APPENDIX B

Part 3 Community Baseline Report and EIS Integration Summary Table - Duncan's First Nation

SITE C CLEAN ENERGY PROJECT

DUNCAN'S FIRST NATION
COMMUNITY BASELINE PROFILE

Prepared for:

BC Hydro Power and Authority

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DUNCAN'S FIRST NATION

COMMUNITY BASELINE PROFILE

Prepared for the Duncan's First Nation and BC Hydro in Respect to the Proposed Site C Clean Energy Project

December 2012

Prepared by:

Matthew General

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EXECUTIVE SUMMARY

BC Hydro (BCH) is preparing its Environmental Impact Statement (EIS) and Socio-Economic Impact Assessment (SIA) for the Site C Clean Energy Project (the Project); a proposed bank to bank hydro–electric facility on the Peace River near Fort St. John, British Columbia (BC). The Project will be subject to environmental review pursuant to the *Canadian Environmental Assessment Act* and *BC Environmental Assessment Act* and its scope and range of potential effects will trigger consultation and accommodation duties of the Crown pursuant to common and constitutional law principles and directives.

The Duncan's First Nation (DFN) has prepared this "Community Baseline Profile" to facilitate the assessment of the Project's potential socio–economic effects and impacts on the DFN community. The DFN is a host community with the Project falling within lands historically and currently utilized by the DFN community. The Project also has the potential to effect and impact resources relied on upon by the DFN community and DFN interests. The DFN has a wide range of environmental, cultural, sustenance, socio-economic, socio-cultural and other interests in relation to the Peace River, the Peace River valley and lands adjacent. The DFN has clearly defined treaty rights which its community members have and continue to exercise in relation to fish, wildlife, forests, waters in and along the Peace River and Peace River Basin.

Hydro–electric facilities such as the proposed Project can result in an array of potential effects that can arise during its construction and ongoing operational phase. Within this report, the DFN has considered the potential upstream and downstream effects and impacts of the Project and how these effects may intersect and converge with key DFN interests and potentially impact its rights and interests. The range of potential upstream and downstream Project effects (along with the potential effects of supporting infrastructure) was systematically reviewed and considered against the range of DFN interests such as hunting, fishing, trapping, gathering, overnight and cultural sites, culturally significant areas and the socio–economic and cultural interests that the DFN has vested in the land and hosting eco-system itself. Going forward, the DFN will work to engage BC Hydro, regulators and Crown agencies in the environmental review of the Project to address the issues and concerns highlighted in this report and that may arise in the upcoming EA review.

The baseline report was based on primary research undertaken with DFN council members, staff and community members and secondary sources such as the DFN Ethno-Historical Review (2011) and the DFN Traditional Land Use Survey (2011) and other relevant documents related to the impacts of hydro-electric development, the impacts of the Peace River hydro-electric system on the Peace River valued components and the state of the hosting Peace River and Peace River Basin.

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1 INTRODUCTION

1.1 Objectives

1.1.1 Community Baseline Profile Purpose, Objectives and Status

BC Hydro is advancing the Site C Clean Energy Project (the Project) and it is anticipated that the Project's Environmental Impact Statement (EIS) will be submitted to regulators by the winter of 2013. In addition to assessing the potential environmental or bio-physical effects of the Project, the EIS must also assess the range of potential socio – economic effects that may result from the construction and ongoing operation of the hydro – electric facility. The proposed Project is located within lands of the Duncan's First Nation (DFN) and may potentially affect lands and resources that the DFN have and continue to rely upon for a range of sustenance, spiritual, socio–economic and socio–cultural purposes.

The purpose of this report is to scope and describe the potential interactions of potential Project effects with the interests of the DFN, its families and community members. The specific objectives of the report are to:

- Conduct a review of BC Hydro's founding EIS documents and reports to determine the potential range of the Project's effects stemming from its construction and ongoing operation
- Prepare a baseline community profile of the DFN as a host nation that set's the various interests and values that DFN have and hold as a host nation
- Undertake a preliminary scoping of the potential range of potential project effects and how these may interact with the range of DFN community interests
- Develop a data-base or listing of potential interactions to support BC Hydro's assessment of potential socio – economic effects arising as a result of the construction and operation of the Project
- Focus and support subsequent engagement efforts between the DFN, BC Hydro and project regulators in relation to the Project
- Function as an assessment / communication tool that will better position the DFN council and community to understand the potential array of potential Project effects and support DFN's EIS review efforts once the EIS is formally submitted to regulators

The DFN highlights the fact that this report is not intended to function as a socio – economic impact assessment of the Project. BC Hydro is charged with this task as a proponent, thus this report is intended to inform BC Hydro's assessment of socio – economic effects and the drafting of its EIS.

In engaging in the exercise, the parties reached a mutual understanding that BC Hydro is not bound to accept the views and findings reached by the DFN within this report. Likewise, the DFN is not bound to accept the methodology, eventual findings and conclusions reached within BC Hydro's Socio – Economic impact Assessment (SIA) and EIS. In reviewing each other's document, that parties have agreed to provide comments, discuss their views and document areas of both consensus and disagreement.

In addition, this report is one of several submissions that has and that will be submitted by the DFN through the engagement, environmental review, regulatory review and consultation process. It has been prepared in the absence of a completed EIS that describes the full array of potential Project effects and prior to Crown agencies and the Joint Review Panel issuing their findings and reports in respect to the Project. Thus this report should not and cannot be taken as constituting a formal review of the Project's impacts by the DFN and should not and cannot be taken as its final view in respect to the Project. Additional legal, technical and policy review work will need to be undertaken by the DFN once BC Hydro formally submits its project application, during the environmental review process and any hearings conducted by the Joint Review Panel.

1.1.2 Report Structure

The report tracks the preferred methodology set out by BC Hydro and Golder and Associates and addresses the proponent's requested information requirements, with some modifications. In short, the report initially sets out and summarizes the cultural and historical setting of the Duncan's First Nation, the range of anticipated potential effects that will arise as a result of the construction and operation of the Project, baseline community conditions for the DFN as a host nation and the potential areas of interaction between potential Project effects and DFN interests.

1.1.3 Report Structure in More Detail

The following baseline report is specifically organized in the following manner:

Duncan's First Nation Background: This section sets out the scope and breadth of DFN's historic and current land and resource use and occupancy patterns within the Peace River Basin and along the Peace River valley itself. The DFN is a multi – national group with its roots in the Cree, Beaver and Iroquois cultures and Nations. The report considers some of the key factors and evidence that connects the present day DFN and DFN families with their ancestors who used and occupied areas through the Peace Basin and along the Peace River valley. In addition, information related to treaty signing, the establishment of DFN reserves and the status of unresolved claims in relation to these lands are provided. Much of the information for this section is attributable to the DFN 2012 Ethno – Historical Review conducted by Dr. Dorothy Kennedy and Randy Bouchard. The DFN's current governance structure is set out along with key land use principles that guide DFN interaction, engagement, consultation and negotiation actions with proponents and the Crown.

State of the Hosting Environment, Ecological Change and Stressors Effecting DFN Utilization of Lands and Waters

Living with ecological and land use change has been a fact of the DFN's existence and survival and some focus is provided to key ecological conditions and stressors that have acted and continue to constrain DFN land and resource utilization. Key studies such as the "Northern River Basin Study" (NRBS) of the 1990's and a more recent review of Peace River eco-system conducted for the Mighty Peace Watershed Alliance were considered. These reports identified and assessed key stressors impacting Peace River water quality, quantity, flows and aquatic system health. These stressors are important to acknowledge and consider given that these stressors have and continue to place limitations on the DFN's ability to rely on, and utilize the Peace River and its tributaries. DFN's current day-to-day land and resource utilization patterns are a function of such constraints and stressors.

Listing and Statement of Potential Range of Relevant Potential Project Effects:

Within this section of the report, the DFN relied on available information from various sources which identify and categorize the potential range of effects and impacts that

may arise as a result of the construction and ongoing operation of the Project. Identification of potential project effects was necessary to assist in determining potential interactions with key DFN interests. Such potential effects and impacts can be grouped under or categorized into the following three distinct areas:

a) The Ongoing Operational Effects of the Existing Peace River Facilities

The DFN opted to include a specific section in the report that considers the ongoing downstream effects and impacts that result from the operation from BC Hydro's existing Peace River facilities. The Site C Project will become part and parcel of this integrated operating system and its operational parameters and its operations will be driven by and must be consistent with the upstream facilities. Within this chapter, the DFN is not providing consideration to the footprint and more immediate effects that resulted from the construction from WAC Bennett and Peace Canyon Dams nor the decision to build those original projects. Rather, DFN is focusing on those set of ongoing effects that result from the year to year, month to month, week to week and day to day operations of the Peace River integrated system, of which Site C will become a part of.

BC Hydro's consideration, characterization and documentation of such ongoing operational effects and impacts occurred within the 1995 "Electric Systems Operation Review". The Peace River "Water Use Plan", approved in 2007, was designed to consider and address some of the same operational effects arising from the ongoing operation of the Peace River facilities, to confirm the preferred operational parameters of the Peace River facilities and to propose a series of potential mitigation measures to address some of these effects and impacts. Consideration of these ongoing operational effects and impacts within BC Hydro's Site C Environmental Impact Statement (ESI) and Socio – Economic Impact Assessment (SIA) may be significant and necessary given:

- that the *BC Environmental Assessment Act* and the *Canadian Environmental Assessment Act* requires consideration of the potential effects resulting from both the "construction" and "operation" of a proposed Project;

- that the Environmental Impact Statement (EIS) Guidelines prepared and approved for the Site C Energy Clean Energy Project considers both the potential effects arising from the "construction" and "operation" of the Project and the operational system that is part of;

- that environmental assessment as a science and practice, makes an assessment of the current baseline conditions. In this case, a relevant factor that determines the current bio – physical environment and state of ecology within and adjacent to the Peace River are the downstream flows governed by the upstream hydro – electric facilities (and the operational decisions made on basin wide basis and a province wide basis which determine these flows);

- that an assessment of the potential cumulative effects is required within the context of this environmental review of the Site C Project and the scope of that review should include the effects of current projects;

- that the proposed Site C Project will be positioned between the existing Peace River facilities and the recently approved Dunvegan Hydroelectric Project and that an investigation of the potential meshing, aggregation and conflation of effects will need to be considered within the cumulative impact assessment for the Site C Project;

- that the Site C Project and its operations will require authorizations from the provincial Water Comptroller whereby the existing "Peace Water Use Plan" may need to be opened up and amended to include the operations of the Site C Project, or that a new parallel Water Use Plan will need to be prepared to govern Site C's operations and operational parameters, and

- that through the engagement process (the pre – application phase) BC Hydro has communicated to DFN and other parties that the potential downstream incremental effects of Site C Project, as a run of the river project, will be indistinguishable from current Peace River flows. This is due to in part, to the reality that flows through the Site C Project will ultimately be determined and governed by flows though the WAC Bennett Dam. It is due to this reasoning, that BC Hydro has opted to not undertake any (or very limited level of) biophysical or downstream baseline studies downstream of the BC / Alberta border. If BC Hydro is correct, it follows that operations and operational effects of the WAC Bennett and Peace Canyon facilities will be that of the Site C Project and the operations and effects of the Site C Project will be that of WAC Bennett and Peace Canyon dams. Thus an assessment of the Site C Project's effects necessitates an assessment and consideration of ongoing operational effects from the WAC Bennett and Peace Canyon dams.

It is acknowledged that BC Hydro may not agree with the above views and reasoning, However, the DFN is required to consider, identify and notify BC Hydro and other parties of Its views of what the potential effects and impacts of the Project will be on its rights and interests. Given that DFN bears some responsibility for these actions as being part of the review and consultation process, it felt obliged to consider all of the relevant potential effects stemming from the construction and operation of the Site C Project. It is open and interesting in engaging with BC Hydro regarding the reasoning and views presented in this baseline report.

b) The Potential Incremental and Operational Effects of Proposed Site C Clean Energy Project:

The core purpose of the community baseline exercise is to undertake a scoping and initial

identification of the potential interactions and intersections between the range of potential project effects and the range of DFN interests. This proved challenging given that the report was prepared in the pre – application phase of the EA review and that DFN was not in possession of a comprehensive description of predicted and categorized effects. DFN will have access to such information once BC Hydro submits its EIS / Project application, as Crown agencies and other interested parties complete their assessment and file their comments and once the Joint Review Panel issues its Project Report to government decision makers. Thus in this section that DFN attempted to predict potential project effects that are known (and documented) to stem from the construction and operation of hydro projects in northern British Columbia and western Canada.

c) Cumulative Impacts and Effects of Site C and the Approved Dunvegan Hydro Project

The Site C project will be situated between the upstream Peace River facilities and the planned and approved Dunvegan Hydro – Electric project. As an approved project, its effects will be considered in conjunction with the existing effects of existing Peace River facilities and the potential incremental effects of Site C. In DFN's mind, there may be a meshing or conflation of effects within a certain zone along the Peace River resulting from the operation of WAC Bennett and Peace Canyon facilities, the approved Dunvegan project and proposed Site C Project.

d) First Nations Key Interest Areas

The balance of the report then proceeds to deal with key community interests. Emphasis is placed in the "Historic and Current Use of Lands and Resources", given that this appears be the one area where potential Project effects and the DFN's rights and interests most clearly intersect. Other areas provided consideration include Community Demographics, Services and Infrastructure, Economics and Community Health, Culture and Wellness.

