17:

INAC recommends that a Draft Spill Contingency Plan be developed that addresses spills associated with construction activities, camps, staging and fuel storage facilities during the regulatory phase.

RECOMMENDATION #18:

INAC recommends that the final detailed design package for transmission line construction include details pertaining to the exact number, location and ground condition of camps, barge landings and staging sites during the regulatory phase.

RECOMMENDATION #19:

INAC recommends that Dezé finalize the details for ice road construction and monitoring, including all proposed mitigation measures to reduce impacts to watercourse crossings, during the regulatory phase.

RECOMMENDATION #20:

INAC recommends that Dezé conduct reconnaissance, if not already completed, along the proposed transmission line right-of-way during summer to ensure tower locations are placed where little to no effects are expected to sensitive habitat and or surface or subsurface conditions.

RECOMMENDATION #21:

INAC recommends that during the regulatory phase Dezé submit final details and configurations for construction camps and staging areas. These details should include information pertaining to material placement and storage method as well as the quantity and type equipment being staged.

RECOMMENDATION #22:

INAC recommends that Dezé be required to develop an Adaptive Management Plan along with its Environmental Monitoring Plans such

that the plans are directly linked and feed into the management framework. INAC is willing to work with the Land and Water Board and Dezé to develop these plans.

RECOMMENDATION #23:

INAC recommends that Dezé be required to develop a Preliminary Closure and Reclamation Plan during the regulatory phase. INAC is willing to work with the Land and Water Board and Dezé in the development of this plan.

2. BACKGROUND – Land Tenure

There are several land tenure instruments under the *Territorial Lands Act*, and *Federal Real Property and Immovables Act* relevant to the Taltson Project. Most of the lands required for the Project are held by Her Majesty the Queen in right of Canada and under the administration and control of the Minister of Indian Affairs and Northern Development. A few exceptions exist where the title to lands is held by the Northwest Territories Power Corporation. A summary is provided below:

- The Northwest Territories Power Corporation (NTPC) currently holds several titles to land encompassing the existing Taltson Generating Station, road and airstrip at Twin Gorges, the Nonacho Lake Spillway and dam, the South Valley Spillway, and two other small dykes on the Taltson River. The proposed new infrastructure at Twin Gorges and Nonacho Lake are outside of these NTPC titled lands, and are on lands withdrawn by Order in Council (below).
- To allow for the development of hydroelectric power generation facilities along the Taltson River, all land along the Taltson River between Nonacho and Tsu Lakes up to 35 feet above the original ordinary high water mark, and all land up to 25 feet above the original ordinary high water level of Nonacho Lake is withdrawn from disposal under an Order from the Governor General in Council. This withdrawal encompasses all existing and proposed Twin Gorges, Nonacho Lake and South Gorge infrastructure and associated flooding, except where title to these lands is held by NTPC.
- Lands proposed for a national park in the East Arm of Great Slave Lake area are withdrawn from disposal under an *Order Respecting the Withdrawal from Disposal of Certain Lands in the Northwest Territories (East Arm of Great Slave, N.W.T.)* made by the Governor General in Council. This withdrawal has exceptions that allow for the disposition of lands to be used for transmission lines and ancillary facilities for power generated at any hydroelectric project on the Taltson River.

- Surface and sub-surface rights related to the ongoing negotiations of a final agreement with the Akaitcho Dene First Nations are withdrawn under the *Order Respecting the Withdrawal from Disposal of Certain Lands in the Northwest Territories (Akaitcho Dene First Nations, N.W.T.)*. This withdrawal also has exceptions that allow for a transmission line and facilities.

Subject to regulatory approvals from the Mackenzie Valley Land and Water Board for access to, and construction of a transmission line, the Minister of Indian Affairs and Northern Development would negotiate with NTPC or its Designate, the appropriate tenure instrument for the lands respecting the transmission line and any long-term access required along its route.

Once the appropriate authorizations are issued by the Mackenzie Valley Land and Water Board, INAC will also consider applications for Quarry Permits as required by Dezé, under the *Territorial Quarrying Regulations*.

