

THE HOLM TEAM Agriculture Economics Trade Int'l Cooperation

292 Smuggler Cove Road, Bowen Island, B.C., Canada V0N 1G0 (604) 947-2893 www.wendyholm.com wendy@wendyholm.com

Summary Notes:

Gap Analysis of BC Hydro Site C Clean Energy

Environmental Impact Statement (EIS) –

Potential Project Impact on Agriculture (Economic)

Submitted to Peace Valley Environmental Association

March 15, 2013

March 15, 201

Summary Notes: Gap Analysis of BC Hydro Site C Clean Energy Environmental Impact Statement (EIS) -

Potential Project Impact on Agriculture (Economic)

Objective: To provide brief summary notes to Peace Valley Environmental Association and their Legal Counsel for use in preparation of a submission to CEAA regarding gaps in the Environmental Impact Statement related to the above project.

Approach and Limitations

Given the limitations of time and budget, it was impossible to thoroughly review the entire EIS document, comprising + 15,000 pages including all figures and appendices. Therefore, the assigned task was carried out using the following approach:

- Overview of Vol. 1-5 with specific reference to potential project impact upon agro-economics.
- More detailed review of Vol 3, Section 20 (Agriculture) with regular cross-checks to other volumes and sections as required
- Overview of targeted Figures and Appendices as required

The Issue Gap Groupings that form the basis of Table 1 emerged from the above review. Given the request for 'Summary Notes' only, the decision was taken to provide a few key examples under each of these groupings, rather than to assemble a long list of specific 'gaps' in the EIS.

While a few selected statistics (e.g. numbers of hectares) have been cited in Table 1, no attempt was made to rationalize or refute the 'numbers' provided within the EIS related to agricultural impact. Although there are perceived contradictions that may warrant analysis at some later stage, it was felt that isolating the more general issue gap groupings would be more useful at this stage of the process.

In addition to limitations imposed by the massive digital size and lack of access to hard copy of the EIS, particularly of the background map sets, this gap analysis was made much more difficult by the extremely complex Table of Contents and convoluted, confusing organization of material. While efforts were made to crosscheck volumes and sections to determine the presence or adequacy of information deemed important to agriculture, some errors and/or omissions should be expected.

General Observations

This project is premised on the assumption that power exports to the south are more valued than food production capacity in the North.

Indeed, agriculture is listed ninth in the list of valued components in the Executive Summary.

B.C. Hydro's justification for ignoring many of the items presented in the following table of GAP deficiencies and issues is that they are "insignificant" on an economic level; any future private losses (to farmers) will be handled on a farm-by-farm basis from a vet-to-be-specified mitigation/compensation fund and any public losses (to the community/region/province: the value of future production, jobs, economic activity, better nutrition and community health, generated under a "no-dam" scenario) will be more than offset by increases in productivity arising from BC Hydro-funded projects in the region.

The GAPS in the analysis include but are not limited to the following:

BASELINE – Based on the 2011 Census of Agriculture, the EIS baseline is not reflective of the productive potential of the Peace River Valley farmland. The region has been in the Site C Project Shadow for 55 years; this has adversely impacted the way the land is farmed. The effect of this GAP is that the EIS substantively undervalues the productive potential of the Peace River Valley farmland.

CLIMATE - There is no recognition of the economic benefits associated with the unique microclimate of the Peace River Valley that supports a wide range of heat-loving crops.

FARMER IMPACT - There is inadequate consideration given to economic impact on farmers including those arising from loss of unique microclimate farmland, loss of future Crown grazing lands and constraints placed on management of land within and adjacent to stability impact lines.

PUBLIC IMPACT - The economic model developed to evaluate future public benefits under a no-dam scenario is static and wooden and does not reflect rational farm decision-making. Further it uses a very high Social Discount Rate (3.5%; should be 1.4% or less), which further understates true public value. Sensitivity analysis is inadequate.

RISK - There is inadequate analysis of the economic impact of risks such as slumping, climate change, higher fuel oil prices, increased concentration in agri-food markets and their impact on food costs. There is no cumulative analysis of risk.