2.0 Scope and Methods

2.1 Regulatory and Policy Setting

In February 2012, the Government of Canada and the Government of BC came to an agreement on the conduct of a co-operative environmental to address the requirements of the *BC Environmental Assessment Act* and the *Canadian Environmental Assessment Act*. The Project triggers a review under both acts and both contain provisions for the inclusion of First Nations in the EA review process and gathering information regarding potential effects on First Nations use of lands and resources and traditional knowledge held in relation to the hosting environment.

At the outset of this exercise, BC Hydro developed a list of information requirements – a listing of the information that it wished First Nations to consider and include in their community baseline reports. BC Hydro created a list of requirements that it believed, at the time, would meet the information requirements of both environmental assessment acts and the eventual information requirements in the EIS Guidelines themselves.

2.2 Specific Information Requirements

The specific information requirements to be considered within this baseline reports as agreed to by BC Hydro and the DFN (for this specific exercise) include:

Categories	**Topics**
Community Background	Ethnographic, historic, linguistic background
Governance	Government structure / system, community planning
Historical and Current Use of Lands and Resources	Hunting, Fishing, Trapping, Earth Material Gathering, Special Places, Spiritual, Cultural Information
Community Demographics, Services And Infrastructure	Population, Housing, Infrastructure, Transportation

Categories	**Topics**
Community Demographics, Services And Infrastructure	Health and Social Services
	Emergency Services
	Childcare, Educations and Training Services

Economic	Labor Market
	Community Capacity
	Education and Skills
	Local business
	Regional Economic Development
Community Health, Culture and Wellness	Cultural Values, Transmission
	Community Consumption of traditional foods
	Contaminants Concerns
	Ecological Impacts and Cultural Loss

2.3 Spatial Boundaries

As BC Hydro's has yet to file its EIS, this baseline community report has been prepared without guidance in respect to the geographic bounds of a Local Study Area (LSA) or Regional Study Area (RSA). Notwithstanding, the Project can be compartmented in sensible geographic components and effect zones:

Project Component	**Associated Areas**
Upstream	Project impoundment area
	Areas between Site C and Peace Canyon
	Areas adjacent to the reservoir
	Tributaries from Site C and above and areas adjacent

Project Component	**Associated Areas**
Downstream	Immediate downstream area to Beatton River
	Confluence / BC – Alberta Border

Downstream	BC – Alberta border to Many Islands
	Many Islands to Dunvegan
	Dunvegan to Peace River
	Peace River to Peace / Notikewin confluence
	Downstream Peace River tributaries
	Areas immediately adjacent to Peace River and tributaries
Ancillary Facilities	Borrow Pit at Peace Reach (east side)
	Borrow Pit adjacent to dam site (south side)
	Access Road and Rail works (south side)
	Transmission Line Corridor
	Highway 29 Realignment
Other	Other areas within the DFN's Traditional Territory that DFN finds relevant to the Construction and operation of the project

2.4 Temporal Boundaries

Temporally, the First Nations Community Assessment will focus on making predictions of potential effects that are likely to occur during the construction and the ongoing operational phases of the Project. Due to the long-term nature of the operational phase of the Project, the current scope does not consider the potential effects associated with the decommissioning of the Project. In addition, the DFN has not considered the immediate and initial historical effects and impacts arising from the construction of the WAC Bennett and Peace Canyon dams. However, the present and ongoing operational effects of BC Hydro's existing Peace River facilities are considered for reasons noted within prior sections of this report.

2.5 Scoping and Intersection of Potential Effects and Interests

BC Hydro anticipates that it will submit its Project application / environmental impact statement in the winter of 2013. Thus as of yet, there is no comprehensive document setting out the potential range of potential effects or an assessment of the significance of those effects. Thus to determine how potential project effects and First Nations interests may potentially occur, the DFN had to rely on the Project Description that has been filed with regulators, summaries of studies produced during BC Hydro's Phase 1 and Phase 2 consultation periods and documented effects that arise as a result of hydro – electric project construction and operation in western Canada.

There are two types of effects that are germane to this analysis. First, is that range of incremental effects and more immediate change that may result and stem from the construction of the Project and its associated works. The second are those ongoing effects that may arise from the operation of the Project and the flows that this facility will manage and transmit. The Project will receive flows and be operated as part of BC Hydro's Peace River integrated hydro – electric system that will result in an attendant range of ongoing operational impacts and change in downstream areas. In short, Site C's operational effects will become one and the same as that of the WAC Bennett and Peace Canyon dams. The converse also holds true; that the ongoing operational effects of the WAC Bennett and Peace Canyon dams will be that of Site C.

In setting out list of impacts and changes in the latter part of the document, the DFN is not asserting that such impacts and changes will occur, however, it is using this list of potential impacts and changes as a higher level filter to determine potential areas of interaction between the main project components and key DFN interests as a tool to assist in the identification of potential socio – economic / cultural effects on the DFN.

Thus in working to identify potential interactions between potential project effects and the interests of the DFN, it developed a matrix which included a list of approximately 100 potential effects (e.g. loss of fish habitat in upstream tributaries, total gas pressure below the dam when spillway in operation, change in ice flow regime downstream) and matched those against specific DFN key land and resource use sub-values and interests such as "hunting", "fishing," "gathering", "culturally significant areas", "socio – cultural", "community health and well-being", "ecological / treaty interests" and "cumulative effects of the Dunvegan Project". Where potential interactions were determined to potentially arise or exist, these were marked and described in tracking matrix. **(Appendix 1: Tracking Matrix)**

2.6 Methods

This report is based on information and data collected from both primary sources based in the DFN community and secondary sources based on written and publically available sources of information. DFN community members Audrey Lawrence and Melvin Lawrence conducted the majority of face to face interviews with the DFN Council and community. Mr. Matthew General conducted several interviews and reviewed secondary sources.

2.6.1 Secondary Data Collection and Information Sources

The DFN relied upon the following primary and secondary sources including:

<u>Duncan's First Nation Cultural and Land Use Information</u>

- The 2011 Duncan's First Nation Traditional Land Use Survey (SECONDARY)
- The 2011 Duncan's First Nation Ethno – History Report (Bouchard and Kennedy) (SECONDARY)
- The 2012 DFN Country Food Harvest Survey (PRIMARY)

<u>Historical Resource Utilization and Ecological Changes in the Peace River Basin</u>

- A Report of Wisdom Synthesized from the Traditional Knowledge Component Studies (Synthesis Report #12) Northern River Basins Study: 1996 (SECONDARY)
- Telling it to the Judge: Taking Native History to Court – Dr. Aurthur Ray: 2011 (SECONDARY)

<u>Information on the Site C Clean Energy Project and Potential Effects</u>

- The Site C Project Description (SECONDARY)
- Site C Environmental Assessment Guidelines (SECONDARY)
- Baseline and biophysical reports prepared in support of Site C by BC Hydro (SECONDARY)

Effects Arising from Relevant Hydro – Electric Project Developments

- Report of Joint Review Panel: Dunvegan Hydro Electric Project (2008) (SECONDARY)
- The Generic Environmental Impacts Identified From Water Impoundment Projects in the Western Canadian Plains Region (Sadar and Dirschl': 1996) (SECONDARY)
- A Holistic Model for the Selection of Environmental Assessment Indicators to Assess the Impact of Industrialization on Indigenous Health (Kryzanowski and McIntyre: 2011) (SECONDARY)
- Annihilation of both place and sense of place: The experience of the Cheslatta T'en Canadian First Nation within the context of large scale development projects (Windsor and MeVey:2006) (SECONDARY)
- Health Determinants in Canadian northern impact assessment (Bronson and Noble: 2006) (SECONDARY)

Information on the Operational Effects of BC Hydro Peace River Operations

- The Electric Systems Operation Review (1995) (SECONDARY)
- The Peace Water Use Plan (2007) (SECONDARY)

State of Environment of the Peace River Basin

- Aquatic System Health of the Peace Watershed Project – CharettePellPosente Environmental Corp. (2012) (SECONDARY)
- Northern River Basin Study Report (1996) (SECONDARY)

Community Demographic, Services and Infrastructure

- Duncan's First Nation Community Development Plan (2002 – 2013) – Armin Preiksatis and Associated Engineering: 2003 (SECONDARY)

- Interview notes of Ms. Audrey Lawrence, DFN Community Researcher (2012)

2.6.2 Primary Data Collection

Primary data could also be considered as having coming from the DFN 2011 Traditional Land Use Survey and the DFN 2012 Country Food Harvest Survey given the number of direct interviews that occurred with community members. With that said, these documents could also be characterized as a secondary data source. Additional data was gathered through one–on–one interviews, community workshops and ad hoc interviews on specific matters.

2.6.3 Interviews

Interviews were conducted by Ms. Audrey Lawrence, who was retained by the DFN as a community researcher. Through July and August 2012, she conducted one on one interviews with the following Duncan's council members, staff members and community members:

- Councilor Martha Gladue: DFN Council
- Councilor Donna Testawich: DFN Council
- Chief Don Testawich: DFN Council
- Julia Knott - DFN Health Director
- Vanessa Testawich – DFN Education Manager
- Joanna Gladue, Human Development Resource Coordinator

In the lead up the reporting of this baseline report, project manager Matthew General conducted one on one interviews in July 2012 with the following Duncan's council members, staff members and community members:

- Chief Don Testawich: DFN Council
- Councilor Martha Gladue: DFN Council
- Tom Green: DFN Lands and Environment Department
- Mel Lawrence: DFN Community Member
- Ken Rich: DFN Lands and Environment Department

2.6.4 Community Workshops

A draft version of this report was tabled with the DFN Chief and Council October 12, 2012 and with DFN community members on December 15, 2012. The input and comments received during these session resulted in revisions and amendments that were incorporated into the current final version of this report transmitted to BC Hydro on December 20, 2012.

2.6.5 Input from Consultation

During the revision period of this document, comments, suggested revisions, additional information provided on the following topics and subject areas was addressed:

- Key valued ecosystem components for the Duncan's community
- Clarification of key community interests
- The culture and history of the DFN People
- Views on the nature of DFN Governance
- Hunting practices and observations of ungulate movements to and from the Peace River
- Impacts currently experienced on the Peace River by community hunters and fishers
- Critical community use areas
- Community population statistics and demographics
- Community program priorities and new initiatives
- Ensuring effects / impacts are characterized as "potential" impacts and effects in the pre – application phase of the EA review
- Clarification of community harvest calculations and measurements
- Others that may be determined

3.0First Nations Background

3.1 First Nation Territory

As is the case with all First Nations who have entered into treaties with the Crown, there are a number of relevant geographic reference points, concepts of boundaries that need to be taken into account when discussing the concept of "traditional lands" or "traditional

territory". The following sub – sections describe these concepts and why they are relevant to the DFN and the Site C Project:

3.1.2 Ancient and Historical Lands

From the DFN's viewpoint, the first important concept of territory is related to the historical and ancient homeland of the Beaver, Cree and potentially the Iroquois peoples. Given the predominate influence of the Beaver and Cree cultures within the DFN, the DFN's ancient and historical lands can be held to include those areas that were historically occupied and utilized by the Beaver, Cree and potentially the Iroquois people through North America.