3. WATER QUANTITY

3.1 Water Levels

INAC was concerned about potential changes to water levels in the various lake and riverine sections of the Taltson Watershed due to the increased storage requirements and potential releases of water for the expansion project. INAC submitted a number of Information Requests (IRs) and has had discussion with the Dezé Energy Corporation (Dezé) on these concerns. INAC believes that Dezé has modelled the Taltson River system to such a point that they can determine the general extent and magnitude of water level fluctuations in locations such as: Nonacho Lake, Trudel Creek, Taltson River below Elsie Falls, Tronka Chua Gap, etc. However, INAC remains concerned over the Dezé's reliance on assumptions and the potential for actual flow conditions and events to deviate from the model projections and the predictions presented in Dezé's Developers Assessment Report (DAR). INAC acknowledges Dezé's commitment to periodically revising the model to include information from the new survey gauge prior to construction.

For example, INAC remains concerned over the extent and rate of change in water levels in Nonacho Lake under the two expansion scenarios and the potential for low flow and water levels in Trudel Creek. Changes in water levels could cause issues with ice formation and ice condition in Nonacho Lake and increase erosion/scour potential along Trudel Creek. Also, the potential exists for ice jamming and flooding to be more profound in Trudel Creek, particularly during plant shutdowns in winter. INAC understands that Dezé is aware of these issues

and has agreed to do what it can to mitigate effects, including controlled water diversions, timing releases and scaling ramping events.

INAC understands that the model prepared for Dezé is based on water level and flow data only and does not take into account the influences of precipitation within the basin or in headwater areas. INAC agrees with Dezé that the hydrograph for the Taltson River is highly influenced by freshet in spring months. As such, the influences of summer and fall storm events do not significantly alter the hydrology of the basin due to its storage potential. However, the influence of snow accumulation and snow melt can have a drastic influence on the reservoir capacity, freshet timing and freshet magnitude, particularly over a series of years. INAC feels it is important to incorporate precipitation information (i.e. mostly snow-water equivalents) into the model to project future reservoir capacity and flows in the Taltson River.

RECOMMENDATION #1:

INAC recommends that Dezé be required to continue calibration and verification of its Taltson River Basin Model during the regulatory phase but most importantly during the initial years of operations such that further operational adjustments can be implemented to reduce potential impacts. This calibration and verification should take into consideration, to the extent possible, precipitation information within the basin to help improve forecasting ability.

RECOMMENDATION #2:

INAC recommends that Dezé implement its mitigation commitments to control the release of water from Nonacho Lake to reduce ice break-up and water level drops in the near shore area which can affect access and safety.

RECOMMENDATION #3:

INAC recommends that Dezé be required to monitoring and report on water level, ice formation and ice thickness at agreed upon locations throughout the Taltson Watershed and that these requirements be conditions of its Environmental Monitoring Program.

3.2 Ramping

INAC remains concerned over the potential for power outages and ramping events causing a flux in water level and flow in Trudel Creek. Dezé has indicated that for the Snare Hydro System there have been 9 reasonably major outages (Outage Type 4) over 18 years; of these 4 would be considered very significant

(Outage Type 5). This would indicate major outages in the Snare System every 2 to 4.5 years. However, for the Taltson Hydro System Dezé has indicated that over the 5 years that there were 5 significant power outages which corresponds to a significant outage every year. Dezé predicted that because of the proposed two plant and three line system, there would be significant outages (Outage Type 5) every 4 to 5 years. The definitions for Outage Type are outlined below:

Outage Type 4: Significant outages that last several hours and upwards, where the headpond level has increased and flows have risen substantially in Trudel Creek. Depending on the period of outages, these scenarios may require consideration of ramping on restart.

Outage Type 5: Very significant outages that last more than six hours, where it is anticipated that close to the full pre-outage flows, less the bypass spill, will be routed into Trudel Creek.

Based on the above predictions, it can be assumed that Trudel Creek may very well see relatively frequent (1-3 years) outage events which will likely result in ramping events where increases and decreases in the levels of Trudel Creek will occur over a relatively short time period (days to weeks). Because of the potential flux in flow and water level the likelihood of ice jamming in the winter and erosion in the summer is increased.

RECOMMENDATION #4:

INAC recommends that Dezé moderate and control water releases through Trudel Creek to the extent possible during power outages, shutdowns and restarts to reduce impacts from a relative quick increase in flow and water level.

RECOMMENDATION #5:

INAC recommends that Dezé use the most recent version of its hydrological model for Taltson River, particularly during the initial years of operation, to make operational adjustments during these outages, shutdowns and restarts such that the effects of water fluctuations in Trudel Creek are minimized.

