From: [redacted]
[redacted]; Jennifer.Howe@canada.ca; Laura Friend
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Jennifer Howe
Project Manager, Prairie and Northern Region
Impact Assessment Agency of Canada / Government of Canada

SUBJECT:Application #80123

CRITIQUE OF January 2021 SR1 Draft Report

The CEAA Staff Environmental Alternative evaluation is missing. It only relates to the Single sourced consultant authored decision to choose a single large civil engineering construction project as an EPCM (Engineering Procurement Construction Management contracted solution to the Elbow River Watershed devastating source of flood storage,

Instead of initiating the AUGUST 2013 Panel Advisory Consultant "single large engineering construction project" as the only *non-feasible* solution to the Elbow Watershed Environmental flood Control Project, the following was my original IDC evaluation to be undertook as a Feasibility Analysis before a comprehensive solution was determined to be environmentally contributory to the natural resources conservation of the 1:250 2013 plus a safety factor ala 1879 approximate level of devastation.

The *following* was submitted as a scoping of a Feasibility Analysis to be engaged in 2014 and 2016 to CEAA and bears no resemblance of critique to the EIS Alternative Options Value Component to the IAAC Final Draft Report.

2013 FLOOD MITIGATION–REGIONAL MASTER PLAN for WATERSHED REMEDIATION

This is a Space Use evaluation of Proposed Sequence of Upstream Impounding Dam construction events. Its purpose is to plan to store severe weather conditions which will generate catastrophic flooding conditions downstream. The origin is within the Micro watersheds at the tops of the Kananaskis Mountain Range as it drains into the Highwood, Sheep and Elbow River Basins. All 3 Basins originate from the same 10,000 Ft high mountain ridge within a <1KM radius.

There are 6 Geo-physical conditions of watershed factors to be examined;

1. *The annual volumetric mountain snow-cover density and melting rate.*
2. *The Probable Maximum low pressure ATMOSPHERIC RIVER precipitation system which moves up the Eastern Rockies from the Gulf of Mexico SUBTROPICAL STORM PATH to join within a jet stream convergence with a Northern high pressure arctic cold system.*
3. *Vector forces are generated from the snowpack stone faced Kananaskis Ridges which travel down all storm water drainage courses to accelerate the stream flow surge power of all creeks and connectors into a flooding River gravitational flow.*
4. *All possible locations of potential impounding (earthen)/glaciofluvial granular/rubble Elbow River bed constructed µDams will be evaluated to store intercepted flood precipitation surge to delay vector current forces.*
5. *A potential conjugation of all meteorological and geo-physical elements of streamflow surge conditions above will be annotated for their size of influence upon maximal River basin flood water surge and volume affect.*
6. *Any alteration within any watershed area will be subject to regulatory measures of the DFO, DOE and Alberta Parks and Sustainable Resources.*

Each functional influence factor of Flooding contribution to a will be isolated and envisioned for potential alterations to Urban FHA Flooding solutions.

FLOOD REMEDIATION CONCEPT EVALUATION AND SEQUENTIAL ASSESSMENT.

1. *Annual snow fall sequences & melt rate will be estimated with 3 evaluations;*
   - *Consult Parks Canada Avalanche Team Probable Maximum advise.*
   - *Consult Sunshine Village Ski Patrol Captains measured experience.*
   - *Consult Alberta Parks field monitoring staff experience & advice.*
2. *Probable Maximum Meteorological Precipitation evaluation*
   a. *Probable Maximum US Meteorological Radar tracing of Gulf of Mexico SUBTROPICAL STORM PATH systems e.g. 2013 Colorado storm.*
   b. *Consult US ARMY CORPS of Engineers Maximum Probable safety factor application.*
3. *Vector Force estimation "F = Mass/weight X Acceleration of gravity":*
   - *From #1 above determine the Probable Maximum weight load of snow sequential layers.*
   - *From #2 above determine the Probable Maximum weight loading of rainwater.*
   - *Measure the F^1 on the Hypotenuse face of the mountain range to determine the actual loading of the dynamic load factor to a ∑ surge F^2.*
   - *Calculate the ∑ surge F^2 Summation accumulation as it traverses the geographic declination to the edge of urbanity downstream.*
4. *Measure the geotechnical sub surficial geology to determine possible construction locations for impounding storage Dam foundations as follows;*
   - *Obtain Geosciences' Seismic Survey of all watershed drainage courses.*
   - *Obtain Foundations evaluation to identify design/build locations.*
   - *Obtain Volker Stevin evaluation and advice upon all dam locations.*
   - *Determine topographic Dam sites storage capacities to evaluate.*
   - *Re-evaluate streamflow F^2 storm surge summation estimates.*
5. *River Basin flood surge will be evaluated for Flood Control.*
   - *Calculate the Resultant ∑ summation of Dam flow control.*
   - *Evaluate the relative new Dam Storage to assure no stream surge that maximizes the limit of non-flooding urban river embankment flow.*
6. *Existing Regulatory constrictions may need to be legally amended to permit any watershed construction whatsoever. The Rivers are classified as Class "A" with specific constrictive rules as follows;*
   - *No construction work may be done without Parks Alberta, ESRD EIA and NRCB APPOROVAL.*
   - *No Dam construction is allowed impounding over 30,000,000m^3 retention volume.*
   - *The streams in these valleys have been designated as Class A streams and subsequently all of their tributaries are also under this classification*
   - *With this classification, the "instream" work can only occur within 15 t0 30 days within of a one year cycle and under very stringent conditions.*
   - *"In stream" is defined as anywhere within the drainage basin watershed that accepts stormwater flow within any 1:10 year high flow event.*
   - *The valley's topographic and geologic environment presents a condition where there is much sub-surface flow through the valleys with more flow than on the surface. There are many locations where the surface flows completely disappear and re-appears downstream up to 1/1.5km away.*
   - *Parks Alberta does not want any large Dams, as originally examined by the Flood Advisory Committee, to be built within the Kananaskis Parks. Their environmental shapes would overpower the natural experience*
   - *Micro(µ) Dam distribution will address environmental design criteria. The smaller sized micro Dams will blend into the natural landscape when drained weeks after the flood conditions recede.*
   - *An option to keep some level of water storage broadly distributed within the Kananaskis will also provide water for wildlife and for drought.*
   - *The Grizzly Bear population and existing Wolf families corridors and dens will continue to be respected and preserved. They will be accommodated by a series of µ Wet Dam distribution within their land use regions of habitat.*