The DFN take the view that prior to and at time of contact, the Beaver and Cree were in possession of a large area within north – eastern BC and north – western Alberta and constituted a distinct cultural and national group. The Iroquois were deemed to have come out at the time of contact or following the growth and establishment of the fur trade within the Peace River. The DFN take the view that the Cree's historical and ancient homeland extended from the areas near Lake Winnipeg as far west as the Peace River area, in which they have a distinct and ongoing interest. The Beaver are deemed to have held the lands between the Rocky Mountains or Northern Rockies and areas to the north of the Peace River extending to the Ft. Vermillion / Peace Athabasca Delta. **(Source: Chief Don Testawich – Personal Communication, 2012)**

There are varied and differing opinions amongst First Nations themselves about the geographic extent of these historic and ancient areas, the strength of the connection to these lands and at what time these areas were occupied. Oral tradition is important in this matter and further study is needed to obtain important information from the Duncan's people themselves. Suffice it to say, there is consensus within the community, that at the time of contact and the earliest phases of fur trade, the Peace River Region was home to both the Beaver and Cree people with the Peace River and Smoky Rivers acting as an important meeting or meshing point between the two key cultures and national groups. **(Source: Chief Don Testawich – Personal Communication, 2012)**

There are many and varied views in the academic and historical community about the extent of use and occupancy by the Beaver, Cree and Iroquois people. Many maps have been produced by anthropologists and historical geographers that set out the extent of use and occupancy by the Beaver and Cree people at the time of contact, at treaty signing and in subsequent years. One issue of some debate in the academic and legal community has been - were the Cree present at the time of contact? Generally, there seems to be agreement on the fact that the Cree migrated or moved westward through the 1700's and that there appears to have been conflict between the Beaver and Cree which ended in a

pact, detent or peace reached at “Peace Point” on the Peace River. **(Source: Bouchard and Kennedy - DFN Ethno Historical Review, 2012).**

A key point, from the DFN’s perspective, is that they are one and the same people as the Beaver and Cree people who held and occupied the Peace River region at the time of contact. The Iroquois are held to have been present in the Peace Region prior to the British Crown having established purported effective control of the region. **(Source: Chief Don Testawich – Personal Communication, 2012)**

3.1.3 Treaty #8 Area

The DFN adhered, through headman Duncan Testawits, to Treaty #8 in 1899 at Peace Landing or the present day location of the Town of Peace River. Treaty #8 guaranteed certain rights, including the right to fish, hunt, gather and practice their traditional vocations through the entirety of the Treaty # 8 area. This is a vast area that takes in portions of present day British Columbia, Alberta, the North West Territories and Saskatchewan. The map of the bounds of Treaty#8 was prepared by Crown officials. The map of the Treaty#8 area is set out in **Appendix 2: Treaty 8 Area Map.**

From DFN’s viewpoint, this means that their community members have the ability to exercise their rights anywhere within the Treaty #8 area, even if they have not elected to exercise such rights in a given location on a prior occasion. Thus within the treaty context, treaty rights are deemed to be portable and attached to the treaty beneficiary. The ability to travel and exercise such rights as and when needed and make a livelihood from the land is critical given key factors that can also determine when and how rights or traditional vocations can be practically exercised. The availability and abundance of fish and wildlife, the movements and migration of fish and wildlife populations, seasonal and longer term climatic trends and the growing influence and impact of development are all factors that make the totality of Treaty #8 lands important to, and of interest to the DFN. DFN members report that they have and do utilize ands and resources within areas in BC, covered by Treaty #8.

Thus DFN community members have an established interest in the health of lands, waters and eco – system conditions that support the exercise of such rights and are necessary to the conduct of traditional vocations and livelihood. The proposed Project and its upstream and downstream impact areas are within the Treaty #8 area and within an area of interest to the DFN.

3.1.4 Lands Within Alberta

The Natural Resources Transfer Agreement (NRTA) that applies to Alberta confirms that Status Indians have the legal right to hunt and fish through the geographic meets and bounds of Alberta. As is the case with the Treaty #8 territory, the exercise of vocational activities and the rights of Status Indians are portable and are exercised upon the discretion of individuals over the course of their lifetime. As such, DFN members that are Status Indians are deemed to have an interest in lands and resources within Alberta such as fish and wildlife. Since the NRTA does not apply to British Columbia, it is uncertain whether a reciprocal arrangement exists through the non-treaty areas of BC for First Nations situated within Alberta. DFN members have reported that they do utilize lands and resources through many parts of Alberta. Emerging case law supports the idea of portability of rights for Status Indians. The proposed Site C project's downstream impact area falls within this territorial boundary.

3.1.5 DFN Traditional Territory

Like many First Nations, the DFN has demarcated or set out a "Traditional Territory". There are of course many concepts of what a traditional territory constitutes and the basis for such a territory. In the case of the DFN, the Traditional Territory tracks and incorporates areas of documented historical, ongoing and current use and utilization by DFN members. The area is extensive stretching west over the BC – Alberta border as far west as Pink Mountain and the Cypress watershed, east to the Cadotte Lake area, north to Keg River on the Peace River and south to an area north of Grand Prairie. Such maps are updated and revised as more research is conducted and more is known about the land utilization patterns of community members, which are in a consistent state of flux. Emerging information indicates that DFN community members exercise rights within BC in the Peace River region, in Alberta in the Peace River region and within the Project's impact zone and area of influence.

The current Traditional Territory of the Map is set out in **Appendix 3: DFN Traditional Territory Map.** The proposed Site C Project's downstream impact area falls within this territorial boundary.

3.1.6 Location of Duncan's First Nation Reserves Along Peace River

Historical sources document the ongoing presence of Cree, Beaver and Iroquois families in the lands between Peace River Crossing, the Shaftesbury area, Dunvegan and Spirit River. Numerous homesteads and villages within these areas were documented and the record

strongly indicates a link between family names inhabiting the same areas and those that became affiliated or who were amalgamated into *the Beavers of Dunvegan and Grand Prairie / the Beaver Band of Horse Lake and the Clear Hills* and the Cree of the "Peace River Landing Band". Many of the current families and family names of present day band members of the Horse Lake First Nation and the Duncan's First Nation can be linked to the names of those Cree, Iroquois and Beaver families that that occupied the stretch of land between Dunvegan and Peace River Landing. **(Source: Bouchard and Kennedy: DFN Ethno Historical Review, 2012).**

It was due in part to this pattern of occupancy, that the Crown officials intended to set aside ten (10) reserves on the banks of the Peace River and lands adjacent to the Peace River. Six (6) parcels were situated on the Peace River on the north bank. The DFN's "Gage" Reserve was located at Fairview, just due north of Dunvegan. The reserves were surveyed in 1905. Today, the DFN only retains two of the original allotted reserves. DFN's current reserve holdings (Duncan's 151A - between Berwyn and the Peace River and William Mackenzie 151K, south–east of the Town of Peace River).The matter of the other reserve parcels along the Peace River remains subject to unresolved claims and ongoing litigation. The location of the Duncan's reserves on the Peace River is set out map in **Appendix 4: DFN Reserves on Peace River.**

The lands which host the Shaftesbury block of surveyed reserves are approximately 375 KM downstream of the proposed Site C project site and could be considered to be within the downstream impact zone. The lands which host the Dunvegan reserve is just less than 300KM downstream of the proposed Site C project. In terms of linear distance, the confluence of the Peace and Moberly Rivers (in the immediate upstream impact zone) to Dunvegan is 147KM and the DFN reserve at Berywn is 189KM respectively.

3.2 Ethnographic, Historic and Linguistic Background

Linguistically, Cree is considered to be part of the "Algonquin" Language Family. The word "Cree" is a term attributed to all those people who speak the Cree language. French traders and missionaries adopted the use of the word Cree sometime in the 1700's. However the term Cree also has other roots such as the shortened form of the Ojibway word "*Knisteneaux"*. Early explorers David Thompson (1790 – 1797) and Alexander Mackenzie (1804) both documented that the Cree they encountered in western Canada referred to themselves as *"Na hath a way".* **(Source: Bouchard and Kennedy - DFN Ethno Historical Review, 2012).**

There are differing views in respect to what specific Cree dialect was spoken at the Peace River in historic times. Some linguists take the view that Northern Plains Cree was the language spoken, whereas others take the view that Woods Cree or Woodland Cree was the dialect spoken by the Cree People along the Peace River. DFN Chief Donny Testawich is of the view that his and other Cree families and ancestors of the DFN spoke a form of Woodland Cree **(Source: Chief Don Testawich - Personal Communication, 2012).** Within each main language grouping, there were sub – dialects with local and regional variation present.

While the Duncan's is a multi – national group having its roots in the Beaver, Cree and Iroquoian peoples, the Duncan's culture has come to be more generally associated with the Cree language and culture. This may be in part to the central role that Duncan Testawits and his family played in the fur trade along the Peace River, his act of entering into Treaty #8 for the Duncan's People and establishment of reserves along the Peace River. It may also have to do with adoption of Cree as the principle trading language. It is estimated that there are now 50 people within the DFN community that are able to speak the Cree language and approximately 200 people that are able to understand what is being said in the Cree language. **(Source: Chief Don Testawich - Personal Communication, 2012).**

The other main culture present in the DFN community is the Beaver or *"Dune – Za"* culture, a term used by Beaver people to describe themselves meaning the "real people". The term *"Beaver"* appears to have its roots with the Chipewayn name for the Peace River – *"Chaw – hot – e – na Dez – za"* – the Beaver Indian river. Linguists deem that the Beaver language is part of the Athapaskan language family and that there appears to be a link between the languages spoken by the Beaver of north – east BC / north – western Alberta and the Slavey language spoken by the Dene Tha' of north – western Alberta and the North West Territories.

It is estimated that there are 0 fluent Beaver speakers at the DFN today. With this said, there are some elders who can understand the Beaver language when it has spoken and who have retained a portion of the language.

The coming of the Iroquois, Six Nations or *"Haudenosaunne"* people from eastern Canada / United States is an interesting development and to some extent – their historic and present day existence in north – eastern Alberta and north western Alberta is somewhat of anomaly. However it is not without parallel. The Saulteau People of Moberly Lake BC, also travelled from the east, settled and inter – married with Cree and Beaver families of the region. Essentially, historians hold that the Iroquois speaking people ventured out with the fur trade. North – West Company records indicated the hiring of 100's of Iroquois speaking people to support fur trade guiding, and logistics. It appears that many of the Iroquois speaking peoples remained in the Peace Region and intermarried with Cree and Metis. It is

reported that both Duncan Testawits and Xavier Mooswah, key people in the history of the DFN, were likely of Iroquois ancestry. **(Source: Chief Don Testawich - Personal Communication, 2012)**

The history of Beaver and Cree people that used and occupied the Peace River and adjacent lands has not always been necessarily one of a peaceful co-existence. Many elders and community members from many Beaver and Cree communities along the Peace River are able to pass on oral history and stories that were transmitted to them about a time of hostility and conflict between the two cultures and nations.

Alexander Mackenzie was the first to document this history and the reaching of a "peace" or pact by numerous Cree and Beaver groups at Peace Point, Alberta. There are a number of historical sources that tie, the arrival of the Cree with the fur trade's spread across the west to rising hostilities between the Beaver and Cree in the Peace River area. Competition for furs, hunting grounds, position with rival fur trading blocks and the introduction fire arms appears to have fueled contention, hostilities and violence. Through the years, inter – marriage, co – settlement and the amalgamation of Beaver and Cree families into bands (such as the case with the Horse Lake First Nation and Duncan's First Nation) has melded families and cultures. While Cree appears to have become the dominant language in these communities, it is important to point out the fusion of cultures, the historical contribution of all three cultures at DFN and the ongoing existence of all three cultures.

Connection of Present Day Occupants to Historical Occupants

In terms of written and historical documentation, there appears to be a strong historical and ethno cultural correlation and link with the Cree, Beaver and Iroquois People that were situated along the Peace River from the BC / Alberta Border to Peace River Landing, to families that are now part of the Duncan's First Nation and Horse Lake First Nations. The 2012 DFN Ethno Historical Review documented prepared by Bouchard and Kennedy highlights the following observations about the historical occupants and their occupation of the Peace River region and Peace River valley:

- During his 1792 / 93 trek along the Peace River, Alexander Mackenzie documented the existence of Beaver and Cree camps at Fort Forks (at the confluence of the Peace and Smoky Rivers) and at the confluence of Montagenuese Creek and the Peace River, just upstream of Dunvegan. Other subsequent explorers and surveyors documented similar patterns of Beaver and Cree occupation at Ft. Forks

and along the “War Road” that connected the western end of Lesser Slave Lake to Ft. Forks.

- In the 1820’s, the Hudson’s Bay Company established Ft. Pinette at the confluence of the Beatton River and Peace River to accommodate and trade with the Iroquois hunters who occupied and hunted areas to the south of the Peace River.
- An entry from the Ft. Dunvegan Post in 1836 documents a planned visit by the Plains Cree Indians from Smoky River and the over-arching concern that peaceful relations were to be maintained between the Beaver and the Cree.
- In an 1875 Geological Survey of Canada expedition, Alfred Selwyn documented Cree camps and settlement at Early Gardens on the Peace River, just due south of Berwyn. In a subsequent1903 survey, Macoun documented settlement and farming occurring at Old Wives Lake (a small lake located on the current DFN reserve parcel at Berwyn), at Bear Lake (which is now Cardinal Lake) and at Shaftesbury Crossing.
- The 1901 Canada Census records several people named Tustawits living at Spirit River, who reported their birth place as Dunvegan
- An a 1956 interview of Maria Bourassa of the Town of Peace River, Ms. Bourassa recalled that in 1913, the Testawich, La Pretre and Mackenzie families were living at Shaftesbury Crossing.

The above are just some of the references that indicate an ongoing historical connection of to the Peace River from the BC / Alberta border area to Peace River Crossing by the Beaver, Iroquois and Cree People. The connection to this area by the same Beaver, Cree and Iroquois people appears to have been maintained and cemented through the years and is borne out given repeated observations of settlement by external parties, the adhesion to the treaty by the Duncan’s in the same area and the eventual survey and allotment of reserves by the Crown to the DFN.