3.3 Minimum Flows

INAC remains concerned about maintaining minimal flow volumes in Trudel Creek and Tronka Chua Gap. The proposed expansion will require the majority of water to operate the hydro facilities. Under the two proposed scenarios of 36 MW and 56 MW, Dezé has modelled the mean annual flow at various locations along the Taltson River. The model predicts that flow through the Tronka Chua Gap will be reduced by 17% and 78% from the baseline condition, respectively.

Flow to Trudel Creek over the South Valley Spillway will be reduced by 82% and 89% from the baseline condition, respectively.

A review of the mean monthly flow modelling indicates that flows through the Tronka Chua Gap will be reduced by 100% in April under the 56 MW expansion scenario (flow would be reduced to 0 from 5.43 m³/s). Flow to Trudel Creek will be reduced by 93% in March and 90% in April under the 56 MW expansion scenario.

Dezé has committed to ensuring that the minimum flow (4 m³/s) is maintained in Trudel Creek for ecological reasons. INAC assumes this is a minimum flow for winter only. However, INAC is concerned that this minimum may not be enough to avoid impacts during the winter months. INAC also feels that minimum flows should be established for other seasons to maintain the ecology of Trudel Creek.

INAC is not comfortable with the assumption that a minimum flow through Tronka Chu Gap is not necessary. A reducing in flow into Tronka Chu Lake will affect the lake ecology and water quality by reducing the concentrations of Dissolved Oxygen (DO). At this point in time, INAC is not able to determine the magnitude of effect of reduced flows into Tronka Chu Lake. Until more information is available on DO conditions in Tronka Chu Lake one can not determine if a minimum flow requirement for Tronka Chu Gap is required. Dezé has committed to collecting baseline DO information to fill this data gap.

INAC is pleased that Dezé has designed the South Gorge Spillway such that it will ensure that 30 m³/s will be released into the South Gorge below the Twin Gorges dam. It is understood that this spillway will require some in-stream works but will ensure that the minimum flow will be maintained in the Taltson River below Elsie Falls.

RECOMMENDATION #6:

INAC recommends that more evidence be provided that supports the recommendation that a winter minimum flow of 4 m³/s will maintain the ecology of Trudel Creek. Dezé should also establish minimum flow requirements for other seasons for Trudel Creek.

RECOMMENDATION #7:

INAC recommends that more work be done to determine if minimum flow requirements are necessary for Tronka Chua Gap to ensure there are no significant ecological effects.

4. WATER QUALITY

4.1 In-stream / Near-stream Work

The proposed project will require that work be conducted in and near water. INAC has identified at least six (6) different undertakings that will include work in the near-stream environment. For most of these undertakings, in-stream activities will also be required, such as: canal construction, spillway construction, dam and spillway improvements, etc. These activities will include the use of machinery, placing of rock and concrete and blasting. All of these activities can introduce contaminants into surface waters. INAC understands that Dezé is aware of these potential sources of contamination and will include mitigation measures to ensure that any contamination, including turbidity and suspended sediments, of surface waters is reduced or avoided.

INAC is pleased that Dezé has recently committed to conducting work with concrete in the “dry”. Still, INAC is unclear how Dezé proposes to do so. INAC assumes that Dezé has committed to using some kind of barrier or cofferdam system to ensure work within the wetted areas is done in “dry” conditions. At this point in time INAC is curious as to why only concrete work has been specified in the commitment. INAC assumes that Dezé will also consider using cofferdams when conducting other activities such as dam improvements and canal and spillway construction to hold back water from the work area.

INAC is pleased that Dezé has committed to using package explosives that are resistant to water for in-stream and near-stream blasting and that they will be developing a Blast Management Plan for the project. INAC is also pleased that Dezé has implemented a 10 metre set back from edge of water when using ANFO in the prill/pellet form. However, INAC remains concerned over the use of ANFO in the prill/pellet form in wet holes outside of the near-stream set back (not within 10 metres of the edge of water). The potential exists for the ANFO to dissolve in wet holes which could lead to surface and or ground water contamination and increase the potential for misfires. INAC requests that if wet holes are encountered that either packaged explosives be used or the holes be dewatered prior to placing the explosives. INAC assumes that any water that collects within the blasted areas will be removed (i.e. pumped) and treated prior to release. INAC understands that Dezé has committed to conducting monitoring during activities to assess effects of the project on the environment. INAC suggests that monitoring for ammonia and nitrate residues be included as part of this proposed monitoring near blast areas. INAC is willing to assist Dezé in the development of such monitoring plans.

