Government of Canada
Gouvernement du Canada

Environmental Assessment Review
Examen des évaluations environnementales

LOWER CHURCHILL HYDROELECTRIC ENVIRONMENTAL ASSESSMENT PANEL

A

COMPENDIUM

OF

COMMENTS PRESENTED TO THE PANEL

ON

THE LOWER CHURCHILL HYDRO PROJECT

POWER GENERATION SITES

JULY, 1980

Information

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Ottawa, Ontario
K1A 0H3

1980.07.09

Mr. B. Ledrew
Manager of Environmental Services
Lower Churchill Development Corporation
P.O. Box 9800
St. John's, Newfoundland

Dear Mr. Ledrew:

With referance to the Lower Churchill Development Corporation's Environmental Impact Statement on the power generation sites attached please find copies of comments and requests for additional information received to date.

In order to permit full discussion at upcoming public meetings a response from LCDC is requested.

Yours sincerely,

P. J. Paradine

P.J. Paradine
Chairman
Lower Churchill Hydro
Environmental Assessment Panel

encls.

Energy, Mines and Resources Canada / Energie, Mines et Ressources Canada

Science and Technology / Science et Technologie

Sir William Logan Building
580 Booth Street
Ottawa K1A OE4

Your file / Votre référence

Our file / Notre référence

June 26, 1980

Mr. P.J. Paradine
Chairman, Lower Churchill
Hydro-Electric Environmental
Assessment Panel
Environmental Assessment Review Panel
Department of the Environment
Ottawa, Ontario
K1A OH3

Dear Mr. Paradine:

The Environmental Impact Statement for the Lower Churchill Project Generating Facilities has been evaluated in the scientific branches of EMR having interests relating to the project. The EIS is considered to address the significant environmental issues and to have made a fair assessment of the associated risks.

Comments have been raised concerning induced seismicity, slope stability of reservoir margins, stability of the "natural dam" area at Muskrat Falls, erosion problems in the work area and downstream sections. Details are attached for your information.

It is noted that design of the generation facility will require consideration of seismic load, and that monitoring downstream from the facility will be needed to determine rates of riverbank and delta scour, and the mitigative measures required.

Evaluation of the geoscientific aspects of the project has indicated no environmentally related reason for not proceeding with the project as planned.

Yours sincerely,

R.A. Edwards

for R.G. Skinner
Head
Office of Environmental Affairs

Encls.

Government of Canada / Gouvernement du Canada

MEMORANDUM NOTE DE SERVICE

TO / À: Mr. R.A. Edwards
Office of Environmental Affairs

FROM / DE: Division of Seismology
and Geothermal Studies

SECURITY - CLASSIFICATION - DE SÉCURITÉ
OUR FILE/NOTRE RÉFÉRENCE: 1135-D14-1
YOUR FILE/VOTRE RÉFÉRENCE:
DATE: June 10, 1980

SUBJECT / OBJET: Project Generation Facilities - Lower Churchill

1. We note that the environmental impact statement on the Lower Churchill Project Generation Facilities makes note on page 270 of the potential for induced seismicity associated with the loading of the reservoir.

2. This reference to induced seismicity is adequate at this state in the process. Later at the detailed design stage it will be appropriate to ensure that the design can indeed take into account a non-trivial seismic load.

Michael J. Berry
Director

MJB:dw

Government of Canada / Gouvernement du Canada

MEMORANDUM NOTE DE SERVICE

TO / A: Dr. J.S. Scott
Director
Terrain Sciences Division

FROM / DE: R.J. Fulton

SECURITY CLASSIFICATION / DE SÉCURITÉ

OUR FILE / NOTRE RÉFÉRENCE

YOUR FILE / VOTRE RÉFÉRENCE

DATE: June 20, 1980

SUBJECT / OBJET: Comments on Environmental Impact Statement, Lower Churchill Project Generating Facilities

The Lower Churchill Development Corporation has done a thorough job of considering the significant aspects of impact on the environment of developing generating facilities on the Lower Churchill River. The comments that are made about geology and terrain are fair and accurate and the conclusions that they draw are reasonable. The project, with the mitigative measures as outlined, should have an acceptable environmental impact.