3.3 Treaty Signing, Establishment of Peace River Reserves and Unresolved Claims

In 1899*, “Duncan Tustaoots”* (Tustawits, Testawich) adhered to Treaty#8 as *Headman of the Indians (Beaver and Cree) of Peace River Landing and adjacent Territory”.* To date, little supporting documentation has been unearthed about the circumstances of the Duncan’s adhesion to Treaty #8. However, more exists in relation to the period in the aftermath of treaty signing regarding the establishment of reserves.

1n 1900, Treaty 8 Commissioner Laird urged the process of setting out of Indian Reserves to begin expeditiously given the influx of settlement into the Peace River region. Crown

representatives met with Duncan Testawits in regard to the establishment of reserves pursuant to the treaty. This meeting and the desire of Duncan's families for reserve lands along and adjacent to the Peace River was documented in a 1900 letter by Sargent Butler of the North West Mounted Police. Instructions for the surveying of the reserves for the Duncan's people occurred in 1901, however the survey didn't actually occur until 1905.

The lands of the Peace River were especially desirable to settler farmers given the rare and distinctive bioclimatic conditions present to support agricultural production in the north (also the reason that Peace River Valley was used and occupied by Indigenous Peoples for thousands of years). In one instance, Duncan Testawits and Xavier Mooswah accompanied the North West Mounted Police to evict settlers who had encroached on the identified lands.

Overall ten reserve parcels were selected and allotted to both the Cree and Beaver families. It appears that the location of the reserves were to facilitate farming activity that would supplement traditional vocations of hunting, fishing and trapping. The majority of reserves were allocated and surveyed directly on the Peace River near Shaftsbury.

No sooner had the reserves been established, numerous requests were made and pressure placed on government officials to free up land for farmers and soldiers returning from World War I. In 1928, the Crown purportedly obtained the surrender for eight of the ten reserves allocated to the DFN. Upon becoming aware of this history and circumstances of the purported surrender, the DFN challenged the validity of the purported surrenders through Canada's Specific Claims process. Canada opted to reject this claim and the DFN subsequently sought a public hearing via the Indian Claims Commission, which produced a report in the matter in 1999. The DFN continues to press forward with legal action in relation to these unresolved claims on the Peace River. **(Source: Personal Communication - Chief Don Testawich, 2012)**

3.4 Duncan's Contribution to Establishment and Success of Fur Trade

The DFN community has witnessed many changes since the time of the signing of Treaty#8. Waves of resource development have swept through the Peace Region bringing in successive waves of activity and people. Economic, societal, environmental, cultural and legal change has been a consistent reality that the community has had to live with, address and manage. The first wave of resource development experienced in the Peace Region could held to have been the fur trade.

Expansion of the fur trade was made possible by the support provided by Duncan's and other indigenous families along the Peace River. The proficiency of the Beaver, Cree and

Iroquois families in hunting, fishing and trapping made expansion in the fur trade realizable. Trading post records note such skills and the key role Indigenous People had in keeping the network of trade alive. As early as 1792 / 93, Alexander Mackenzie wrote of the successful hunting practices by the Beaver near Ft. Forks located at the confluence of the Peace and Smoky Rivers. **(Source: Bouchard and Kennedy - DFN Ethno Historical Review, 2012).**

‘Homeguards” came into being, with specific families or groups provisioning specific forts along the Peace River. Ft. Forks, St. Mary’s, Dunvegan and Ft. de Pinette became the focus of trade and commerce along the Upper Peace and were positioned so as to be in close proximity to areas of game to supply pemmican to traders plying up and down river. The location of key fur trading posts on the Peace River in the Alberta portion of the Basin was documented in the Northern River Basins Study. **(Appendix 5: Trading Post Locations: Northern River Basins Study: 1996)**

For example, circa 1830, Ft. Dunvegan was taking in 30,000 – 40,000 pounds of wild game per year. As Buffalo vanished, deer, elk and moose became the staples for the forts and for Indigenous people of the region **(Source: Bouchard and Kennedy - DFN Ethno Historical Review, 2012).** In fact, the hunting of beaver and of game to supply the trading posts was so successful that the numbers of beaver, buffalo and amount of game began to plummet through the late 1930’s and early 1940’s. Further, epidemics also severely impacted Beaver, Cree and Iroquois families likely curtailing their ability to provide for the forts as they once had. These developments occurred in parallel with a series of very severe winters which appears to have delivered the coup de grace to the remaining buffalo populations in the Peace River Region.

While buffalo populations in the area did not recover, moose, deer, elk, marten and beaver numbers did rebound along with a resurgence in fur populations and trapping into the 1870’s. The importance of trapping as a traditional vocation for trading and subsistence purposes was obviously still key, given its inclusion into Treaty # 8 in 1899 as an enshrined right along with the subsequent allocation of trapping areas or registered fur management areas through BC and Alberta.

Based on anecdotal reports within the DFN community, it appears that DFN families continued to actively trap with most people over the age of fifty being able to recall travelling to traplines, trapping along the rivers and that their families held traplines in various portions of the upper Peace Region. As with the region as a whole, trapping as a commercial activity declined significantly after the 1960’s. Cited reasons for this include unexplained changes in the watershed as whole, a decline in fur populations, the lessening of market demand and the taking up of other forms of work by DFN families **(Source: Chief Don Testawich - Personal Communication, 2012)**

Notwithstanding the alteration and decline of the fur economy through the 1900's, the DFN continued to be rooted to the hinterland adjacent to the Peace River. A recent Traditional Land Use Survey (2011) conducted by the DFN shows that despite economic, regional and landscape changes, the DFN is a community that is still highly reliant on lands and resources within the Peace River Valley, adjacent lands and the adjacent hinterland. The survey indicates a clear pattern of ongoing community use and utilization centered on the Peace River that can be traced back seventy – eighty years within the lifetimes of a large group of people within the DFN community. **(Source: DFN 2011 Traditional Land Use Survey, 2011)**

Recent interviews conducted in the community bears witness to DFN family's continued reliance on the Peace River and hinterland for a range of sustenance, cultural, socio – economic and spiritual purposes. However, the DFN continue to do so in the face of mounting difficulties, challenges and constraints. The past 20 – 40 years can be characterized as period of cultural and socio – economic challenge given reported declines in fish and wildlife populations, increased land use disturbance and regulation.

Within the past decade, the DFN have attempted to deal with this growing challenge and impact on their culture and rights through increased engagement with industry and government, litigation and attempts to address government policy in relation to the cumulative impact of development. **(Source: Chief Don Testawich - Personal Communication, 2012)**

3.5Governance

As with many other First Nations, the Duncan's people hold the view that they continue to hold original or radical / root title to their lands and have never surrendered their rights, ownership of and jurisdiction over these lands. The DFN takes the view that such rights were confirmed when the Duncan's people entered into Treaty #8, a treaty of peace and co-existence signed with Crown representatives of the Dominion Government of Canada. The Crown and successive governments have, in contrast, come to hold the view that Treaty #8 is a document of mere historic interest which amounted to a surrender of sovereignty and title to lands.

Subsequent to the signing of the numbered treaties, the Dominion Government enacted legislation that sought to organize the Cree people (of which the DFN are part), as other indigenous peoples, into administrative units under the authority of the federal government. The *Indian Act* and Indian Band Councils continue to exist to this day, and are the only delegated form of government that Canada will acknowledge, empower, or transfer

payments to. The Duncan's First Nation is an Indian Band within the meaning of the *Indian Act*.

Notwithstanding, the Duncan's People maintain that they have the right to self – determination and the ability to govern themselves outside the purview of the Minister of Indian Affairs, Parliament and the *Indian Act*. However, the people of Duncan's recognize that they have little choice at this time, but to work with the Indian Act system to meet their community's basic needs, until at such time the Government of Canada recognizes the need to repeal the *Indian Act* and recognize the rightful and legitimate authority of the Duncan's people to govern their own lives and lands. Until at such time a traditional government is recognized and instituted, the Duncan's First Nation continues to act as a steward and take steps to advocate for, preserve the rights of its people and work towards the re-establishment of their rightful government system.

Under the INAC Band Council system, the Duncan's First Nation (Bands 451) is a "Section 11 Band" that has developed and administers its own custom election code or custom electoral system. Election are held every two years, with the next the election due in the summer of 2013. The current system creates on position for Chief or Chief Councillor with two other Councillor positions. For the most part, administrative and policy decisions are arrived by way of band council resolution. Other matters related to lands and trusts (e.g. matters such as the designation of reserve lands) sometimes carry the requirement for referendum.

The DFN Council and the DFN Community place a high priority on public involvement and engaging the community on an ongoing basis on key community governance, lands, environment and treaty related matters. Numerous community meetings are held through the year where industry and government agencies are invited into the community so they can meet and work with council, DFN staff and the community.

3.6 Land Use and Stewardship Principles

At this time, the DFN has not developed or adopted a formal policy or set group of principles in respect to land use and stewardship. It however, has communicated and utilizes a set of working principles in its engagement with industry and Crown agencies. First and foremost, it is clear that First Nations, Crown and industry relations are being driven and shaped in part by the emerging principles and directives of Canada's courts.

DFN recognizes that Canada's courts have issued judgments about the nature, scope and limitations of Section 35 of the *Canada Constitution Act* (1982) aboriginal and treaty rights. Notwithstanding DFN's concerns about the limitations of these decisions (to date), DFN acknowledges that the principles flowing from the courts provide direction to the Crown and its representatives in respect to land management and policy decisions. In summary, these cases establish that as a minimum:

Consultation is an ongoing process and is always required.

The Crown (and industry) must provide full information to First Nations on an ongoing basis, so that First Nations can understand the potential impact of any proposed decision on their rights and interests.

It is the content of the consultation, and not the amount of paper or number of meetings or telephone calls that is relevant in determining whether or not the Crown has met its obligations.

The Crown's duty to consult extends to both the cultural and economic interests of First Nations.

Crown Consultation must be meaningful and conducted in good faith.

Crown Consultation must take place early in the process, before important decisions are made.

The Crown must consult with First Nations about the consultation process itself.

The Crown must consult not only about the site specific impacts of decisions, but also about the cumulative or derivative impacts of decisions, including any potential injurious affection related thereto.

Consultation must occur in relation to all phases of a project's life span.

The Crown, acting honourably, cannot cavalierly run roughshod over Aboriginal interests.

The Crown must approach consultation with an open mind and must be prepared to alter a course of action depending on the input received through consultation with First Nations.

Note – that further legal principles may emerge and need to be applied given the evolution of the court's thinking on Section 35 rights.

In summary, the DFN must be consulted and involved in any and all government decisions affecting the management of lands and resources. Governments must meaningfully consult with DFN and that consultation must meet the standards and principles set down by the courts. If the government fails to do this, the DFN can opt to challenge government decisions and project approvals such as oil and gas, tar sands, mining, hydro – electric, nuclear power, transmission line and pipeline, forestry plans and provincial and regional land use plans. The courts can and will strike down government approvals of resource

development projects, where First Nations can demonstrate that government breached its duties to them and the Crown has failed to act honourably.

Notwithstanding the many challenges that DFN faces in its dealings with the Crown and industry, the DFN remains committed to working with these parties in good faith to resolve outstanding and emerging issues. Further, the DFN is not opposed to all forms of resource development and is prepared to establish and build mutually beneficial working relations with industry and third parties. However the emphasis of such dealings is on ecological and cultural sustainability. To date, the DFN has had some success with certain companies operating in their traditional territory where the companies have shown a willingness to work with the DFN begin to address its environmental, cultural and socio – economic interests and well-being.

Such agreements do not alleviate the Crown of its obligation to consult, accommodate and reconcile the rights and interests of the DFN with its assertion of sovereignty. However they can strengthen and support the process of consultation and accommodation such as it is. Further, such agreements do not constitute a form of compensation or redress for past impacts to the DFN people, breaches of the Crown's duty or infringement of DFN rights. Further such agreements do not provide for DFN's consent, approval or lack of concern over varying forms of development. The DFN is prepared to entertain forward looking and varying types of agreements with industry and third parties that address DFN's environmental, cultural and socio – economic interests and wellbeing. Such agreements are often referred to as impact – benefit agreements.

The Duncan's First Nation Framework for Impact Benefit Agreements is set out as follows:

<u>Principles</u>

- The Duncan's First Nation is an adherent to Treaty # 8 which obliges the Crown to ensure that First Nations can continue to utilize their lands to sustain their culture, way of life and make a livelihood from their lands. The Governments of Canada, British Columbia and Alberta have yet to act on these commitments in any substantive way.