SCOPE - The scope of economic impact does not consider the sector itself (the remaining farming community). It dos not consider the future importance of the Peace River Valley farming to the health and nutrition of peoples living in North West Territories and Yukon. It also does not consider the impact on the provincial ALR.

NO MEASURE OF SOCIAL IMPACT. It does not measure the economic effect of reduced food sufficiency and high access costs on nutrition, poverty, health and social costs. Nor does it acknowledge the psychological and social costs to families and communities if the project goes ahead.

Table 1: BC Hydro Site C EIS Agro-Economic Related Issues - Gap Groupings and Examples

NOTE: In addition to identifying key areas where information considered important to assess project impact on agriculture is missing, "gaps" are considered to include situations where either the interpretation of the information for impact assessment purposes or the application of the interpretation to potential impact is questionable.

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
BASELINE	The Baseline used in the EIS is based on current production in the Valley. This undervalues the food production potential of the Project Activity Zone (PAZ). (Vol 3, 20.2, 202.2.2, 20.2.4.2)	The baseline used to estimate the magnitude of public loss arising from the construction and operation of the proposed dam should reflect how the land was cropped before the shadow of the Site C Dam Project impacted farm decision-making and reduced production.
	BC Hydro notes acres farmed in the Peace Agricultural Region have declined in absolute terms and in relation to the rest of the province over the past decade. According to the EIS, from 2001 to 2011, the EIS reports livestock and poultry inventories declined in the Peace Agricultural Region by 51%, area in beef production declined by 30%, dairy by 48%, tame hay by 35%, and honeybees by 59%. Production of ewes, goats and forage seed also declined. (Vol 3, 20.2.2.72.)	Production was even more robust before the shadow of the dam fell across the valley 56 years ago. Art Guitard in his1965 paper Agriculture in the Peace — Past, Present and Future describes a flourishing farm economy: "it is a region of exceedingly good productivityThere is a broad-based diversified agricultural industryclimate is extremely favourablefavourable distribution of moisture, combined with lower evaporation than in the south, makes efficient moisture use possible the reduction in the growing season is compensated for by increase in day-length. The portion of the crop that is produced for seed is particularly significantvirtually all of Canada's seed of creeping red fescue 40% of Canada's alfalfa seed, 20% of sweet clover, 50% of red clover and 70% of Alsike clover. All grow well. Complementary to legume seed production is a rapidly expanding honey industry that will be based on output from approximately 50,000 colonies of beesFinally now in the region a nucleus of small but diversified horticultural enterprises producing potatoes, carrots, turnips, cucumber, tomatoes, cabbage, sweet corn and other staplesWhat must concern us is the economic forces that may exist in the future to cause this land to be developed improperly. The future of agriculture in the Peace is equally important to other segments of government and to industry that must give it direction and support during its development. During the past 10 years, agricultural lands in the Peace River region have been brought into production a from 100 to 200 thousand acres per year Undoubtedly the rate of development will continue to be substantial. We would expect that within a rather short period of time the point will be reached where a further 1 million acres are being brought into production every 4 yearsSince bees are required for the pollination of legumes for seed and of canola, future development must be based on a well-coordinated honey production industry. And finally, we cannot visual

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
UNIQUE MICRO CLIMATE	The economic value of the unique Peace River Valley micro-climate is not recognized: • LSL Table 1 Climate for Agriculture GAP: No mapping of climate characteristics that would clearly identify those PRV lands with unique microclimate for horticultural (heat-loving) crop suitability (Vol 3 Sec 20.2.2.1) The economic effect of the impact of the reservoirs on the Peace River Valley microclimate is not recognized. • LSL Table 1 Climate for Agriculture GAP: Question interpretation of minimal impact of proposed reservoir (and past reservoirs?) on agricultural microclimate characteristics with respect to crop and enterprise choice, seeding/harvesting management, and soil moisture within LAA and RAA.	This has the effect of underestimating bot the crop potential of the land today and the productive public value of the land in the future under a no-dam scenario. **Unique microclimate agricultural lands, which have specific crop suitabilities, are not tracked throughout the impact analysis and therefore not identified as a specific aspect of agriculture land loss. (LSL Table 1. Assessment of Agriculture Land Loss GAP.) Changes in microclimate such as changes in temperature, precipitation, wind, humidity, fog etc. and their impact on farm management practices are ignored.