INAC is also concerned over the potential for blast rock stockpiles to create acid rock drainage or to leach metals into the surrounding environment. INAC anticipates that Dezé will monitor seepages and runoff from all blast rock stockpiles. The results of this monitoring will be provided for review on a regular

basis, likely as part of the Surveillance Network Program in the project authorization.

RECOMMENDATION #8:

INAC recommends that Dezé Implement all commitments and mitigation measures as outlined in its Commitments 2009 document (October, 2009) when conducting activities in-stream and near-stream to ensure the contamination of surface waters is reduced or avoided.

RECOMMENDATION #9:

INAC recommends that Dezé be required to submit a Blast Management Plan during the regulatory process that details the procedures for placing explosives in wet holes outside the near-stream set back zone (10 meters from the edge of water) such that effects to surface and groundwater are avoided.

RECOMMENDATION #10:

INAC recommends that Dezé consider using cofferdams when conducting other in-stream activities such as dam improvements and canal and spillway construction to prevent water contamination and sedimentation.

RECOMMENDATION #11:

INAC recommends that Dezé incorporate monitoring for ammonia and nitrate residues as part of the proposed Environmental Monitoring Program and for acid rock drainage and metal leaching from blast rock stockpiles as part of their Surveillance Network Program. The information from these monitoring programs should be used to adapt aspects of project construction and operation such that background water quality is not adversely affected. INAC is willing to assist Dezé in the development of such monitoring plans.

4.2 Water and Flow Level Changes

The expected change in water level and flow through Tronka Chua Gap and Trudel Creek can also influence the quality of these waters. Flow reductions can effects water quality by reducing Dissolved Oxygen (DO) levels in winter months and fluctuations in flow can increase erosion and the suspension of sediments from slumping and or scouring of the river bed and banks. Erosion and suspension of sediments can also reintroduce contaminants back into the water column. These aspects are further discussed below.

The DO concentrations during winter months are critical for the survival of fish. Dezé has predicted that the reduction in DO will be highest in Trudel Creek but have noted that no baseline information on winter DO levels for Trudel Creek are available. Dezé has committed to gather additional information from Trudel Creek and Tronka Chua Lake to fill these data gaps. This baseline monitoring is intended to occur prior to construction. However, Dezé does not have any baseline DO data at these particular locations to validate the outputs of their model. The most recent model results for Gertrude, Trudel and Un-named Lakes have been provided by Dezé in the Commitments 2009 document (October, 2009). Under both expansion scenarios, Gertrude Lake falls below the threshold for sensitive early life-stage (i.e. 9.5 mg O₂/L) and Un-named Lake falls under the threshold for other life stages (i.e. 6.5 mg O₂/L). INAC is concerned over the potential for DO levels to fall even further below guidelines established by the Canadian Council of Ministers of the Environment (CCME) for the protection of fish. INAC suggests that more work be done to characterize DO levels in winter in these regions of interest and that the model used to calculate DO levels be verified and used to recalculate the expected DO levels under the two expansion scenarios.

Dezé has identified that the expansion project will result in the increases to water level fluctuations which may erode and disturb sediments, potentially remobilizing Methylmercury that has been sequestered away from the water column (i.e. Reach 1 – Trudel Creek). Any increase in the availability of Methylmercury raises the potential for bioaccumulation and biomagnifications in the food chain. Once Mercury gets into the water column it is available to small organisms which over time can accumulate through the food chain. INAC understands that Dezé has committed to monitor Mercury in sediments as part of its proposed monitoring program. INAC is willing to assist in the development of this program but feels that monitoring of Mercury in sediment only may not provide adequate information on uptake in organisms. Monitoring that will indicate the levels of uptake in aquatic organisms should also be included as part of the monitoring program.

RECOMMENDATION #12:

INAC recommends that Dezé gather all information necessary to address the data gaps identified in the Draft Environmental Monitoring Program (October 2009) such that Dezé can provide adequate characterization of baseline conditions. These characterizations should be used to verify the assumptions used to model the environment and predict impacts.

RECOMMENDATION #13:

INAC recommends that Dezé gather additional information on DO levels in winter for all areas of interest and that these data be used to further calibrate

and validate the model used to calculate the DO levels under the two expansion scenarios to assist in the assessment of effects for the project.

RECOMMENDATION #14:

INAC recommends that this revised DO model be used along with any revisions to the power generation model and the Taltson River Basin model to identify a preferred operational scenario for both generation and environmental effects mitigation.