CONCLUSION :

Regional Comprehensive Planning Consultant Charles Hansen has assembled a consortium of contributing consultant collaborators to address a more flexible and environmentally sustainable contribution to Upstream FLOOD CONTROL of Downstream Urbanity and in cooperation with Parks Alberta, Wild Life Habitat- U of Calgary Research, DFO, DOE, Species at Risk and the Alberta Natural Resources Conservation Board.

I propose to establish Dam Feasibility Engineering Design within a Design/Construct PILOT PROJECT.

Charles Hansen - EKISTICAL URBAN ARCHITECT PLANNER
B ARCH – MAJOR THESES URBAN DESIGN INFRASTRUCTURAL PLANNING
HANSEN REGIONAL COMPREHENSIVE PLANNING CONSULTING
STRATEGIC EKISTICAL CONCEPT LAND USAGE----------DYMAXION DEVELOPABILITYURBAN DESIGN

Calgary, Alberta, Canada-- --403 – 592 - 0926 - - - -scandinadianb@gmail.com

This is a small portion of my critical analysis of Stantecs ERRORS & MISTAKES which exaggerate their self-serving critique of the MICRO application to the Upper and Lower Alpine Watersheds

CRITIQUE of the May 2019 **Stantec** ERRORS and OMMISSIONS- are in this RED

"ALBERTA TRANSPORTATION SPRINGBANK OFF-STREAM RESERVOIR PROJECT RESPONSE TO CEAA INFORMATION REQUEST PACKAGE 3, AUGUST 31, 2018"
"Alternative Means May 2019"

"MICRO-WATERSHED IMPOUNDING CONCEPT" ::::: ***MWIC***

- *"Details on the Micro-Watershed Impounding scheme have not been provided to Alberta Transportation and the only available information that Alberta Transportation is aware of is on the TRJR website." "Alberta Transportation does not know who its proponent is, nor does Alberta Transportation have any details to evaluate its merit, or feasibility".* The CEAA documented meetings with Stantec VP Russ Mackenzie P.Eng who called to discuss a shorthanded verbal questioning, not a engaged Feasibility Analysis.
- *"Alberta Transportation assumes that Micro-Watershed Impounding scheme refers to a series of low-head dams or weirs placed throughout Elbow River and its tributaries. "This concept would require significant disruption to the Elbow River system as a whole with the installation of multiple low-head dams that would be required to meet the active "flood storage capacity" requirements for flood control on Elbow River. Micro-hydro and other low-head dams have been proven to be barriers to fish, and mitigations using fish ways are often rarely successful at these facilities". "This scheme is "likely to render" ("likely to render" is not a scientific, P.Eng responsible Feasibility Analysis) the river impassable at multiple points in the watershed. The Micro-Watershed Impounding scheme would also require road and utility access to each of the micro-impoundment facilitie's.*
- *There are "currently very few roads" (both inactive and active) within the Sheep, Elbow and Highwood River watersheds, and disturbance from this access would likely have a considerable effect on the watershed, the fish and wildlife, and the area's stakeholders.* MWIS requires no new roads. Existing roads allow equipment access to pushing riverbed aggregate to stack 2&3m dams.
- *"utility access* is needed'.- The Province of Alberta paid 34+ million to Bell 1n 2008 to install a fiber optic SuperNet for all Provincial internet connections installed into and around the Elbow Watershed . It can receive Mountain solar sensoring devices to telemetric all river and flood control devices from the Elbow River Management Office on across H/W66 from Allen Bill Pond. There are 44 existing antennae within the Watershed.
- *"flood storage capacity"*- MICRO stream confluence locations weres estimated on to accommodate the 100Km^3 2013 flood surge vector forces, which was the major engineering purpose to retain small DAMS.

CONCLUSIONS

The TRJR, as it is proposed, cannot meet the Province's flood mitigation objectives. The Micro-Watershed Impounding scheme is not feasible as a flood mitigation solution for Elbow River because of its environmental impact and inefficiency in achieving Alberta's flood mitigation objectives. A Feasibility Analysis was proposed to Premier Prentice. He instead assigned the Provincial Emergency Director to evaluate the MWIC. who did not understand engineering planning and decided otherwise to mitigate SR1.

THEREFORE:

- The statement that this is the last public chance to "comment" has been meaningless.
- That there is no Report viewed position of my 50+/- Emails and ATTACHMENTS which expose the SR1 limited IDC evaluation which was never submitted until January 2021 to the NRCB AEP requirement of an engineering Stamped signed copy of an IDC.
- The Alberta Terms of Reference for an RFP was actually a specification for a RFQ presented by AT Mark Svenson P.Biol. Knowing Mark's deference of engineering skill, it was drafted by the Panel Consultant Advisor.
- The Draft Report CONCLUSION recommends approval of a Project which does not conform or apply to providing Environmental co-existence from a disastrous flood free natural Resource with wild life, humans and health.

Charles Hansen