

Review Comment Table

Board:	WLWB
Review Item:	DPC - Modification - Snare Cascades Dyke Wall Raise (W2014L4-0001)
File(s):	W2014L4-0001
Proponent:	Northwest Territories Power Corporation
Document(s):	Modification - Snare Cascades Dyke Wall Raise (556 KB)
Item For Review Distributed On:	May 3 at 11:56 Distribution List
Reviewer Comments Due By:	May 25, 2021
Proponent Responses Due By:	June 1, 2021
Item Description:	<p>Northwest Territories Power Corporation on behalf of Dogrib Power Corporation submitted a notification of intent to modify the Snare Cascades Power Canal Dyke. This notification is required by Water Licence W2014L4-0001 (the Licence), Part D, condition 1(a).</p> <p>Update (May 6, 2021): NTPC, on behalf of DPC, has updated its materials and scope of work for the proposed modification. This update is now reflected in the IFR.</p> <p>Using the Online Review System (ORS), reviewers are invited to submit comments and recommendations on the documents linked below by the review comment deadline specified. Reviewers may also wish to consider providing an overarching recommendation regarding whether the Board should approve the submission, to provide context for the comments and recommendations and assist the Board with its decision. If reviewers seek clarification on the submission, they are encouraged to correspond directly with the Applicant prior to submitting comments and recommendations.</p>

	All documents that have been uploaded to this review are also available on our public Registry. If you have any questions or comments about the ORS or this review, please contact Board staff identified below.
Contact Information:	Anneli Jokela 867-765-4588 Jessica Pacunayen 867-765-4591

Comment Summary

GNWT - ENR - EAM (Environmental Assessment and Monitoring): Central Email GNWT				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	General File	Comment (doc) ENR Letter - No Comments or Recommendations at this time. Recommendation		
Tlicho Government: LONGINUS EKWE				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Strength and quality of material (concrete aggregate and rockfill on-site stockpile)	Comment (Submitted after Due Date) Is there any recent test that has been conducted on both stockpiled materials to verify their actual condition and be certain that they still possess the required material strength, and that the materials' geochemical characteristics have not changed as well due to weather effect, just to rule out any potential impact	June 1: These and similar concrete aggregate and rockfill materials have been used at the Snare Hydro Developments over the years since 1948. The materials of construction are strong, durable, non-deleterious and show no signs of physical deterioration. There has been no change in their geochemical characteristics. Non-destructive testing of the concrete at the various	

		<p>they may have on the quality of water when used in the project. The only QA/QC information about the stockpile is the gradation analysis conducted in August 2006 as shown on one of the application documents.</p> <p>Recommendation Please verify with a professional engineer that these materials are still suitable and not weak in terms of providing the desired performance and durability, and also will not impact the water quality due to any change in their geochemical characteristics.</p>	<p>developments carried out during the 2000 Dam Safety Studies show average strengths in the range of 20 to 33 MPa.</p>	
2	Strength Test	<p>Comment (Submitted after Due Date) Information provided in the application documents on #6 of the notes, under the field quality control, stated that "Engineer shall sample and arrange testing of the concrete". For a strength test, three standard test cylinders shall be made, one cylinder will be tested at an age of 7 days and two cylinders at an age of 28days.</p> <p>Recommendation Please provide strength values you hope to achieve at age of 7 days and age of 28 days as part of the information contained in the design specifications</p>	<p>June 1: The concrete mix will be designed for a 28 day strength of 20 MPa. The seven day strengths will be two thirds of the 28 day strength.</p>	

3	Dyke Elevation	<p>Comment (Submitted after Due Date) Could replacing the 0.5m rockfill cover with a concrete material to the crest elevation affect the quantity of water flowing downstream? Or affect the existing reservoir operational plan?</p> <p>Recommendation Please clarify whether there will be effects on the quantity of water flowing downstream, or on the operations of the reservoir during construction and during periods of low and high water levels in the future.</p>	<p>June 1: There will be no effects on the quality of water flowing downstream or on the operations of the reservoir during construction and during periods of low and high water levels in the future. In the event of the design flood the forebay level will be retained by the concrete wall within the rockfill dyke and the flood will be safely passed over the Labyrinth Spillway for which it is designed to handle.</p>	
4	Rockfill settlement	<p>Comment (Submitted after Due Date) DPC/NTPC mentioned in the document submitted to the Board that " Over the years of operation, the rockfill has settled to a variable degree such that in one area the top of the wall is exposed", but NTPC did not further state the cause of the settlement, the trend of the settlement and the proposed mitigations of this settlement post-construction of concrete wall height.</p> <p>Recommendation Please clarify the cause of the rockfill settlement, and what the trend has been over the</p>	<p>June 1: The rockfill placed in the dyke supports the concrete cut-off wall and has settled due to the downward migration of fines within the fill. The settlement occurs during periods of heavy rain and will decrease over time. The process is slow and has occurred over the past twenty-five years. After raising, some further topping up of the rockfill may be required in the distant future.</p>	