- In parallel, the courts have ruled that where First Nations rights risk being infringed, the Crown, and by extension third parties, may be required to accommodate the environmental and economic interests of First Nations. While the Crown directly bears such duties, in practice, government agencies generally delegate consultation, issue resolution and development of relationships to industry and First Nations.

- Further, a core principle that underlies environmental and socio – economic impact assessment is ensuring that impacts of development are mitigated and offset to the

degree possible. Positive measures and agreements that offset impacts with benefits are often referenced and considered by regulators.

- The DFN Traditional Territory has been heavily damaged, where there are few areas left to support the ongoing exercise of treaty rights in any meaningful form. The cumulative impact of development must be considered by the Crown and third parties when advancing new projects. As a result, accommodation of interests and the mitigation of socio – economic impacts is a reasonable consideration within most project development contexts.

- The negotiation of Impact Benefit Agreements (IBAs) is now a standard mechanism or feature of resource development within northern Canada, that provides both benefits to industry and First Nation communities.

- The DFN encourages IBA's with industrial operators who have an established interest and ongoing operations within the DFN Traditional Territory. Such agreements are voluntary. Parties enter them at their discretion and work to implement the components and provisions of the agreements as they are of the view that it's in their interest to do so. The key components of such agreements can include the following:

  Information Sharing and Consultation
  The agreement can include mechanisms to improve and strengthen the lack of meaningful Crown consultation and the de-facto delegation of consultation duties by the Crown. The parties can opt to a move to a more proactive planning approach where proposed developments can be dealt with on a more constructive basis, weeks and months in advance. Other measures could include a Joint Committee or Working Group that would work to improve the information sharing and consultation process.

  Project Review and Site Assessment
  Under the agreement, the parties can establish an effective project review process where the proponents projects will be reviewed in a timely way by way of desk top review and field site assessments where warranted. Issues and written reports are produced to assist the parties in addressing community concerns and facilitating issue resolution. This process can remove the uncertainty of government processes, timelines and policies.

  Capacity Support
  The DFN lacks the resources to address proponent's projects and development priorities in a timely and effective way. Governments refuse to, or do not provide adequate levels of funding to allow a First Nation to address and manage the

numerous oil and gas, forestry, lands, environmental, mining and development applications that now must be forwarded to them as required by law. The agreement would provide for a reasonable level of funding that would allow the DFN to engage with the proponent, build a strengthened working relationship, work on joint opportunities and provide focus and priority on the proponent's development priorities.

Dispute Resolution

Given that disagreements and disputes do arise, the agreement would contain provisions setting out the parties' intent and agreement to address issues in a constructive way with priority being given to resolving such matters amongst themselves, without having to appeal to outside parties (e.g. regulators and the courts)

Training, Education and Community Investment

There are numerous factors that have resulted in the array of socio –economic challenges that now face First Nations, including the DFN. While industry is not responsible for addressing these in isolation, they can opt to take a proactive role in working with DFN to address its socio – economic goals. Responsible investments in community training, human resource development and educational initiatives can help prepare a local work force to become future employees, contractors and take on a meaningful role within the resource sector of today and tomorrow.

Contract Procurement and Business Development

The resource sector invests heavily within the DFN traditional territory, purchasing an array of services and goods from the local and regional area. The DFN wishes to become involved as partners with industry and build and foster competitive businesses owned and run by community business people and at the First Nation level. The agreement can address how the parties wish to move forward on this goal and the principles that would guide how this takes place.

4.0 Baseline Conditions: State of the Hosting Environment, Ecological Change and Stressors Effecting DFN Utilization of Lands and Waters

As noted, the Duncan's culture, way of life, ability to exercise their rights and their utilization of lands and resources has altered in response to cultural, socio – economic and eco-system change. The resulting land use maps set out in the 2011 Duncan's Traditional Land Use Survey reflect changing land and water use and utilization. While no such maps were prepared 100, 50 or 25 years ago, those maps would likely have been quite different in terms of the intensity and extensivity of use. No study has ever been conducted that has sought to document this change with the community.

Anecdotally, many DFN elders and community members can recall the changes that occurred in the community as the fur based economy declined and as people began to become more involved in the wage economy. Another key factor driving altered community land use patterns were changes occurring in the regional eco-system, especially over the last forty year period. Again, no comprehensive study has been undertaken to document or verify such shifts and the causes for such land use change.

Notwithstanding the lack of study and data on this subject area, it is critical to consider the hosting environment in which the Duncan's community have been undertaking their traditional vocations in and that which will play host to the Site C project.

4.1 Historical Availability of Fish and Wildlife Populations and Utilization

The DFN, as other Indigenous communities within north – western Alberta and north – eastern British Columbia, utilized large areas through the Peace River Basin given the lower levels of biological productivity present. While fish and wildlife populations were present in large numbers they tended to distribute themselves widely over the landscape as an adaption and survival strategy. This required the Duncan's people to travel large distances to follow game and anticipate where game might be at a given time of the season and in response to short term weather and longer term climatic cycles. This meant that the ancestors of the Duncan's families utilized large areas through the northern Peace region and areas within their identified Traditional Territory.

<u>Fish</u>

Given the link between land and resource use and utilization and the presence, availability and health of fish and wildlife populations, some consideration needs to be provided to the changes in the availability of fish and wildlife over time and some of the factors that resulted in this changing state.

The DFN does not have at its disposal, an historic record or inventory of the types of fish and wildlife resources it has historically relied on. However, the 2011 DFN Ethno Historical Review does reveal some important indicators of the availability and relative importance of fish and wildlife populations and longer term trends in populations. Early written accounts indicate that healthy fish and wildlife populations were present within the Peace River Basin which clearly supported and sustained Indigenous People of the region.

Fish and fishing activity appears to have been important to the Cree, Beaver and Iroquois People along the Peace River. In 1913, linguist and anthropologist Pliny Goddard documented conversations with the Beaver People of Dunvegan where one Beaver person reported that the Cree had come to the region and Lesser Slave on account of the large fish populations within the lake and rivers that flowed into the lake. In 1793, Alexander

Mackenzie recorded that the Cree which resided along the Peace River spear fished and weaved nets and travelled to and from fishing grounds in small groups, indicating the importance of fisheries to Indigenous People of the Peace Region.

There appears to be few historical documents in existence regarding the relative abundance of fish within the Peace River Basin and those that do exist are somewhat contradictory. An historical review undertaken as part of the Northern River Basin Study attempted to document some contemporary accounts of the fishery within the Peace / Mackenzie River Basin. One source from 1909 held that *"it is remarkable fact that…the Peace River country possesses but very few fish in its rivers and lakes..".* Another source in 1908 records that *"…there are no fish of great value in the Peace, Smoky or Athabasca Rivers, or in the tributaries….they are too muddy for any but char or mud pouts…Eels might thrive…"*. **(Source: Synthesis Report #12 - Northern River Basins Study, 1996)**

On the other hand, the Northern River Basin Study also documented the importance of the fishery to the regions' Indigenous People and incoming fur traders and the system of trading forts that depended on the regions' fish and wildlife resources. "The Archives Database shows that Aboriginal people and the European fur trades and explorers depended heavily on fish for their own sustenance and that of their dogs. The records clearly show that if it had not been for fisheries resources, death by starvation during the winter would have occurred more commonly than it did." **(Source: Synthesis Report #12 - Northern River Basins Study, 1996)**

Historical archives document the existence of commercial sized fisheries on Lesser Slave Lake, Lake Athabasca and Lac La Biche which appear to be based on whitefish populations. **(Source: Synthesis Report #12 - Northern River Basins Study, 1996).** In the late 1980's Professor Arthur Ray undertook archival research with Department of Indian Affairs and Hudson's Bay Archives for the Horseman case about whether Treaty 8 conveyed a commercial right to harvest bear. His research revealed the ongoing resilience and importance of the fishery as a source of income between 1922 and 1935. While the fishery never had the economic impact that the trade in hunting and trapping it was an important source of protein for the posts within the area of the Lesser Slave Lake Agency. (**Source: Professor Arthur Ray -** "**Telling it to the Judge Taking Native History to Court", 2012)**

So, on one hand there appears to be some thinking in existence that holds that the Peace River Basin has never and could not support any substantial fishery. There are others views that indicate otherwise. A middle of the road and supportable proposition might be that the fish populations of the Peace were never great enough to support a commercial sized fishery. With that said, fish absolutely played a critical role and perhaps its relatively moderate size was absolutely critical in sustaining Indigenous People through key times of the year and while they were working to procure large game. There is some indication that the fishery was prominent enough to compel families to gather together at fishing locations and fish camps in the summer and fall season, prior to them moving back to the hinterland for the fall and winter round of activities. Clearly this is an area that requires additional

literature and synthesis research and research to record the historic recollections of the DFN and other First Nations along the Peace River.

Wildlife

Overall, the range of wildlife species and their respective populations appear to have been sufficient in size to have supported Indigenous People throughout the Peace Region. In his 1793 expedition, Mackenzie recorded that beaver, deer, reindeer (caribou), elk, grizzly and buffalo were readily available however it appeared that elk and buffalo supplanted caribou and caribou shifted towards the northern Rocky Mountain range. Mackenzie also noted the Beaver People's hunting skills and the large distances they travelled from the Peace River to hunting grounds in the hinterland. One such account recorded the Beaver People from the Ft. Forks on the Peace River, travelling to the Whitemud Hills to hunt.

The fur trade established itself along the Peace and expanded given the range of wildlife species and Indigenous People's hunting and trapping skills. Forts and traders travelling up and down the Peace became dependent on Indigenous hunters who kept them supplied in both fur for trade and game to eat. In 1873, Butler documented the trapping tools and success of Beaver people upstream of Ft. Dunvegan noting that one hunter / trapper brought in large numbers of marten per year. In the same year, Butler recorded that each of the four main trading forts along the Peace River had consumed 100 moose in that winter season and that 2000 moose hides had come out of the Athabasca District that year and that the moose populations seemed to have been the same as fifty years prior. Records for Ft. Dunvegan note that Indigenous hunters were provisioning the fort with 30,000 – 40,000 pounds of meat per year, circa 1830. **(Source: Bouchard and Kennedy - DFN Ethno – Historical Review, 2012).** Another way to consider the provisions being provided to Ft. Dunvegan at the time could be as follows – if a de-boned moose weighs 650lbs, Indigenous hunters killed between 46 – 62 moose that year.

Prior to the 1820's and 1830's, buffalo appear to have been present in vast numbers through the Peace Region. In 1879, Dawson observed the wallows that were scored into the ground at river crossings and lakes indicating the large numbers of buffalo that had been present for years. At the time of treaty signing, Commissioner Charles Mair also noted the evidence of wallows along the north side of the Peace River between Dunvegan and the Smoky River. The Northern River Basin Study attempted to document the importance of wildlife resources in the Peace and Mackenzie Basins. In the Upper Peace Basin in 1843 and 1860, moose, elk, buffalo, black bear, caribou, deer were considered to be "abundant" as opposed to "scarce". **(Source: Northern River Basins Study- Synthesis Report #12, 1996**). There is also some historic documentation (not available for this report) that indicates that many buffalo were hunted by settlers attempting to clear lands for agriculture and grazing. **(Source: Chief Don Testawich - Personal Communication, 2012)**

The abundance and distribution of wildlife species appears to have been negatively affected with the presence of trading forts and the demand that they created. Buffalo populations began to plummet. The causes appear to be rooted in severe winters but also

the demand induced by the forts along the Peace, and the efficiency of Indigenous hunters in supplying this new market. Dawson reported the accounts of Indigenous people in the Dawson Creek area noting that many of the buffalo had died out in prior hard winters. In December 1833, Chief Factor of the Peace Athabasca District reported that buffalo and deer were not nearly as plentiful as they had once been. The decline of buffalo appears to have started in the 1820's, in part due to a hard winter in 1829 / 1830. Bear, elk and moose appear to have replaced buffalo as a staple for both Indigenous people and traders dependant on the fort system. **(Source: Bouchard and Kennedy – DFN Ethno – Historical Review, 2011)**

The decline in populations appears to have extended to other wildlife populations. Theforts along the Peace River began to document, that by 1836 / 37, the Cree and other Indigenous hunters had exhausted the best part of the Peace River region for large mammals. In 1841, the Hudson Bay introduced a quota system that favoured fur bearers other than beaver in an effort to allow beaver populations to recover. Moose, lynx and rabbit were also harder to come by. The declines were so marked that it created hardship for Indigenous People along the Peace. Governor Simpson reported in 1821 that many Dune – Za died of starvation and were required to depend on fort provisions, beaver skins, potatoes and their horses. **(Source: Bouchard and Kennedy – DFN Ethno Historical Review, 2011)**

Gathering

There are some limited accounts that speak to the importance of gathering in the seasonal round of activities for Indigenous People of the Peace Region. In 1875, Alfred Selwyn – Director of the Geological Survey of Canada met with Cree People at Early Gardens upstream of Peace River where he documented considerable berry picking activity occurring and that people were surviving on berries and bear. In the 1903 Geological Survey of Canada, James Macoun documented the berry gathering activity at Pouce Coupe by Metis and other Indigenous People.