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
GLOBAL CLIMATE CHANGE	Climate change analysis is perfunctory and inadequate, and its implications for the Peace River Valley are dismissed. The economic implications of global climate change are not addressed. • "Climate change predictions also indicate that climate capability within the region as a whole will improve, increasing the land capability for agriculture throughout the region. It is expected that the proportion of high capability land within the Project activity zone relative to the total within the region will not increase with climate change, and may decrease." (Vol. 3. Sec. 2.2.2.1.5) • LSL Table 1 Climate for Agriculture GAP: Confidence of climate interpretation for agriculture limited by reliance upon BC Hydro 1-year (2011) climate station data as the PRV component of the determination of 30-year climate averages, which are based on upland data in a different climate zone. (Vol 3 Sec 20.2.2.1.4 and Vol 3 Append D)	The EIS implies the risk of global climate change is "significant" compared with local climate change (MIROCLIMATE) but does not factor this into scenario analysis. Estimate of changes in temperature were compared to expected changes due to global climate change. For most of the Technical Study Area the magnitude of predicted changes in microclimate would be statistically insignificant when compared to global climate change. EIS Vol 2 Appendix K What effect will global climate change have on local, regional and provincial food security options in the future? How will climate change impact the capability and crop suitability of Peace River farmland? How will climate change impact overall food production capacity of the provincial ALR? How will climate change impact food production strategies and options at the local, regional, provincial level? How will this change the relative importance of Peace River Agriculture? BC Agriculture's Climate Change Action Plan 2010-2013 identifies the following broad changes for BC's climate: • Increasing climate variation and more extreme weather events with an increase in the associated damage costs • Shrinking of glaciers with many expected to disappear within 100 years; resulting in serious impacts on water availability and hydrology • Reduction of snow accumulations, particularly at lower elevations • Warming by 2-7°C by 2080 – impacting sea levels, precipitation patterns and ecosystems • Increasing frequency and severity of wildfires • Increasing frequency and severity of pest, disease and invasive plant outbreaks "These changes are likely to have consequences for food production through impacts to health and quality of crops, pasture, forests and livestock. The biophysical changes are anticipated to result in socio-economic impacts which could also be felt in BC, even if the more dramatic changes are likely to have consequences for food production through impacts to health and quality of crops, pasture, forests and livestock. The biophysical changes are anticipat

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
	(**************************************	
DIRECT LOSSES TO	LAND LOSSES	
FARMERS (Vol 3, 20.4; Table 20.37)	The EIS provides no evaluation of the economic (public) cost to mitigate and/or compensate farmers for LOSSES arising from the construction and operation of the proposed dam: a. Lands impacted by construction, disrupted traffic	Loss of land "cultivated in 2012" will be compensated at land value; in the case of severe impact, BC Hydro will consider requests from the farmer to purchase the farm. This is essentially expropriation. Also suffers from the baseline problem noted above, what was "cultivated" in 2012 may be a small percentage of productive but fallow land lost to flooding. How will this be compensated for?
	patterns, transmission system (Temporary) b. Land flooded, lands lost to farming (Permanent.)	Compensation and mitigation will be based on-closed door negotiations between BC Hydro and the affected farm. Farmers will not know if they are being treated fairly or not.
	e.g. at perimeter.	, and the second
	Mitigation and Compensation measures are inadequate. According to the EIS, mitigation for temporary losses will be based on implementation of management plans and compensation for permanent losses will include irrigation and drainage improvements, soil relocation, inclusion of land within the ALR and payments from the agricultural compensation fund. Islands created by the Project are not included in permanently lost land, yet may be removed from the productive land base due to economic costs to access.	Loss compensation based on land value does not recognize the investment the farmer has placed in that land (soils and fertility, strategic importance within the farming unit) nor the economic value of its unique microclimate. Compensation should be based on annual profit each acre would generate when put to highest use over the life of farmer and the next generation. Some hectares of agricultural land that will be permanently loss are more valuable than others, partly due to unique microclimate characteristics and crop suitability and partly due to the greater acreage of higher capability land identified through the more detailed mapping that was carried out. (LSL Table 1 Agricultural Compensation Package to address Residual Effects GAP)
	No mention is made of the economic impact of the loss of potential future crown grazing rights	BC's northern grasslands are amongst the most productive in Canada. Loss of access has economic consequences for individual farmers and for the sector.
	No mention is made of the economic losses arising from the restriction of management options (rights) on lands within and adjacent to stability impact lines.	Statutory rights of way imposed across lands within and adjacent to stability impact lines will restrict farm management options (for example, prohibiting irrigation or machinery use) restricting farmers' productive use of these lands. Implications of the preliminary stability impact line and associated statutory rights-of-way on ± 9600 ha have been seriously downplayed in the EIS, resulting in several key gapsOther than building restrictions, no interpretation of the impact upon farm operations and opportunities (e.g. Restrictions on crop range, irrigation, livestock and farm machinery use). (Vol 3 Sec 20.3.2.1, Vol 2 Append C) (LSL Table 1 Impact upon Agricultural Land Use Within Preliminary Reservoir Impact lines GAP.)