		years and how you plan to mitigate it, because understanding the pattern of the rockfill deformation can help in predicting any future event before it occurs.		
WLWB: Jessica Pacunayen				
ID	Topic	Reviewer Comment/Recommendation	Proponent Response	Board Staff Response
1	Modification	<p>Comment As per the W2014L4-0001 Licence, a 'modification' is defined as "an alteration to the Licensed Undertaking that introduces a new structure or eliminates an existing structures and which the alteration does not change the purpose or function the Licensed Undertaking as certified in writing by an independent Professional Engineer, but which does not increase the size of the area flooded by the Forebay."</p> <p>Recommendation Can DPC/NTPC please confirm whether this dyke raise would increase the size of the area flooded by the Forebay?</p>	<p>June 1: Raising the Dyke Cut-off Wall will not increase the size of the area flooded by the forebay. The wall will be raised 0.5m from 184.5m up to the rockfill dyke crest elevation of 185.0m and is required to provide freeboard along the canal dyke against wave runup at design flood elevation 184.3m.</p>	
2	Purpose of the Modification	<p>Comment NTPC's letter states that the purpose of the Modification is "to handle the increase in the spillway design capacity". It is not clear what is meant by this. Staff consulted the 2018 Snare System Hydro Safety</p>	<p>June 1: NTPC's letter as stated is clarified as follows. The purpose of the modification is not "to handle the increase in the spillway capacity" but to provide freeboard along the canal dyke in the</p>	

		<p>Review for more background on this issue, but found none that directly speaks to improving the spillway design capacity or raising the concrete wall in the canal dyke.</p> <p>Recommendation To improve staff's understanding of the proposed Modification, can NTPC further explain the purpose of the Modification and why the wall is being raised? Please also describe why the spillway design capacity is being improved, and whether the spillway will also be undergoing a Modification. Are there any implications related to Water Licence conditions associated with the increase in the spillway design capacity?</p>	<p>event of the 1:1000 AEP Design flood. The Labyrinth spillway can handle the Design Flood and Spillway Modifications are not required</p>	
3	Additional or Increased Impacts	<p>Comment It is not clear based on the submission whether there are any additional/increased impacts to the environment, traditional uses, or other authorizations (e.g., fisheries authorizations) as a result of the proposed modification.</p> <p>Recommendation Can DPC/NTPC describe whether there any additional/increased impacts to the environment, traditional uses, or other authorizations as a results of this modification? If so, please describe the</p>	<p>June 1: There are no additional or increased impacts to the environment, traditional uses, or other authorizations as a result of this modification. The wall is being raised to provide freeboard in the event of floods up to the design magnitude. In the absence of high flood inflows, the development can be expected to operate as it has over the past 25 years since commissioning in 1996.</p>	

		impacts and proposed mitigations. If none, please provide rationale.		
4	Erosion	<p>Comment NTPC's letter does not address potential issues related to erosion and release of sediment to the Snare River.</p> <p>Recommendation Will DPC/NTPC be using any erosion control measures to prevent sediment from the construction activities (including excavation of the stockpile, placement of rockfill, pressure washing, other construction activities, etc.) from entering the Snare River? If so, please describe these measures. If not, please provide rationale.</p>	<p>June 1: There will be no erosion and deposition (i.e., sedimentation) into the Snare River due to excavation of rockfill at the stockpile or excavation and placement of rockfill at the crest of the dyke.&nbsp; The stockpile is located in a small hollow near the bank of the canal on the opposite side of the power canal dyke. There is no runoff from the stockpile area into the canal. At the crest of the dyke the rockfill has settled such that the top of the cut-off wall is exposed in some places. Where the rockfill at the crest has to be removed to expose the top of the wall it will be windrowed along the downstream shoulder of the crest away from the waterline and replaced after the wall is raised. Additional rockfill from stockpile will be loaded, hauled, and dumped on the downstream berm of the dyke 3 to 4 m above the spillway discharge channel water line from where it will be placed with care using the 690 JD hoe on both sides of the wall from elevation 184.5m to 185.0m; well above the waterline at 182.9m. Care will be taken such that no rockfill or sediment</p>	