The prime terrain-geology aspects that have been identified as significant problems are:

1. Re-establishment of stable slopes by the reservoirs. – The reservoir margins generally consist of granular and non-cohesive materials with relatively steep slopes. When the reservoirs are filled there will be considerable slumping and sliding in the shore zone while a new equilibrium is being achieved. This will continue for many years. The highest impact will probably be in the Muskrat Falls reservoir because here the bank materials are predominantly non-cohesive fine grained sediments. Fortunately drawdown in this reservoir will be no more than 1 metre so that the slope stability problem will not be exacerbated by periodic dewatering. The sediment resulting from this shoreline instability will largely be held in the reservoirs so that downstream siltation should not be a problem. The land that will be effected by this activity in general has a negligible value and consequently there should be no problem in permitting equilibrium to develop naturally.

Adequate account is taken of this problem in the Environmental Impact Statement.

2. Erosion of the river bed below Muskrat Falls. – The new reservoir will trap sediment carried by the river. Consequently after leaving the Muskrat Falls facilities, considerable bed erosion will occur as the river entrains sediment. This report hypothesizes that only a short segment of the downstream channel will be effected. The area

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affected likely will be greater than they are anticipating and degradation of the channel could lead to bank instabilities which could worsen erosion problems already being experienced at Happy Valley. Nothing can be done to keep the river from deepening its channel but mitigative measures can be taken to control bank erosion and facilities endangered by bank erosion can be moved. Bank conditions downstream from Muskrat Falls should be documented prior to construction of the reservoir and post-imponding changes should be carefully monitored and mitigative measures taken where and when necessary.

The Impact Statement indicates an awareness of this problem but does not stipulate that a "natural state" survey should be made nor say that it will undertake mitigative measures if necessary.

3. Control of erosion in work areas. – Soils in the work areas are generally non-cohesive and most vegetation is shallow rooting. Consequently gullying, sheet-wash and deflation could be problems when the surface vegetation mat is removed. Care will have to be taken to limit the area stripped and as far as possible divert surface water-flow around work areas, if surface degradation and silt production is to be minimized. In addition every effort should be made to re-establish a protective mat as soon as feasible.

The report indicates an adequate appreciation of the problem and indicates that proper mitigative measures will be taken.

4. Stabilizing "natural dam" area at Muskrat Falls. – One segment of the Muskrat Falls dam consists of a natural sediment plug in a buried valley. The sediments consist largely of sands and estuarine and marine silts. Leakage and potential failure could be anticipated in this area. The worst possibility, failure, could cause flooding of Happy Valley and a triggering of many bank failures due to the sudden drawdown of the reservoir.

Lower Churchill Development Corporation is very much aware of the potential problem and has conducted extensive geotechnical studies of the sediment plug and outlined engineering procedures that should secure this portion of the "dam".

The assessment of the environmental impact and appraisal of the effected area given by the Lower Churchill Development Corporation is a fair one. Water power is the prime resource of the area. The region is not highly productive in other renewable resources (although it is one of the most productive in Labrador) and it is not well endowed with non-renewable resources. Because of the climate it is not a very desirable place to live and tourism has little potential. There may be some ecologically unique areas but not all will be impacted and there might be some question as to the value of some of those that might be destroyed. In view of these aspects and the fact that the impact should not be great, there appears to be no reason for not proceeding with the project.

R J Fulton

R.J. Fulton, Head
Regional Projects Section,
Terrain Sciences Division.

RJF/gm

Government of Canada / Gouvernement du Canada

MEMORANDUM NOTE DE SERVICE

F.E.A.R.O.
JUL 9 1980
RECU'D

TO / A: Chairman
F.E.A.R.O.

FROM / DE: A/Senior Assistant Deputy Minister

SECURITY - CLASSIFICATION - DE SÉCURITÉ:

OUR FILE/NOTRE RÉFÉRENCE:

YOUR FILE/VOTRE RÉFÉRENCE:

DATE: July 8, 1980

SUBJECT / OBJET: Environmental Impact Statement - Lower Churchill Project - Generation Facilities

Please find enclosed the results of a technical review of the above and a statement of the Department's Environmental Impact Statement position on the project.

The Department is of the opinion that the project has the capability of being constructed and operated in an environmentally acceptable manner providing that adequate existing technology is employed to control potentially adverse environmental effects. To determine whether this capability will be realized, further work is required on the Environmental Impact Statement. There are several expected impacts which must be more clearly defined. As well, further work is required on proposed mitigatory measures regarding several aspects of the project. The areas of the EIS requiring additional work are indicated in the position statement and technical review.

It is the opinion of the Department that these deficiencies be remedied before approval is given for construction to begin.

J.S. Tener
for Jacques Gérin

Attach.