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
	(00.1111.011.011.01.01.01.01.01.01.01.01.	
DIRECT	HIGHER FARM MANAGEMENT COSTS	
LOSSES TO FARMERS	The EIS provides no measure of the economic (public)	The EIS judges these costs to be insignificant.
(cont'd)	cost to mitigate HIGHER COSTS arising from	
(Vol 3, 20.4;	construction and operation of the proposed dam (including but not limited to the following) nor an	The EIS states BC Hydro will mitigate adverse effects through irrigation improvements and the development of Farm Mitigation Plans to include
Table 20.37)	assessment of their cumulative effect:	environmental management plans, traffic management plans, public safety management plans and biosecurity protocols if needed.
	 a. Bisected operations, partitioned fields, new fencing and gates, changes to field drainage and irrigation, wildlife damage. 	With the exception of irrigation, all of the above are part of basic farm management planning. The only actual mitigation measure is irrigation. Further,
	 b. Changes in soil and subsoil water flows (local hydrology and groundwater); impact of changes on irrigation capacity, management practices, 	many of the mitigation measures cited fall under sections of the EIS, which do not reference agriculture. (For more LSL Table 1 Impact of Land and Water Use Change upon Agriculture GAP)
	 cropping, farm returns. c. Changes in microclimate; changes to farm management practices arising from changes in temperature, precipitation, wind, humidity, fog. 	Mitigation will be based on-closed door negotiations between BC Hydro and the affected farm. (Vol 3 Table 20.37)
	d. Slope Instability; impact of slides and slumping on field and farmstead management and public safety; loss rights associated with imposition of statutory right of ways within and adjacent to	The mitigation process should be open and transparent. Absent this, there is also no way to assess the equity of the mitigation/compensation paid area farmers who sustain such losses and/or higher costs.
	stability impact lines. e. Noxious weed contamination. f. Constraints on resiliency (capacity for strategic repositioning to take advantage of market	Changes to livestock access and security and trespass management related to recreation use of the reservoir are complex issues not able to be addressed only on an individual farm operation basis. (LSL Table 1. Impact of Land and Water Use Change upon Agriculture GAP)
	opportunities) e.g. loss of heat-loving croplands, loss of isolation needed for organic seed crops. g. Farm worker safety. h. Increased transportation costs; due to scale, due	Mitigation will be funded from of a yet-to-be-specified compensation and mitigation fund.
	to new road system, etc. i. Reduced isolation; intro of new pests/diseases. j. Loss of biodiversity and its impact on farm	Since funds by their very nature have a bottom, pressure for early settlements will be strong.
	practices (e.g. IPM). k. Interference from non-farm uses. I. Loss of carbon sequestration income/capacity.	Adverse effects of the Project will extend into the long term, yet there is no specification of the amount of the fund, nor its duration.