			will enter the Snare River water course.	
5	Forebay levels - water licence requirements.	<p>Comment Part C, Condition 2a requires that "The Forebay water levels do not exceed 184.5 metres (NWTPC Datum) or fall below 181.88 metres (NWTPC Datum). Exceptions to the minimum water level of 181.88 metres (NWTPC Datum) can be made only after a written request is submitted to the Board by the Licensee and approved by the Board."</p> <p>Recommendation Can DPC/NTPC confirm that the DPC/NTPC will meet this requirement during and after the Modification?</p>	<p>June 1: The Water Licence requires that "The Forebay water levels do not exceed 184.5m (NTPC Datum) or fall below 181.88m";. NTPC will meet this requirement during and after the modifications.</p>	
6	Security	<p>Comment It's not clear whether the proposed Modification would impact DPC's security deposit.</p> <p>Recommendation Will the modification impact DPC's security deposit? Please provide rationale.</p>	<p>June 1: This modification will be completed as per PART D: Conditions Applying to Modifications in the Snare Cascades-DPC - Type A Water Licence - W2014L4-0001. It is a relatively minor modification for the overall facility that is a result of updated design inflow flood values calculated in the Snare Flood study completed by Mecos in 2015 that will have no impact on power generation for the facility. No change in the DPC's security deposit is warranted.</p>	



May 25, 2021

Joseph Mackenzie
Chair
Wek'èezhì Land and Water Board
#1-4905 48th Street
Yellowknife, NT
X1A 3S3

Dear Mr. Mackenzie,

**Re: Northwest Territories Power Corp./Dogrib Power Corp.
Water Licence – W2014L4-0001
Snare Cascades Dyke Wall Raise
Modification Request
Request for Comment**

The Department of Environment and Natural Resources, Government of the Northwest Territories has reviewed the request at reference based on its mandated responsibilities and has no comments or recommendations for the consideration of the Board at this time.

Should you have any questions or concerns, please do not hesitate to contact Patrick Clancy, Environmental Regulatory Analyst at (867) 767-9233 Ext: 53096 or email patrick.clancy@gov.nt.ca.

Sincerely,

Patrick Clancy
Environmental Regulatory Analyst
Environmental Assessment and Monitoring Section
Environmental Stewardship and Climate Change Division
Department of Environment and Natural Resources
Government of the Northwest Territories

Distribution List

DPC - Modification - Snare Cascades Dyke Wall Raise (W2014L4-0001)

File(s): W2014L4-0001

Proponent: Northwest Territories Power Corporation

Reviewer Comments Due By: May 25, 2021

Proponent Comments Due By: June 1, 2021

Document(s)

Modification - Snare Cascades Dyke Wall Raise

Contact Information

Anneli Jokela 867-765-4588(ajokela@wlwb.ca)

Jessica Pacunayen 867-765-4591(jpacunayen@wlwb.ca)