DEPARTMENTAL POSITION AND OVERVIEW OF THE LOWER CHURCHILL PROJECT GENERATION FACILITIES ENVIRONMENTAL IMPACT STATEMENT

PREPARED BY

ENVIRONMENT CANADA

SUMM' 'Y STATEMENT

The Department of Environment considers that the project has the capability of being constructed and operated in an environmentally acceptable manner providing that adequate existing technology is employed to control potential adverse environmental effects. To determine whether this capability will be realized, further work is required on the Environmental Impact Statement (EIS). There are several expected impacts which must be more clearly defined. As well, further work is required on proposed mitigatory measures regarding several aspects of the project.

THE TECHNICAL REVIEW

A technical review of the Environmental Impact Statement prepared by the Lower Churchill Development Corporation in support of a proposal to develop Generation Facilities on the Lower Churchill River has been completed in the Atlantic Region by representatives of the Services of DOE/DFO.

The technical review committee supports several proposals made by the proponent such as: the hiring and training of environmental monitors, and the inclusion of environmental protection clauses in contract specifications. Other beneficial environmental practices such as the commitment to further resource studies and a program of fish enhancement await clear articulation. Notwithstanding these points, further work is required to clarify or expand on a large number of probable impacts and/or mitigatory measures.

In particular, certain and probable impacts related to water use for residents living on the Churchill River downstream from Muskrat Falls have been overlooked. Additional impacts omitted are related to borrow pit selection and rehabilitation, stability analyses and possible erosion problems at Muskrat Neck, along roads and in borrow pits.

Impact analyses and discussion of mitigatory measures is deficient in areas including; reservoir preparation, the philosophy and mechanics of a reservoir stocking program, assessment of fish contamination and fish movements in and below the impoundments. The EIS does not provide any evidence that pre-planning in order to minimize environmental impacts has been directed towards ancillary road development or construction sites.

THE OVERVIEW

The Department of Environment recognizes the many benefits to the Province of Newfoundland and Labrador from the proposed generation facilities on the Lower Churchill River. It is recognized as well that this project can be developed so that the environmental impact is

minimized to an acceptable level. This can be accomplished by employing existing mitigatory technology.

The EIS was prepared to indicate the environmental sensitivities in the area to be affected by the development, the impact of the project on those sensitivities, and finally the mitigatory techniques to be employed to control these various impacts. While the department is aware of the broad impacts to be expected and the range of mitigatory techniques available to protect the environment, it is still unclear in many instances what the specific impacts will be and thus whether the most appropriate mitigatory measures will be employed.

The concerns of inadequate impact analyses include potential effects on the downstream residents at Happy Valley/Mud Lake with respect to their use of the Churchill River, insufficient details on reservoir preparation, and the lack of stability analyses for roads, borrow pits and soils adjacent to one generation facility.

It is therefore recommended that the EIS be expanded to include the issues detailed below.

REQUIREMENTS

The following include some of the requirements essential to a thorough environmental impact assessment. The additional information constitutes prerequisites to the creation of a final DOE position on the acceptability of the Lower Churchill Generation Facilities project.

1. The strategy for Reservoir preparation should be clearly presented and fully evaluated. Impacts associated with the cutting program selected and with the alternatives should be considered. Impacts on land peripheral to the reservoir and long and short term effects on the water chemistry, as a result of impoundments on the Lower Churchill, should be assessed.

2. A consideration of impacts on residents of Happy Valley/Goose Bay and Mud Lake as they relate to the use of the Lower Churchill River must be developed. Analyses of higher sustained river flows and erosion effects, the use of the river for transportation to Mud Lake, and the potential impacts on drinking water intakes from intrusions of saline water and/or sewage as a result of the proposed 11 day dewatering of the Lower Churchill are required.

3. Recognition of the possibility of flooding erosion at Muskrat Neck and analyses of impact potential related to altered

groundwater flows is necessary.

4. Ranking of borrow pits in terms of environmental suitability is lacking. The exclusion of certain borrow sites, ie. sites along the Pinus River, from any development is necessary to guarantee protection of the much reduced good spawning habitat after flooding. Rehabilitation measures for borrow pits and construction camps are essential and awaits consideration.

5. Problems that may be anticipated due to backwater effects in tributaries at bridges have not been identified. Past experiences dictate that the formulation and review of a detailed transportation plan is necessary if terrain impacts are to be minimized. Stability analyses of road cuts is necessary.

6. The loss of large amounts of fish spawning habitat should be acknowledged as a residual impact. A commitment to a fish enhancement program post-flooding, should be clearly stated. The rational for selecting the fish stocking alternative presented in the EIS, demands elaboration.

7. Certain and probable impacts on fish resources in terms of mortalities and contamination require attention in view of experiences gained from the Upper Churchill Development.