It seems clear that fishing, hunting and trapping were still viable and continued to function as key vocations to the life of Indigenous People in the north at the time of the signing of Treaty #8 in 1899.The treaty commissioners report in relation to the negotiations of Treaty #8 clearly establish that such vocations and the ability to continue to hunt, fish and trap were a key interest to the parties at the time. Thus, it can be inferred that if hunting, fishing and trapping were key vocations that warranted treaty protection, wildlife, fish and fur bearer populations were still viable at the turn of the century. The ongoing importance of hunting, fishing and trapping at the turn of the century and early part of the 20th century is evidenced by documents pertaining to the establishment of Indian reserves. The reserves were established to provide for permanent settlement and the pursuit of farming to supplement ongoing hunting, fishing and trapping vocations of Indigenous Peoples. The subsequent passage of the *Natural Resources Transfer Act* of 1930 also dealt squarely with the matter of preservation of "Indian" rights in relation to fish and wildlife providing clear

indication that traditional way of life and vocations were still key to Indigenous People within Alberta, the Treaty #8 area and the Peace River Region.

Thus while historic documentation and sources are limited, the written record can provide snap shots of the importance of fish and wildlife to the Beaver, Iroquois and Cree ancestors of the Duncan's people since the time of contact into the 20th century. The record also provides some indication of human influences on the availability and health of fish and wildlife populations and how that in turn affected the Duncan's ancestors livelihood and ability to provide for their own sustenance and cultural needs. While the fur trade created some opportunity a new economy for Indigenous Peoples of the area to establish trade relations with newcomers, it also carried with it, negative consequences for the Duncan's ancestors. The demand placed on fish and wildlife resources by the fur trading forts and trading network had pushed buffalo to the point of extinction where species such as beaver and moose were stressed and needed time to recover. Species recovery did occur, with Duncan's families continuing to rely on fish and wildlife species from the time of treaty signing and the establishment of reserves to the present day. The Duncan's socio – cultural needs and their ability to depend on terrestrial and aquatic resources of the Peace River Basin has again been affected and shaped by human influence in more recent times.

4.2 Eco – System Health of the Peace River and Peace Basin

The DFN People continue to utilize lands and resources within the Peace River Basin and along the Peace River Valley for traditional purposes. However their ability to do has and continues to be circumscribed by the overall health of the Peace River Basin / Peace River and the availability and health of fish, wildlife and plant communities. In understanding the ability of the DFN to utilize the Peace River, its key tributaries and the overall Peace River Basin, consideration is required of the current state of the hosting eco – system and key factors or stressors effecting eco – system health.

According to AEW's 2007 "Summary Report on the Initial Assessment of Ecological Health of Aquatic Systems in Alberta", water quality in the Upper Reach of the Peace Basin (at the BC / Alberta border to the Smoky / Peace confluence was considered to be "good". With this said, the AEW Summary Report concluded that there is a lack of knowledge about the effects of climate change, pollution and flow regulation associated with hydro – electric development on aquatic habitat, fish populations, riparian habitats and channel morphology and maintenance due to sediment discharges.**(Source: Mighty Peace Watershed Alliance, 2012).**

The lack of long term data on fish populations, movement and distribution in the Peace River was a key issue that delayed regulatory approval of the Dunvegan Hydro – Electric Power project in 2003/4. The Northern River Basins Study concluded that many reaches of the Peace, Athabasca and Slave Rivers appear minimally affected by environmental stress. In other reaches, however, fish and other aquatic organisms are experiencing stress. For

example, the NRBS concluded that the Wapiti / Smoky River systems are heavily stressed due to key factors such as high nutrient levels from the City of Grande Prairie and the Weyerhaeuser mill, sharp declines in under-ice dissolved oxygen, and high PCB concentrations in sediment and fish. While the NRBS considered the effects of regulation on river channel habitat, it did not undertake a comprehensive assessment of those effects on fish, wildlife and aquatic habitats**. (Source: Synthesis Report #12 - Northern River Basins Study: 1996).** It should be noted that when this study was tabled with NRBS funders, some funders subsequently ended their funding of the NRBS process.

Key factors at play in the Peace River Basin include point and non – point sources of pollution, habitat change, human activities, changes to the hydrological cycle and climate induced change. Key stressors effecting the health of the Peace River eco-system and the Duncan People's ability to utilize the Peace River, adjacent lands and the Peace Basin include linear features, agriculture, urban development, recreation, oil and gas, mining, hydro – electric development, water use and climate change and cumulative effects. Human activity and development has actively disturbed over 57% of the Peace River Basin and in Upper Peace Sub Basin (at the BC / Alberta border. **(Source: Mighty Peace Watershed Alliance, 2012)** The following summarizes the role that each of these stressors play:

Linear Features

The Peace River Basin hosts a high level of linear or anthropogenic features that give rise to a range of negative effects and outcomes. Access roads, permanent roads, pipelines, power corridors and seismic lines criss-cross the Upper and Mid Peace Basin and represent a significant permanent or semi – permanent features on the landscape. There is over 300,000KM in cut lines and over 34,000 Km of pipeline alone in the Alberta portion Peace River Basin. **(Source: Mighty Peace Watershed Alliance, 2012)**

When roads are constructed and operated over a long term, they can act as a significant source of sedimentation a river basin and its tributaries. The same appears to hold true for the Peace Basin. Further, the construction of roads alters the natural course of water and has led to the cutting off and removal of fish habitat and has fragmented watersheds. habitat. For example, the high numbers of culverts and stream crossings in place in the Peace Basin have played a major role in restricting fish movement and habitat utilization.

The sheer level of linear corridors cut into the boreal forests of the Peace River Basin has had indirect effects on fish and wildlife habitat and populations. Terrestrial and aquatic habitats that were once remote are no longer such and human access and predation have contributed to a decline in numerous populations. Northern lakes and rivers tend to have lower levels of productivity and do not recover well or at all once they are heavily fished or fished out. Overall, the higher the level of road density, the greater the potential for that density to effect the biological integrity of fish communities. **(Source: CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)**

Agriculture

Agriculture has been a main feature in the Peace River Basin, with a significant amount of land being cleared adjacent to the Peace River and Peace River valley for agricultural purposes. In some cases, up to 25% or more of certain lands within the Alberta portion of Peace River have been taken up for grain, vegetable, canola and hay crops and cattle farming. First and foremost, the sheer amount of forest that has been cleared for farming has been significant which has reduced habitat for wildlife and has impacted riparian areas and fish habitat. Loss of forested lands has reduced the ability of sub-watersheds to retain and keep Peace River tributaries watered throughout the year. Higher temperatures have also resulted from the loss of riparian forests limiting fish range and habitat utilization. Run off and sedimentation from cattle farming operations have contributed to nutrient loading from cattle waste, sloughing along water courses and increased sedimentation and turbidity impacting fish populations.

A key impact has been run off of farm fertilizers which have greatly contributed to eutrophication of Peace River tributaries and the Peace River itself. The shallower the water levels in the Peace River, the more heat is dispersed to organisms which leads to algae blooms in oxbows and back channels. The resulting nutrient enrichment has led to increased algae levels and depleted oxygen levels in water bodies which have affected cold and cool water fish species and benthic organisms that support fish populations. Water demands and withdrawals for farming operations are significant and likely to become a more significant factor accompanying the effects of climate change. The draining and use of wetlands for agricultural purposes has its own range of attendant effects on fish and wildlife. **(Source: CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)**

Forestry

Over 6.4 million cubic metres of timber was harvested within the Alberta portion of Peace River Basin in 2009/2010. **(Source: CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)** As noted, considerable timber harvesting has and continues to impact the Peace River Basin by altering watersheds' ability to hold and release waters in a natural manner that is both beneficial to the forest and receiving waters. Increased run off of soil water results. In addition, when a sufficient mass of forest is not present, waters are not retained in root systems and soils and are released more quickly, resulting in drier summer and fall season creek and river flows. Data indicates that watersheds which have been logged below 50%, tend to exhibit better eco – system health indicators than watersheds that have experienced forest harvesting 50% and above.

In more recent years, improved forest harvesting practices and regulation that attempt to mimic natural disturbance / conditions may provide some better protection for critical values such as riparian forests and riparian areas. However, the considerable cut level through the years, and road building have also impacted such areas in the past and current sustainable

forest management practices may not be sufficient to offset the considerable impacts of the past. In several jurisdictions (e.g. Quebec and Ontario), governments are recognizing the need to conserve and protect large portions of the boreal forest to ensure that key values are maintained across landscapes such as wetlands, old growth forest and caribou habitat. Further, in some cases, current required minimum setbacks for forestry activities may not be sufficient to protect and help fisheries and fish habitat recover within riparian forests.

Pulp mill operations have and continue to act as a point source of pollution in the Peace River. At this time, there are up to five pulp mills that discharge effluent into rivers within the Peace River Basin. Prior to 1992, the effluent (e.g. dioxins and furans) from pulp mills was found to be acutely toxic posing high risks for downstream fish populations and potential risk for people that had high levels of fish consumption in their diet. Strengthened regulations brought down levels of such pollutants in the early 1990s, however there is ongoing concern about pollutants that still may be present in river and bottom sediments and the ongoing discharge of nutrients and organic matter that may act to impact river oxygen levels and fish habitat. **(Source: CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)**

Urban Development

The Peace River Basin has experienced an upswing in activity and population over the past twenty years. Point source effluent discharge from water treatment plants and non-point source pollutant contributions via sewer and storm water systems deposit nutrients, organic matters, suspended solids and bacteria which deletes oxygen, contributes to eutrophication and degraded fish habitat conditions. While all municipalities have moved to secondary treatment, continuous and intermittent discharge of treated waters occurs. While both BC and Alberta regulate municipal effluent discharges, not all effluents are regulated. Such is the case with nutrients. The attractiveness of home and cottage ownership along Peace River Basin water bodies has impacted foreshore and riparian areas. **(Source: CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)**

Recreation

As noted, increased access has made once remote areas, more accessible to humans. The sheer number of linear corridors has allowed humans to access and place pressure on water bodies and intact habitat areas in a level never seen before. Increased population and ATV access has increased this trend resulting indirect effects on fish and wildlife populations. Further, the combined impact of increased habitat loss along with regulated and unregulated hunting and fishing has placed intense pressure on certain populations.

Cold water fish species in the Upper Peace Basin and cool and warm water species in the lower portion of the basin are all experiencing increased pressure. Walleye populations have declined significantly in certain watersheds in the Peace River Basin and fishing of this species is now regulated. Walleye fisheries collapsed in the 1980's and 1990's through northern Alberta, with increased access, lack of regulation and on the ground enforcement seen as being the key factors leading to the decline. **(Source: CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)** The Peace River Basin has a diversity of fish species including fish species of concern such as Arctic Grayling, Bull Trout and Large Scale Sucker. Provincial fish consumption advisories are in place at certain sites to protect residents from consuming harmful quantities of contaminants in fish. **(Source: Synthesis Report #12 - Northern River Basins Study, 1996)**

Although studies of fish populations have been undertaken by proponents and for government departments for sports fisheries, a BC – Alberta commissioned study concluded that little is known about the health of fish populations throughout the Peace River. **(Source: CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)** Restocking efforts have maintained fisheries for certain sport species however, cold and cool water species stocks have not been able to be bolstered through restocking.

Oil and Gas

Large scale conventional oil and gas development has been underway in the Peace River Basin for forty years. A vast number of wells have been drilled that are also supported by a network of temporary access roads, permanent access roads, power lines, pipelines and facilities. There is well over 61,000 oil and gas wells in the Alberta portion of Peace River Basin and there is 6.6Km of seismic line and pipeline for each square km of non-agricultural land. **(Source: CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)**

The Peace Basin is criss-crossed with older 2-D seismic lines, intense grid works of 3–D seismic lines that have not regenerated well. The subsurface nature of resource and the competitive nature of the industry has meant that planning has tended to occur on an ad – hoc basis (if at all), resulting in a heavily fragmented land base in many portions of the Peace River Basin. Lands along the Peace River from Ft. St John to Peace River have been subjected to medium to high levels of oil and gas development. The aggregated effect of the oil and gas exploration along with other forms of development such as forestry and farming has intensified effects on fish, wildlife and plant communities. Run – off and site contamination has and continues to occur from oil and gas sites such as sumps and other facilities. Ongoing operational spills and leaks in addition to more but significant oil pipeline ruptures such as the 2000 Pine River Spill and the recent spill 100KM north of Peace River contribute hydrocarbons to the Basin tributaries.