Sent To		
Organization	User	Email
Akaiicho IMA Implementation Office	Poole, Stephanie	screeningofficer@eastarm.com
Canadian Northern Economic Development Agency - NWT Region	Paradis, Adrian	adrian.paradis@canada.ca
CIRNAC - Inspector	Morton, Tim	tim.morton@canada.ca
Community Government of Behchoko	Daniels, Clifford	clifforddaniels@tlichocom
Community Government of Behchoko	Gon, Ritalene	landoffice@behchoko.ca
Community Government of Behchoko	Richardson, Treeva	sao@behchoko.ca
Community Government of Gameti	SAO, Gameti	sao@gameti.org
Community Government of Wekweeti	Wekweeti, SAO	wekwetisao@northwestel.net
Community Government of Whati	Nitsiza, Alfonz	alfonznitsiza@tlichocom
Community Government of Whati	SAO, Whati	sao@whati.ca
Deninu K'ue First Nation	Simon, Richard	ima@dkfn.ca
Deninu K'ue First Nation	Simon, Patrick	patricksimon777@yahoo.ca
Environment and Climate Change Canada	Environment and Climate Change Canada, EA	ec.eenordrpntno-eanorthpnrnwt.ec@canada.ca
Fisheries and Oceans Canada	Coombs, Dan	daniel.coombs@dfo-mpo.gc.ca
Fisheries and Oceans Canada	Fisheries Protection Program, Triage Group	fisheriesprotection@dfo-mpo.gc.ca
Fisheries and Oceans Canada	Dupuis, Lynn	Lynn.Dupuis@dfo-mpo.gc.ca
Fisheries and Oceans Canada	Fisher, Neil	Neil.Fisher@dfo-mpo.gc.ca
Fisheries and Oceans Canada	Gervais, Rick	Richard.Gervais@dfo-mpo.gc.ca
Forward Mining	Mauchan, Jason	info@forwardmining.ca
GLWB	Macdonald, AlecSandra	AMacDonald@glwb.com
GNWT - ENR (Environment and Natural Resources)	Somers, Gila	Gila_Somers@gov.nt.ca

GNWT - ENR (Environment and Natural Resources)	McGregor, Laurie	laurie_mcgregor@gov.nt.ca
GNWT - ENR (Environment and Natural Resources)	Richea, Nathen	Nathen_Richea@gov.nt.ca
GNWT - ENR (Environment and Natural Resources)	Clancy, Patrick	patrick_clancy@gov.nt.ca
GNWT - ENR (Environment and Natural Resources)	Walbourne, Rick	Rick_Walbourne@gov.nt.ca
GNWT - ENR - EAM (Environmental Assessment and Monitoring)	GNWT, Central Email	gnwt_ea@gov.nt.ca
GNWT - ENR - North Slave Region	McQuinn, David-Scott	David-Scott_McQuinn@gov.nt.ca
GNWT - Executive and Indigenous Affairs	Fast, Peter	Peter_Fast@gov.nt.ca
GNWT - HSS (Health and Social Services)	Department , of Health	Environmental_health@gov.nt.ca
GNWT - INF (Infrastructure)	Campbell, Alexis	Alexis_Campbell@gov.nt.ca
GNWT - INF (Infrastructure)	Bey, Benjamin	Benjamin_Bey@gov.nt.ca
GNWT - INF (Infrastructure)	Posynick, Jon	Jon_Posynick@gov.nt.ca
GNWT - ITI (Industry, Tourism and Investment)	Mason, Dane	Dane_Mason@gov.nt.ca
GNWT - ITI (Industry, Tourism and Investment)	Elliott , Dinah	Dinah_Elliott@gov.nt.ca
GNWT - ITI (Industry, Tourism and Investment)	Johnson, Kris	k_Johnson@gov.nt.ca
GNWT - ITI (Industry, Tourism and Investment)	McEachern, Menzie	Menzie_McEachern@gov.nt.ca
GNWT - Lands	Rozestraten, Katie	katie_rozestraten@gov.nt.ca
GNWT - Lands	Pink, Melissa	melissa_pink@gov.nt.ca
GNWT - Lands - North Slave Region	Bradbury, Brandon	Brandon_Bradbury@gov.nt.ca
GNWT - Lands - North Slave Region	Coe, Charlene	Charlene_Coe@gov.nt.ca
GNWT - Lands - North Slave Region	Larocque, Cheryl	cheryl_larocque@gov.nt.ca
GNWT - Lands - North Slave Region	Ambrose, Clint	clint_ambrose@gov.nt.ca
GNWT - Lands - North Slave Region	Lee, Nahum	Nahum_Lee@gov.nt.ca
GNWT - Lands - North Slave Region	Stewart, Scott	Scott_Stewart@gov.nt.ca
GNWT - MACA (Municipal and Community Affairs)	Arshad, Iqbal	Iqbal_Arshad@gov.nt.ca
GNWT - MACA (Municipal and Community Affairs)	Lee, Olivia	Olivia_Lee@gov.nt.ca
GNWT - PPCA (Policy, Planning, Communications and Analysis (w/in ITI))	Walz, Evan	Evan_Walz@gov.nt.ca
GNWT - PWNHC (Prince of Wales Northern Heritage Centre (w/in ECE))	Mackay, Glen	Glen_Mackay@gov.nt.ca