RECOMMENDATION #15:

INAC recommends that DO and Mercury be monitored and reported as part of the Environmental Monitoring Plan and that the results of this monitoring be used to adaptively manage operations at the facility to mitigate effects. INAC is willing to assist Dezé in the development of this monitoring plan.

4.3 Construction Camps and Staging Areas

Dezé has not finalizing camp or staging site details for the proposed expansion project and transmission line construction at this time. However, Dezé proposes two large construction camps to be located at the Twin Gorges site (~400 people) and the Nonacho Lake site (~60 people). These large camps are anticipated to accommodate the majority of construction personnel for the plant expansion. For construction of ice access and the transmission line, a series of camps will be required along the transmission line right-of-way. At this time Dezé has not confirmed whether some of these camps will be located on barges. However, Dezé has committed to ensure that all camp waste and sewage will be handled appropriately and that wastewater discharges from camp facilities will be treated to meet water quality criteria specified in Dezé's authorizations. INAC assumes that the construction camps located along the transmission line right-of-way will likely be seasonal and be built upon ice pads. At this time it is unclear if construction camps and infrastructure will be removed prior to spring thaw. INAC anticipates that these details will be worked out during the regulatory phase and that if necessary mitigations will be in place to ensure the environment is protected.

INAC is unclear whether Dezé intends to use sewage lagoons as potential treatment systems for camps. Correspondence from Dezé has indicated that they have not yet determined if site conditions such as soil or terrain are appropriate for sewage lagoons. INAC understands that details regarding any potential lagoon systems will be submitted during the regulatory phase.

Dezé has proposes up to 10 minor staging sites, 4 major staging sites and 2 barge landing sites along the transmission line route. INAC understands that the

staging areas will be used to store equipment, fuel and supplies for construction of the transmission line. INAC assumes that the staging locations will be on land and will likely be in place for the entire 3 year construction period. Dezé has indicated that the barge landing-camp sites proposed are comprised of rock and or coarse gravels. It is assumed that locations for staging sites will have similar characteristics and that ground condition assessments will be submitted as part of the detailed design package for transmission line construction.

RECOMMENDATION #16:

INAC recommends that Dezé implement its commitments in regards to waste and sewage storage, treatment and disposal as proposed in the Commitments 2009 document (October 2009).

RECOMMENDATION #17:

INAC recommends that a Draft Spill Contingency Plan be developed that addresses spills associated with construction activities, camps, staging and fuel storage facilities during the regulatory phase.

RECOMMENDATION #18:

INAC recommends that the final detailed design package for transmission line construction include details pertaining to the exact number, location and ground condition of camps, barge landings and staging sites during the regulatory phase.

4.4 Access Route Stream Crossings

Dezé plans to reopen the existing winter road between Fort Smith and Twin Gorges, construct a new winter haul road from Twin Gorges to Nonacho Lake and construct temporary access trails from the staging camps to the transmission line right-of-way and along the right-of-way. The temporary access trails will be the primary means of installing the transmission towers and conductor cable except around areas of difficult topography where construction will be entirely by helicopter. Dezé has indicated that all access to construction and camp sites will occur during the winter only. INAC understands that water will be required for the creation of the ice roads and the roads themselves will cross a number of water bodies and rivers along the way. INAC understands that Dezé has committed to following all DFO protocols for water withdrawal and stream crossings.

RECOMMENDATION #19:

INAC recommends that Dezé finalize the details for ice road construction and monitoring, including all proposed mitigation measures to reduce impacts to watercourse crossings, during the regulatory phase.

5. TERRAIN AND PERMAFROST

5.1 Transmission Line Access and Construction

Dezé has indicated that the final tower arrangements and type have not been decided upon yet, however, several specific configurations have been considered most suitable. At this time the guyed steel lattice structures identical to the structures used on the Snare and existing Taltson Hydro lines is preferred. Dezé anticipates that towers will be built on rock outcrops and secured by anchor bolts. However, the spacing and alignment of the towers is somewhat flexible such that sensitive habitat or terrain can be avoided. INAC anticipates that the location and spacing of the towers will be done such that impact to the surface and or subsurface are reduced. In order to do such, reconnaissance may be required during summer as construction activities for the project are only to occur during winter months. Construction when the ground is frozen may obscure the presence of sensitive habitats and or sensitive surface and subsurface conditions.