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
SECTORAL LOSSES	a. The assessment of land loss is based on unimproved land capability for agriculture, (Vol 3. 20.3.3.1; Table 20.16)	This has the effect of underestimating the economic significance of the loss to the sector. This approach has the effect of reducing the loss of Class 1 agricultural land to 0 hectares, whereas adding up EIS-provided figures on hectares lost to individual project components based on improved ratings results in the permanent loss of 1547 ha of Class 1 agricultural land. (LSL Table 1: Assessment of Agriculture Land Loss GAP)
	 No consideration is given to the economic cost to the sector of a loss of diversity arising from the loss of heat loving crops as a production option. 	EIS did not consider the unique microclimate of the Peace River Valley and its beneficial effect on soils and crops.
	 No consideration is given to the economic impact of the proposed dam on agricultural infrastructure. 	What effect will a reduction in number of farmers and operating farms have on local infrastructure – for example farm suppliers, farm services, technical, financial, peer and community support?
	d. No consideration is given to the economic impact of the proposed dam on farm demographics	The construction of the dam limits the future for agriculture on some of the highest capability land in the province. This will reduce the number of young farmers entering the sector, impeding intergenerational transfer of farms and reducing sectoral resiliency.
	 No consideration is given to the economic and social costs associated with depression, disempowerment, major shift in vision of the future. 	Does not value economic impact on farm community (losing neighbours, numbers, collectivity).
	f. No consideration is given to the economic effects of how the project will impact personal and household wellness, security and happiness and the social and economic fabric of the community.	
	g. No consideration is given to the economic impact of the loss of farmland in the Peace Valley on the resiliency and capacity of the provincial Agricultural Land Reserve.	The economic value of the unique Peace River Valley microclimate is not recognized by the EIS and consequently its importance to the provincial land reserve is also unrecognized.

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
LOSSES TO PUBLIC AND COMMUNITY	IMPACT ON LOCAL AND REGIONAL SPENDING, TAX BASE, JOBS AND ECONOMIC DEVELOPMENT a. Long-term impact on regional economy (loss of farmland over 50, 100, 150, 200+ years) is premised on artificially low baseline. (Vol 3 Table 20.31)	This undervalues potential benefits under "no dam" scenario (see BASELINE).
	 b. Long-term scenario analysis is based on EIS collapsed "utility ratings" derived solely from land capability ratings. 	This GAP makes accurate economic modeling of the "no-dam" scenario impossible.
	c. Model to estimate future benefits assumes static	The unique microclimate of the PRV most directly manifests itself in crop suitability (unique opportunity to produce specific heat-loving crops) rather than land capability (which is a reflection of range of crops only) No mapping of crop suitability was carried out and therefore this critical knowledge base is unavailable for interpretation. (LSL Table 1 Land Capability, Crop Suitability and Utility for Agriculture Interpretations GAP). The EIS uses 2011 baseline scenario and mechanically increases acres in each
	cropping decisions that undervalue economic potential of the land base.	crop by 8-10% a year, adding one ha of vegetables per year. Further, there is no consideration of animal production (dairy, meat, eggs) in the scenario analysis. Absent the shadow of the Site C dam project, rational decisions by farmers can be expected to move the land to highest and best use. Given the Peace Valley's unique microclimate (see MICROCLIMATE) and comparative advantage at serving regional and northern food demand, this would include the production of heat loving vegetables and berry fruits, potatoes, animal agriculture and the evolution of local processing and value added facilities.
	d. Inadequate sensitivity analysis. The EIS states base case valuation is most sensitive to length of the period over which foregone benefits are calculated, area of vegetable production included and length of the period over which the full development of the agricultural potential of the Project activity zone is assumed to occur, yet only undertakes perfunctory analysis of the first variable. (Vol 3. 20.3.8.6)	The fact that the model is sensitive to "area in vegetable production" and "rate of development" underscores the problems in the scenario analysis noted in this section. Absent the shadow of Site C, rational decision-making by farmers would be expected to increase agricultural diversity, the cultivation of heat-loving horticulture crops and the addition of animal agriculture and processing capacity to provide a local source of food to regional and northern communities. This scenario was never tested by the EIS.