GNWT - PWNHC (Prince of Wales Northern Heritage Centre (w/in ECE))	Smethurst , Naomi	naomi_smethurst@gov.nt.ca
Kitikmeot Inuit Association	Clark, Geoff	dirlands@kitia.ca
Lutsel K'e Dene First Nation - Chief or Wildlife, Lands and Environment	Marlowe, Chief Daryl	chief.lkdfn@gmail.com
Lutsel K'e Dene First Nation - Chief or Wildlife, Lands and Environment	Guthrie, Glen	lkdfnlands@gmail.com
Lutsel K'e Dene First Nation - Chief or Wildlife, Lands and Environment	Keats, Beth	lkdfnregulatory@gmail.com
Mackenzie Valley Environmental Impact Review Board	Cliffe-Phillips, Mark	mcliffephillips@reviewboard.ca
Mackenzie Valley Environmental Impact Review Board	MVEIRB, Generic	preliminaryscreening@reviewboard.ca
MVLWB	Plautz, Angela	aplautz@mvlwb.com
MVLWB	Potten, Jen	jpotten@mvlwb.com
North Slave Metis Alliance	Taylor, Joanne	general@nsma.net
North Slave Metis Alliance	Enge, Susan	heritage@nsma.net
North Slave Metis Alliance	Hurtubise, Jess	jess.hurtubise@nsma.net
North Slave Metis Alliance	Lands, NSMA	lands@nsma.net
Northwest Territories Power Corporation	Dewar, David	ddewar@ntpc.com
Northwest Territories Power Corporation	Miller, Matthew	mmiller@ntpc.com
Northwest Territory Metis Nation	Coleman, Ria	lands.clerk@nwtmetis.ca
Tlicho Government	Wheler, Brett	brett.wheler@tlicho.ca
Tlicho Government	George Mackenzie, Grand Chief	georgemackenzie@tlicho.com
Tlicho Government	Lands Regulatory, Tlicho	ginger.gibson@thefirelightgroup.com
Tlicho Government	Mackenzie, Grace	gracemackenzie@tlicho.com
Tlicho Government	EKWE, LONGINUS	longinusekwe@tlicho.com
Tlicho Government	Richardson, Sean	seanrichardson@tlicho.com
Tlicho Lands Protection Department	Washie, Doreen	doreenwashie@tlicho.com
Tlicho Lands Protection Department	Huskey, Joline	jolinehuskey@tlicho.com
Tlicho Lands Protection Department	Steinwand, Tyanna	tyannasteinwand@tlicho.com
Tlicho Lands Protection Department	Camsell-Blondin, Violet	violetcamsellblondin@tlicho.com
Wek' eezhii Renewable Resources Board	Guile, Aimee	aguile@wrrb.ca
Wek' eezhii Renewable Resources Board	Pellissey, Jody	jpellissey@wrrb.ca
Wek' eezhii Renewable Resources Board	Meinert, Laura	lmeinert@wrrb.ca

Wek' eezhii Renewable Resources Board	Norrish, Shalyn	snorrish@wlwb.ca
Wekweeti Community Government	Football, Charlie	charliefootball@tlicho.com
WLWB	Jokela, Anneli	ajokela@wlwb.ca
WLWB	Pacunayen, Jessica	jpacunayen@wlwb.ca
WLWB	DeFrancis, Kassandra	kdefrancis@wlwb.ca
WLWB	MacIntyre-Newell, Meaghan	mmacintyre-newell@wlwb.ca
WLWB	Schnurr, Meghan	mschnurr@wlwb.ca
WLWB	Bams, Rhiana	rbams@wlwb.ca
WLWB	Fequet, Ryan	rfequet@wlwb.ca
WLWB	Judas, Roberta	rjudas@wlwb.ca
WLWB	Elsasser, Sarah	selsasser@wlwb.ca
WLWB	Water Board, Wekeezhii Land and	wlwb06@gmail.com
Wood	Malavige, Perera	malavige.perera@woodplc.com
Yellowknives Dene First Nation	Black, Johanne	jblack@ykdene.com
Yellowknives Dene First Nation	YKDFN, Admin	lands@ykdene.com
Yellowknives Dene First Nation	Miller, Ryan	ryanm@ykdene.com
Yellowknives Dene First Nation	Gillis, Sarah	saraht@ykdene.com