As conventional supplies of oil and gas are peaking or about to peak, industry has moved to unconventional oil and gas resources such as coal bed methane, tight gas, shale gas and oil sands in the Peace River Basin. Shale gas is becoming an increasing feature in the upper portion of the Peace River Basin at the BC – Alberta border along with a major oil

sands play at Peace River. These resources are driving the need for new infrastructure such as pipelines and power lines, which in turn giving rise to the increase in anthropogenic disturbance. Some views hold that these new unconventional hydro – carbon resources may pose issues for surface and subsurface water quality and quantity. **(Source: CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)**

Mining

By the 1990's, the coal sector appeared to be on the decline, however growing demand in Asian markets has renewed interest in the vast coal resources in the upper portion of the Peace River Basin. New projects are coming on line with a significant number of new applications being advanced. Further, "clean coal", technology might spur on further coal mining to meet power production needs. Acid rock drainage and selenium effects are key issues of focus in environmental assessments for coal mines. In the past, surface mining has had a significant impact on sensitive high elevation areas in the northern Rockies impacting sensitive species such caribou, mountain goats, sheep and Grizzly Bear.

There are large iron sands deposits located north of the Clear Hills in Alberta, just due east of the Alberta – BC border. A company is actively advancing a large iron sands operation in the upper Notikewin River watershed, a key tributary of the Peace River. The company is proposing to construct rail lines from Alberta or a slurry line into BC to ship mined materials. (**CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)**

Water Use and Climate Change

Water is taken from surface and ground water sources in the Peace to meet a wide range of residential and commercial needs. A significant amount of water volumes from withdrawals are not returned to the source and are often discharged via surface run off or surface water bodies. Net water losses to a water system can impact habitat quality for aquatic life. One major intra – basin water transfer has been approved, where Talisman obtained a water license to withdraw water from Williston Reservoir and transport via a pipeline to serve shale gas development needs near Hudson's Hope. With increased drought conditions in southern Alberta and the US, inter-basin water transfers may well be contemplated in the future. Bruce Nuclear Power's proposal for a major nuclear power plant north of the Town of Peace River has been suspended; however the company maintains that it has a long term interest in "Whitemud Site".

While consensus has not been achieved on the influence of human induced greenhouse gas emissions, the International Intergovernmental Panel on Climate Change (IPCC) projects that the effect of a warming trend will be more pronounced in northern latitudes

with higher temperatures occurring in winter months. Over the long term, less ice cover is expected for the Peace River and in the mountains reducing the glacier, ice and snow melt contributions to the Peace River. (**CharettePellPesconte – for Mighty Peace Watershed Alliance, 2012.)**

Hydro – Electric Development

In the 1960's, as part of the BC Government's "Two River Policy", the Columbia and Peace River Basins were dammed extensively to address flood control and power generation needs. In 1968, the WAC Bennett Dam was completed flooding a vast area in the former Parsnip and Finlay River valleys in BC and altering flow regimes far downstream into Alberta. In the 1970's, BC Hydro completed "Site B", the Peace Canyon Generating station with plans to construct a new dam at "Site C", just south of Fort St. John.

BC Hydro and the BC Government have acted to partially address the historic foot print impacts of the construction of the Peace River facilities through the creation of fish and wildlife compensation program which funds fish and wildlife restoration work in the upper portion of the Basin in BC. BC Hydro has also negotiated compensation agreements with upstream and downstream First Nations impacted by the historic upstream impacts of the dams.

An array of ongoing operational downstream effects result from year to year, month to month and week to week decisions made by BC Hydro. BC Hydro operates its integrated electric system to meet a range of priorities and objectives. The ongoing operational effects from the existing Peace River facilities have been well studied and examined in various reviews and planning processes mandated by the Government of BC. These are examined in the following section. The ongoing hydro – electric operations of BC Hydro's Peace River facilities have ongoing effects on fish and fish habitat. Daily, monthly and seasonal fluctuations have immediate effects on fishing conditions within the river in downstream areas. While BC Hydro's water licence requires the Peace River facilities to operate within certain minimum parameters, BC Hydro has considerable ability and latitude to alter its operations. It generally elects not to do so, given the impact of foregone power and revenue generation benefits. These operational effects were the focus of BC Hydro's 1995 Electric Systems Operation Review (ESOR) and were again examined and considered by government agencies in the 2006 Water Use Plan, approved by the BC Water Comptroller - a plan that governs and clarifies BC Hydro's Peace River systems operations.

New power generation facilities have been approved and are under consideration for the Peace River including Trans Alta's Dunvegan Hydro – Electric Power Project and the BC Hydro's Site C Clean Energy Project – the focus of this community baseline profile. Alberta based ATCO was also examining a potential site near Notikewin Provincial Park and sought to obtain a licence of occupation for a bank to bank dam. Investigations are still underway. **(Personal Communication: Ken Rich – DFN Lands and Environment Manager: 2012).**

The need for energy and the various energy options available to meet demand is set out in BC Hydro Integrated Resource Management Plan. Of note, is that the parties to the Columbia River Treaty (CRT) have the ability opt out of the CRT by 2024 at the earliest. Ten years notice by either party is required, thus BC will be in a position to notify US interests of whether it wishes to opt out or renew the CRT in 2014 – less than two years away. The ending of the CRT could mean that BC could obtain back 50% of the power benefits generated by the three treaty dams on the BC side of the Columbia River. That major increment of power could offset or negate the need for a major project such as Site C. Thus the BC Government's decision in respect to the CRT has ramifications for the Peace River and Peace River Basin and ultimate decision to move forward with Site C or not.

Cumulative Effects

All of the above noted effects can act in synergistic way resulting in a range of cumulative effects. Again, the Northern River Basin Study (NRBS) was one of the first attempts to identify and assess incremental, multiple source and multiple stressor impacts. The work and recommendations of the NRBS has in theory been continued through the Northern Eco-System Initiative (NERI) and Mackenzie River Basin Management Board (MRBMB). With this said, many of the key recommendations and concerns highlighted in the NRBS have yet to be implemented by any jurisdiction.

First Nations throughout the Peace River Basin have anecdotally reported that they have observed and experienced overall declines in fish and wildlife populations through the Basin and within their traditional territories. Elders and land users of the Duncan's First Nation have reported that is becoming increasingly difficult to hunt, fish, trap and gather successfully and in the preferred manner. This trend has appeared to become more pronounced over the past twenty years with the effect being most pronounced in areas that have experienced greater levels of resource development. DFN elders and community members also report that it has become increasingly difficult to successfully fish in the Peace River and its key tributaries. **(Source: Personal Communication - Ken Rich – DFN Lands and Environment Director, 2012)**

Throughout the Peace River Basin, First Nations have called for cumulative impact assessments, appropriate cumulative impact management frameworks, land use plans, protected areas, special measures and a regional strategic environmental assessment to address the combined, aggregated and synergistic effects resulting from multiple stressors in the Peace River Basin. While the BC and Alberta Governments have initiated pilot projects, sub regional plans and monitoring bodies, none as of yet have squarely dealt with the issue of cumulative impact on First Nations ability to utilize lands and resources, the ongoing taking up of lands and the impacts on First Nations rights and way of life.

Governments do require a limited form of cumulative assessment within the context of project specific environmental assessments. However such assessments are scoped

narrowly to address the incremental effects of the applied for project, adjacent developments and any project that has been formally applied for. Such assessments are temporally and spatially limited and have not considered impacts on First Nations and their rights and interests. When environmental assessments are circumscribed in such way by government policy and only consider the incremental effects of a proposed project (with a base case set in the present day), it fails to consider the above range of stressors and the cumulative impact of these stressors. The DFN's ability to hunt, fish, trap, gather and utilize the land has been heavily impacted and the current scope of their land use activities and resources results from the cumulative effect of development.

Thus when environmental assessments for major projects do not consider the cumulative impact of development and the limitations it places First Nations in a "Catch – 22 Situation". Environmental assessments end up evaluating the incremental effects of a new project, consider the resulting apparent limited First Nation use, then go on to conclude that the project will result in zero to little impact on First Nations rights and interests. An appropriate disturbance analysis is needed to place a project's effects in the correct context as experienced by the First Nation.

5.0 INTEREST AREA 1: BASELINE CONDITIONS - HISTORICAL AND CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

5.1Scope of the Assessment

At the outset of the socio – economic impact assessment data gathering exercise, BC Hydro established information requirements (under the *Canadian Environmental Assessment Act* and *BC Environmental Assessment Act*) that it believed would satisfy statutory and common law requirements. For Interest Area #1 (Land and Resource Utilization). These are as follows:

Topics

- Fishing, Hunting, Trapping, Earth Material Gathering, Overnight Sites and Culturally Significant Areas, Socio – Cultural, Ecological and Treaty Interest and Cumulative Interaction with the Dunvegan Hydro Electric Project

Key Indicators / Information Source

The DFN has not undertaken any new research to assist in the preparation of the community baseline report. Rather it is relying on existing sources of information and reports that have been prepared in the past for Interest Area #1. Key documents that have been taken into account include:

- The 2011 Duncan's First Nation Traditional Land Use Survey
- The 2011 Ethno – Historical Report prepared by Bouchard and Kennedy
- The 2012 Duncan's First Nation Country Food Harvest Survey
- Personal communication with DFN community members and council

5.2 Ongoing Land and Resource Utilization by the DFN: Overview

Despite the considerable change that has occurred in the regional economy and the impacts that have been experienced by fish and wildlife populations, the DFN continue to utilize and rely on the lands through the Peace Region, north – western Alberta and north – eastern BC. Hunting, fishing, trapping and the gathering of earth materials are activities and vocations that are still practiced and extant rights that are exercised.

DFN community members also undertake activities that are incidental to hunting, fishing, trapping and gathering practices such as building and maintaining camps and cabins. Some of the DFN members trade and sell what they kill, catch and gather, thus there can be an economic aspect to these traditional vocations. In some cases, guide outfitting has also been incorporated into DFN family's traditional round of activities.

As documented in the 2011 DFN Ethno – Historical Review, the DFN were required to cover vast distances travelling hundreds of miles every year from the Peace River into the hinterland. Today, the DFN are again required to travel great distances given that many areas close to the Peace River have been cleared, heavily logged and fragmented through road building and petroleum development. Through the last forty years, many DFN community members report that they often find it harder to successfully hunt, fish and gather in the areas in which they historically utilized and relied upon. One community reports that overall, it takes longer for him to catch fish and kill wildlife than it did years ago, and he has the greatest challenge today in areas that have experienced heavier levels of disturbance and fragmentation. He also notes that they must cover more ground and cover greater distances as the years pass to find sign of animal and areas that host more wildlife. He also notes that it is harder to successfully fish in the Peace River, the Smoky River, the Whitemud River and Notikewin River today than when he was younger. **(Source: DFN Community Member Mel Lawrence - Personal Communication, 2012.)**

The experience and observations of DFN community member, Mel Lawrence are shared by many DFN families. While the DFN 2011 TLUS did not document the process of land use alienation, it appears from the transcripts, that the majority of community members raise the issue and cite it as being significant and limiting factor. In short, DFN members are having to alter their hunting, fishing and gathering patterns given the effects of an increasingly industrialized landscape. On the ground, this means that many community members are having to shift their land and resource activities away from their usual and accustomed places for hunting, fishing and gathering to other more far flung areas. It also means that they are having to travel greater distances and undertake a greater number of trips to achieve the goal of providing for their immediate and extended family.

In fact, a fascinating but logical transition is occurring. The lack of fish and wildlife in close proximity to the community is requiring DFN families to travel further afield. In the past, “old timers” travelled large distances on foot, with dog teams and by boat along the Peace River. Trips of 100KM – 400KM where not infrequent (linear distance between points). So, the DFN is now seeing a transition occurring where greater distance is having to be covered once again by community members, where current land use patterns are more closing resembling historic patterns. Of course today, DFN members travel to these areas using their vehicle to spend time in a given area. It is surmised that a similar transition is underway with other First Nations within the Peace River Basin, given the levels of development and similar ecological stressors that they must contend with.

The sites identified within the DFN 2011 TLUS reflect *examples* of *some* land and resource use sites that could be recalled by DFN community members within living memory – reflecting both recent past, current and ongoing use. The DFN maps depict community land and resource use “extensivity”. The DFN “All Sites” Map within the TLUS depicts the outer bounds of the DFN land and resource use by those community members interviewed. **(Source: 2011 DFN Traditional Land Use Survey, 2011)**

Thus based on available information at this time, the DFN community collectively travels from the reserve community at Berwyn to utilize lands and resources as far out as the following example locations:

- as far east as Bison Lake, Lubicon Lake and Lesser Slave Lake in Alberta
- as far west as Pink Mountain, Hudson’s Hope, Moberly Lake and Tumbler Ridge in BC (with some DFN members travelling to the Pink Mtn area in BC to hunt)
- as far north as an area between Keg River and High Level Alberta, and
- as far south as areas within the upper Wapiti River watershed in Alberta

A concentration or locus of traditional use activity is evident along the Peace River valley in an area extending from Dunvegan to the Notikewin / Peace River confluence and extending from the Peace River, through and around the DFN reserve at Brownvale to, north to the Whitemud/ Chinook Valley.