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
LOSSES TO PUBLIC AND COMMUNITY (cont'd)	e. No consideration is given to the economic contribution arising from the potential growth and development of a locally-based value-added pre and post farm gate agri-business sector to provide services to, buy from, processes, and transform Peace Valley food products for local and export consumption.	In the early 60's, before the shadow of the dam fell across the land, there was a thriving agribusiness sector. (See BASELINE.) There is no reason to assume that this would not return if the shadow of the dam were lifted, farmers made rational economic decisions and the land moved to its highest and best use.
	f. What is the justification for using a social discount rate (used to value economic impact of loss of farmland on regional economy over 50, 100, 150, 200+ years) of 3.5% for first 50 years, dropping to 2.5 in second 50-year period, 2% for the next 100- years, and 1.5% thereafter? (Vol 3. 20.3.8.6)	A social discount rate of 3.5 is extremely high. Stern, in his respected Review on the Economics of Carbon Credits suggests a discount rate of 1.4% is far more appropriate. It is further questionable why the social discount rate is varied at the end of each 50-year period. (Paradoxically, it discounts the importance of the benefit in the first 50 years then assumes it will be of greater importance after that.)
	g. Sensitivity to variance in the SDR of plus/minus 0.5% is inadequate. (Vol 3. 20-58-22)	
	h. What is the justification for basing measure of economic activity lost (1.8 multiplier) on farm expenses not farm sales? (Vol 3. 20-61 line16)	Basing the assessment of secondary economic activity only on projected expenses and not on projected gross sales understates the economic impact of a no-dam scenario. Basing it on farm receipts would increase the measure of economic activity by 2.27 times today and by 2.43 times a hundred years from now. Baseline issues continue to undervalue the magnitude of both projections.
	 What is the justification for excluding family labour from job creation assessment? Impact of proposed dam on number of jobs created by the sector includes only hired labour. (Vol 3.20-61-23). 	EIS notes for every one job created in primary agriculture there is 0.91 jobs created in the economy yet they exclude from calculation on-farm employment by family members, understating impact on job creation and economic activity.
	 Fails to adequately assess the economic impact of the withdrawal of these productive lands from the provincial foodlands reserve (the ALR). 	If the Site C dam goes ahead, will farmers have the critical mass, resources and natural capital to meet new challenges and potential? Resiliency of community to increase local supply, value added, co-ops,

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
LOSSES TO PUBLIC AND COMMUNITY (cont'd)	k. Regional food resiliency ignored; provincial resiliency issues dismissed.	How does loss of Site C lands impact resiliency of existing ALR, of ability to craft a sound provincial food strategy? The Class 1 climate capability for agriculture lands within the PRV are the only Class 1 climate for agriculture lands north of Prince George (LSL Table 1 Assessment of Agriculture Land Loss GAP)
	Impact on local food security dismissed, citing globalization and increased trade as sufficient remedies: "The effects assessment concluded that there would be no adverse effect on food self-reliance for the Peace Agricultural Region". (Vol 3. 20.3.13)	The crops that can be grown in the valley bottom are completely different than can be grown on the benchlands.
	"there will be more than adequate land outside of the Project activity zone to meet self-reliance needs at least for the next 100 years." (Vol 3. 20-65-29) "There are no residual effects to the ability of the region to be food self-reliant in commodities that can be produced in the region, as there is sufficient land remaining for the region to be self-sufficient in these commodities. "((Vol 3. 20.4.1) "Canada supports fair trade rules and environmentally sustainable trade practices as the means toward increasing food security, rather than agricultural protectionism and promotion of food self-sufficiency. (Vol 3. 20-25-3)	This suggests a misunderstanding of what is meant by self-sufficiency and food security. The concern is not with "self-sufficiency" of crops being currently cultivated but the ability of the land to support a range of market garden crops and animal protein to provide food self-sufficiency Given climate change, peak oil and population growth, this simplistic statement flies in the face of good public policy. According to BC Agriculture's Climate Change Action Plan 2010-2013: It is estimated that about between 40 and 50% of the food consumed in the province is imported and a significant percentage comes from California which has recently been experiencing severe drought conditions. As climate change impacts are felt in other jurisdictions, heavy reliance on imported food may become increasingly problematic and costly There is a critical need to determine how best to support the industry with climate change adaptation and how to increase food security in the face of a changing climate