RECOMMENDATION #20:

INAC recommends that Dezé conduct reconnaissance, if not already completed, along the proposed transmission line right-of-way during summer to ensure tower locations are placed where little to no effects are expected to sensitive habitat and or surface or subsurface conditions.

5.2 Construction Camps and Staging Areas

INAC understands that Dezé will be finalizing details for construction camp and staging area configurations during the regulatory phase. INAC anticipates that part of this process will include information on ground conditions and site characteristics for all final camps and staging areas such that the potential for erosion and or subsidence is better understood. INAC assumes the general site characteristics of selected sites will be similar to those proposed for the barge camp offloading sites.

RECOMMENDATION #21:

INAC recommends that during the regulatory phase Dezé submit final details and configurations for construction camps and staging areas. These details should include information pertaining to material placement and storage method as well as the quantity and type equipment being staged.

6. MANAGEMENT PLANS

6.1 Project Management Plans

Dezé has committed to providing a number of management plans as the project transitions to the regulatory phase. INAC has highlighted key plans that are required to ensure protection of the environment and overall management of the project in the preceding text (for both construction and operation). These plans should be submitted, even if only in draft form, prior to authorizing the project. Many of these plans will be required as part of the conditions of the authorization and will likely require approval by the responsible Land and Water Board.

INAC suggests that an Adaptive Management type plan also be required. This plan will outline the framework that Dezé will use, along with any potential options, if impacts to the environment are detected by the various Environmental Management Plans (e.g. Aquatic Effects Monitoring Plan, Wildlife Monitoring Program, etc.). Dezé has indicated that they would submit an Adaptive Management Plan after effects are detected in the environment. INAC's experience indicates that developing an Adaptive Management Plan after effects are detected can lead to prolonged effects or impacts to the environment that could be curtailed earlier if an Adaptive Management framework was already in place. The development of the plan should not be reactive for the time needed to develop and approve the Adaptive Management Plan and then determine the most appropriate response is too lengthy. INAC is willing to work with the Land and Water Board and Dezé in the development of an Adaptive Management framework for the expansion project during the regulatory phase. INAC feels that it is most appropriate to develop the Adaptive Management Plan and Environmental Monitoring Plans at the same time such that the results can be directly linked and feed into the management framework.

RECOMMENDATION #22:

INAC recommends that Dezé be required to develop an Adaptive Management Plan along with its Environmental Monitoring Plans such that the plans are directly linked and feed into the management framework. INAC is willing to work with the Land and Water Board and Dezé to develop these plans.

6.2 Closure and Reclamation Plan

Dezé has indicated that at present the project has an operating life of over 40 years; however, with proper care and maintenance it can function for up to 100 years. During this time Dezé has anticipated the need for several closure and reclamation plans. Some plans would cover areas affected by construction, while others would address the decommissioning of permanent facilities at the end of the project life.

At this point in time Dezé has not provided any details or commitments regarding closure and reclamation. It is INAC position that Dezé provide draft details in a Preliminary Closure and Reclamation Plan during the regulatory phase. The Preliminary Closure and Reclamation Plan should outline proposed construction reclamation details and information on the decommissioning construction equipment and infrastructure. The plan should also include preliminary details on decommissioning of permanent facilities at the end of the project life. INAC is willing to assist Dezé in the preparation of a Preliminary Closure and Reclamation Plan for the project.

RECOMMENDATION #23:

INAC recommends that Dezé be required to develop a Preliminary Closure and Reclamation Plan during the regulatory phase. INAC is willing to work with the Land and Water Board and Dezé in the development of this plan.

7. ACCESS

Impacts resulting from increased access along the re-opened winter road from Fort Smith to Twin Gorges has been assessed by Dezé and raised during technical sessions. Dezé has proposed to re-open and maintain the winter road during the winter hauling season, and block the entrance to the winter road at the end of each winter (March). INAC agrees with Dezé that the currently out-of-service winter road from Fort Smith to Twin Gorges is used by the public for recreation (snowmobile and all-terrain vehicle), and that re-opening the winter road during the winter hauling period would result in increased access by vehicles. To mitigate impacts from access, Dezé proposes to block access to the road by using a gate and piling slash across the road at the end of each winter season.

From Fort Smith to Twin Gorges, the out-of-service winter road traverses Crown Land until it reaches lands held in title by the NTPC at Twin Gorges. On Crown Lands, the public has a general right of access, meaning that Dezé cannot gate access to the road at its entrance near Fort Smith (or anywhere else). Dezé can however, construct gates on its own titled lands.