8. The Environmental Protection Policy relating to the discretionary powers of the project manager and waste management plans require review and action. Previous criticisms of these topics has not resulted in changes to date.

9. Details of potential contaminant storage and transportation, are required. Identification of data gaps, especially in the overview summary, is required.

Information from the N.M.I.A., however, indicates that in the last decade, the Indians have begun to increase their hunting and trapping activities, reoccupying traditional areas by using modern technology (aircraft, snowmobiles and two-way radios), while maintaining year-round residency at Northwest River (Sheshatshit).

The discrepancy between the two interpretations means that more research is required before the nature and magnitude of the impacts are known for certain. The corporation's consultants on wildlife matters, Northland Associates, made a recommendation to undertake such additional studies, especially for caribou and moose populations (pp. 101, 105).

In making its case, the L.C.D.C. assumes that the wage-labour economy will inevitably supplant subsistence hunting and trapping. That assumption causes the proponent to discount several issues:

a) the need to suggest mitigative measures for protecting subsistence activities;

b) native peoples' attitudes towards involvement in a wage economy;

c) the viability of a hunting and trapping economy for those who might choose to continue or resume such a lifestyle.

There are some important mitigative measures which the proponent might consider such as compensating native peoples for any loss of harvesting income; Beak Consultants at least recommend that consideration be given to compensating full-time trappers. As well, a liaison committee might be established so that native people could be advised of the timing and extent of flooding, in order to avoid the loss of traps and equipment as happened during the Churchill Falls flooding. Such a committee might provide another service by co-ordinating native employment on the project.

2. Social Change

The E.I.S. predicts the typical problems and benefits resulting from short-term wage employment and a large influx of non-resident labourers. It seems that negative social impacts, such as cultural alienation, inflation, mental health problems and alcoholism, will be greater for the dam site projects than for the transmission line construction, and that they will persist

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for a longer period of time. The E.I.S. on the generation facilities reports that the impacts upon residents from outside workers and a boom and bust economy in the past have been "traumatic" (p. 350), and the study implies that a certain boom and bust effect is inevitable with the proposed hydro development.

I am concerned that apart from increased support to the Indian Alcohol Abuse Program in Northwest River, the L.C.D.C. makes no special recommendations to mitigate potential negative impacts among native peoples, despite Beak Consultants' admission that there will be a "disproportionately high incidence of individual and social problems among native people" (S.-E.I.S. on transmission line, p. 6.3). Beak's socio-economic impact study of the dam sites also acknowledged that "special consideration has to be given to Native Peoples" in addition of recommendations for other workers and residents (p. 100).

3. Native Employment

Although the report by Beak Consultants on the dam sites identifies a need for special measures to promote native employment, and makes certain recommendations to achieve that goal (p. 100-1), the E.I.S. by L.C.D.C. makes no mention of measures to encourage native employment.

As the consultants properly appreciate, native people will want to know the employment benefits they can expect to receive, and the means to facilitate their successful participation.

4. Land Claims

The E.I.S. from L.C.D.C. makes no comment on the importance which the Naskapi-Montagnais peoples attach to settlement of their land claims in Labrador prior to any major industrial developments in the area. Nor does the report give any consideration to whether native peoples would be in a better position to cope with, or benefit from, such a development if the project were delayed until claims were settled.

SUMMARY

In general, the studies on the proposed generation facilities largely ignore the potential impacts on the native community at Northwest River. The oversight should be corrected, given that native people constitute a special element in the Labrador population, one that may be

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particularly susceptible to negative impacts and least equipped to derive employment or other benefits from the proposed project.

While information on native concerns may have been lacking due to the refusal of the Indians to co-operate in the studies, the company still has a responsibility to outline the cultural and social impacts of the project on native residents.

The L.C.D.C. could have identified anticipated impacts on the native community and recommended measures, not only to mitigate negative impacts, but also to ensure that the native community derive some benefit from the development. The corporation could also have acknowledged the importance of land claims to native people, and discussed the advantages and problems of delaying the project until claims were settled.

An attempt by the L.C.D.C. to address potential native concerns might encourage the Naskapi-Montagnais Innu Association to participate in the assessment process. The N.M.I.A. could help fill in some of the gaps in the report, such as the present-day extent of native trapping in the Churchill River Valley. It is also important to obtain from native people their views on participation in the larger society.

Yours sincerely,

M. J. Zaharoff

for K.J. Crowe
A/Senior Negotiator
N.W.T. and Labrador
Office of Native Claims