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
LOSSES TO PUBLIC AND COMMUNITY (cont'd)	m. Analysis is simplistic. From Food Self Reliance in the Peace Agricultural Region: Vol 3, 20-26 a. "Overall, regional food self-reliance has not been examined in detail. Nonetheless, it is estimated that about 30% of the freshequivalent weight of vegetables consumed cannot be grown in the region; for fruits and berries slightly over 96% of the products consumed cannot be grown in the Peace Agricultural Region. At maximum, this means that the Peace Agricultural Region is capable of producing 41% of the total fruits and vegetables consumed	What is the basis of this assumption? Interviews with local merchants? This again ignores the unique microclimate of the Peace river Valley and its ability to support a wide range of heat –loving crops. Further, The market basket of fruits and vegetables consumed is related to price. And price of non-local foodstuffs is related to transportation costs and market concentration. As price of imported goods rises, it is reasonable to assume consumption will shift to a more sustainable, local food basket. A similar argument can be made for animal production. Indeed, localism as the "new urbanism" is a trend sweeping many Canadian cities.
	n. The question of food accessibility (price) was not addressed, not impact of reduced access (price. supply) on local diet, nutrition and health costs.	If prices of nutritious foods escalate, what will happen to nutrition? What health outcomes can one expect?
	 Impact on food security (supply, access), nutrition and health in the Northwest Territories and Yukon not considered. 	Need to understand existing supply lines to the North. Does PR have strategic advantage in nutrition? Quality? Price? What are the implications for PR farmers and for Northern Communities if this option foreclosed?
	 p. Economic impact of reduction in Natural Capital; (local, regional, provincial) not considered 	Reducing natural capital reduces community resiliency.
CUMULATIVE EFFECT	There is no evaluation of the cumulative economic effect of potential impacts of the proposed project on the region and the province.	The accumulated impact on agriculture is much more than the sum total addition of land loss to reservoir taking and Statutory Rights-of-Way. It is the combined direct and indirect impacts of reservoir flooding, access and transportation planning, groundwater and surface water quality/quantity changes, land use changes and forced farm and ranch operation management modifications – both in the short and the long term. (LSL "Cumulative Effect" GAP.)

Issue Gap Groupings	Selected Gap Examples (dominant EIS section reference)	Comments
RISK	ECONOMIC IMPACT NOT SUBJECT TO RIGOROUS SENSITIVITY ANALYSIS FOR RISKS, INCLUDING THE FOLLOWING: 1. Risk of climate change	The EIS implies the risk of global climate change is "significant" compared with local climate change (CLIMATE) but does not factor this into cropping options in scenario analysis to value the loss of agricultural land should the project proceed.
	Risk of fossil fuel price escalation; (transportation costs)	Deemed insignificant –rest of region can respond if necessary. Does not consider impact of transportation on food prices, nutrition and health care cost
	3. Risk of escalating population	The EIS modeling pegs population growth at 1.09% per year. Both BC and Alberta are experiencing higher job growth due to resource extraction. BC grew at 7.0% over the past 5 years, Alberta by 10.8% and Edmonton by a whopping 12.1%. Energy exploration in the Peace should peg growth rates closer to Alberta. EIS population growth estimates almost certainly underestimate the demand for food in the region. Further, there is no consideration given to populations in the Yukon and NWT.
	Risk of market failure (increasingly concentrated markets)	Does not consider increasing trend towards market concentration and impact on food prices, nutrition and health care cost.
	5. Risk of increased slumping.	Implications of the preliminary stability impact line and associated statutory rights-of-way on ± 9600 ha have been seriously downplayed in the EIS (LSL Table 1 Impact Upon Agricultural Land Use Within Preliminary Reservoir Impact lines GAP)
	 Risk of shrinking food land base; foreign buy up of farmland for food export or bio-fuels 	Does not consider importance of the Peace River Valley land to the diversity, capability and resiliency of the provincial ALR.
	 Risk of food becoming more valued than energy exports. 	What are the public options if the land is needed in future for food production? Does not consider potential future cost of dam decommissioning.