A clear and consistent pattern of community land use and resource utilization is also clearly evident all along the Peace River extending from the Site C location, to the BC – Alberta border, to Dunvegan, to the Smoky River / Peace confluence, to the Town of Peace River, to the Cadotte River / Peace confluence and north to the Notikewin / Peace River confluence.

Sub clusters or nodes of land use and resource utilization are also evident at the following locations / areas:

- The Beatton River between Charlie Lake and the Peace River
- An area along the Peace River between the Moberly River and the Pine River
- An area adjacent the upper Kiskatinaw River, adjacent to Bear Hole Lake Provincial Park, west of the BC – Alberta border
- An area along the Peace River between the BC – Alberta border, the Clear River, the Montageneuse Creek / Peace confluence and the Dunvegan crossing
- In the Upper Clear watershed
- At Bear Lake, north of Grand Prairie
- At Sturgeon Lake and Snipe Lakes
- On the west side of Lesser Slave Lake
- At Winagami and Kimiwan Lakes
- In the upper Heart River watershed and around DFN's William Mackenzie Reserve south – east of the town of Peace River
- In the Cadotte and Carmon Creek that flow into the Peace River
- At the Cadotte / Carmon / Peace River cofluence
- At Cadotte and Lubicon Lakes
- At Haig and Otter Lakes
- Sulphur Lake and the Upper Whitemud River watershed

- An area between the Notikewin and Chinchaga Rivers and at the confluence of the two rivers

The DFN has proposed to BC Hydro to conduct a TLUS Density Analysis (aka “Heat Mapping”) using an agreed to, transparent and defendable mapping methodology. Areas would be coded as “Important”, “Significant” and “Critical” based on the concentration. This may or may not be undertaken during the EA Review of the Site C Project. If it is, clear patterns of TLUS Density would emerge and be suggestive of the relative importance of certain areas to DFN members over their lifetime. However, the ongoing shift in land and resource use patterns that is occurring (due to the increasing difficulty of hunting, fishing and gathering) also needs to be kept in mind.

5.3Reliance on Country Foods and Bush Commodities by the DFN

As noted, the DFN has not had the opportunity to undertake a significant amount of cultural – socio – cultural research however, it has been afforded some limited opportunity to do so with the support of BC Hydro in relation to the Site C project. The DFN has undertaken a Country Food Harvest Survey that clarifies species relied upon and those country foods that have and continue have key socio – economic and cultural value to the DFN. In the following section, species of cultural importance, cultural values and key interests to the DFN community are described. In a later chapter, the relative importance of these species and the role they play within the diets of the community and culture of the DFN is also discussed and elaborated on.

Thus the 2011 DFN TLUS reveals that the following species are of cultural, socio – economic and socio – cultural relevance and interest to the DFN are but not limited to:

MAMMALS

1) Moose
2) White Tailed Deer
3) Mule Deer
4) Elk
5) Bear (Grizzly and Black Bear)
6) Other Ungulate (Includes Caribou, Mountain Goat, Sheep)

BIRDS

1) Waterfowl
2) Upland Birds

FISH

1) Trout (Bull Trout and other species of Trout)
2) Northern Pike
3) Walleye
4) Whitefish
5) Other Fish
6) Grayling

BERRIES (TYPES)

1) Saskatoon Berry
2) Wild Raspberry
3) Blueberry
4) Wild Strawberry
5) Choke Cherry
6) Low Bush / High Bush Cranberry
7) Other

Following the conduct of the 2011 DFN TLUS, the DFN conducted a supplementary Country Food Harvest Survey. The DFN opted to use a survey model and template based on the "Nunavut Wildlife Harvest Survey", with some modifications.

The DFN retained a community member to undertake the 25 surveys on a one–on–one basis with the identified head of each household. A sound balance of gender and age groups was achieved among the selected respondent group. Overall, the recognized or designated heads of households were invited to participate. Overall the 25 respondents that participated reported on the consumption patterns of up to 86 people within the DFN community (on reserve). The interviews took place through August and September of 2012. The same questionnaire was administered in every interview to ensure that every question was asked of the same respondent in the same way. Respondents were asked to report on their consumption of country foods within the past year or over past three years.

The results of the survey were tabulated into a matrix where results were compiled. The Matrix is listed as **Appendix 6: DFN 2012 Country Food Harvest Survey.**

In reviewing all completed questionnaires, it is evident that the exercise was conducted according to expectations and instructions. With this said, some examples were noted where deviations occurred in recording of data and some evidence exists indicating that questions and or answers may not have been completely understood. Specifically, the following potential issues should be taken into account when reviewing and considering the results of the DFN 2012 Country Food Harvest Survey:

- While instructions were provided to respondents to report on current country food consumption within the past year or average over the past three years, there is some limited evidence that a few respondents may have cast further back in time as evidenced as citing trapping as a current activity and higher levels of caribou consumption than expected.
- Whenever there was any doubt or ambiguity in reported consumption amounts, a conservative amount was used. For example, where they may have been some uncertainty over an amount of food being consumed, the likely lowest amount of 3 0z or one “palm” was assumed.
- In many cases, respondents reported on the seasonal or occasional (as available) consumption of foods (e.g. rabbit, ducks, geese). Where this occurred, these amounts were not factored into the total given the difficulty in estimating such amounts. Thus the survey really tracks staples within the community diet that can be more readily tracked on a week by week basis. However, it must be noted that seasonal foods such as ducks and geese do play an important role within household diets given times and given seasons. The same held true where people fished in certain limited periods. Thus, the reported consumption levels are skewed downwards as a result.
- There appears to have been some confusion in some limited cases where there was inappropriate recording of consumption per person occurs and consumption per week. If the information was clearly incomplete and not having any substantive basis, the result (amounts) were deleted and not tallied in the matrix. Such occurrences appears to be the exception and not the rule, however such occurrences should be taken into account when reviewing the results. Overall, the approach taken would result in the dampening or under – recording of community consumption.

Thus the results of the 2012 DFN Country Food Harvest Survey can be summarized as follows:

Households Reporting the Use of the Following Plants and Earth Materials

- Berries (Undetermined)- 19
- Rat Root- 6
- Mint - 4
- Labrador Tea - 4
- Saskatoon Berries - 4
- Wild Strawberries -3
- Wild Rhubarb - 2
- Blueberries - 2
- Cranberries – 2
- Herbs (Undetermined) 2
- Diamond Willow - 2
- Dandelion – 2
- Rosehip – 2
- Red Willow – 1
- Chokecherry - 1
- Birch - 1

Preferred Wildlife Species Consumption Reported by Household

- Moose - 25
- Elk – 19
- Rabbit – 15
- Chicken – 15
- Deer – 15
- Duck – 10
- Bear – 9
- Caribou - 8
- Geese – 5
- Ducks – 2
- Birds – 1
- Porcupine – 1
- Beaver -1

Wildlife / Game Consumption Statistics

- Total Reported Meals Per Week Containing Wildlife for All Surveyed Households: 93.50

- Total Reported Meals Per Year Containing Wildlife for All Surveyed Households: 4120

- Total Reported Wildlife Consumed By All Surveyed Households by Weight: 1546.50 oz. / week or 96.65 lbs.

- Total Reported Wildlife Consumed By All Surveyed Household by Weight: 80,415 oz. / year or 5025.93 lbs.

Reported Fish Species Caught - By Household

- Whitefish – 15
- Northern Pike / Jackfish – 15
- Walleye / Pickerell – 8
- Trout – 5
- Grayling – 1
- Burbot - 1

Fish Consumption Statistics

- Total Reported Meals Per Week Containing Fish for All Surveyed Households: 25

- Total Reported Meals Per Year Containing Fish for All Surveyed Households: 1456

- Total Reported Fish Consumed For Households by Weight: 520 oz. / week or 32.5lbs.

- Total Reported Fish Wildlife Consumed For Households by Weight: 26,870 oz. / year or 1,679,37 lbs.

Total Protein (Wildlife and Fish) Intake for Surveyed Households by Week / Year

- Total Reported Protein (Fish and Wildlife) Intake for All Surveyed Households: 2404 oz. / week or 150.25 lbs.

- Total Reported Protein (Fish and Wildlife) Intake for All Surveyed Households: 91,684 oz. / year or 5736.25 lbs.

Perceived Most Favourite / Consumed Country Foods in Community:

- Moose - 24
- Berries - 15
- Fish - 14
- Elk - 7
- Chicken - 5
- Deer - 4
- Duck – 2
- Rabbit – 2
- Wild Potatoes – 2
- Caribou - 1

Perceived Most Favourite Country Foods for Youth/ Consumed by Youth in Community:

- Moose - 22
- Berries – 15
- Fish – 5
- Chicken - 3
- Elk – 2
- Deer – 2
- Rabbit – 1
- Wild Potato - 1

Reported Traditional Use Activities In Order of Most Prominent Activity

- Hunting
- Fishing
- Gathering
- Trapping

Top Reasons for Continuing to Consume Country Foods by Surveyed Household:

- Healthier / Promotes Health and Well Being – 14
- Cost / Cheaper Than Store Bought Foods - 11
- Part of Culture and Way of Life – 10
- Spirituality - 1
- Readily Available - 1

Access to Country Foods

- 15 Households Reporting That They Do Not Consume as much Country Foods as They Would Like

- 10 Households Reporting That They Are Consuming as much Country Foods as They Would Like

Top Cited Barriers to Hunting by Household

- Difficult to Access Good Places - 11
- Changes in Population and Abundance – 10
- Cost – 9
- Limited Time - 6
- Lack of Equipment - 4
- Broken Equipment - 3
- Employment - 1

Top Cited Barriers to Fishing by Household:

- Water Quality / River Condition Concerns - 5
- Changes in Population and Abundance – 5
- Concerns re Contamination and Pollution - 4
- Difficult to Access Good Places - 3
- Cost – 3
- Lack of Equipment – 2
- Limited Time -1
- Broken Equipment - 1

Concerns Related to Country Foods and Consumption

- Most consistently expressed concern in relation to harvesting country foods is contamination in fish and wildlife and water quality / pollution in water (which also includes Peace River flows and fluctuation in flows)

The results of the DFN 2012 Country Food Harvest Survey could be extrapolated to the entire community, however the DFN has not elected to do this at this time. In doing so, DFN might present a skewed picture of country food consumption within the reserve community. This might overlook that some households might not consume any country foods or very little for various reasons. With that said, the results of the harvest survey are quite compelling in providing some confirmation that the DFN, in spite of its population and location within the heavily developed Peace Region, could still be characterized as a community still attached to its traditional land base and in need of country foods that it provides.

Clearly the survey provides some indication that hunting and the consumption of wild game is a key socio–economic and socio–cultural activity within the community that continues to the present day. Fishing comes second with gathering, earth and plant materials third. While putting food on the table for a variety of pragmatic reasons is a clear priority in the community, maintenance of a traditional way of life, maintaining a connection with the land and transmitting the culture to the next generation are also key values to the community.

The results could and should be compared with other First Nations in the Peace Region and north–eastern BC and north–western Alberta. While the DFN might not consume as much in terms of country foods compared to their relatives to the north and in the North West Territories, the bush foods and commodities that are brought into households are significant and serve an important function for a small community.

It appears that the slowing down of the traditional economy in the community stems from several factors. It appears that the sheer level of industrial development and displacement or declining fish and wildlife populations are key factors contributing to this downward trend. There is some degree of concern over contamination in fish and wildlife and especially in regards to fish populations in the Peace River. Declining water quality and quantity was also raised by several people as limiting their fishing activity in the Peace River. Further, Hydro – Electric operations and fluctuating levels were also mentioned in some interviews.

The DFN has opted to not monetize the value of country foods, given it thinks the caution should be applied to the initial results obtained from the harvest survey. The DFN would caution that a second survey should be conducted on the same population or a different

group to compare results. With this complete and should the results be consistent an exercise to determine the replacement costs of country foods might be warranted.

5.4 Hunting

The DFN's culture is one based on the long practiced art and vocation of hunting. As documented within the DFN Ethno – Historical Review, it was evident that the Duncan's relationship with the land and mammals was key to their ongoing survival and the perpetuation of their culture and way of life to the present day. Early written accounts of the Beaver, Cree and Iroquois ancestors of Duncan's noted their proficiency as hunters and a mode of life that was based on the seasonal round, following and anticipating where game would be.

All manner of animals were hunted, however it is clear that large mammals such as buffalo, caribou, moose, elk, deer and bear were sought after given their ability to feed a family efficiently from large kills. Other smaller animals and fur bearers sustained Duncan's families as they travelled and in need. Ducks, geese and grouse also played a key role for Duncan's families. Today, moose appears to be the most sought after ungulate / large mammal and is preferred by most families, however elk and deer is also important.

Most hunting activity is conducted to provide sustenance for families, however, several Duncan's members have utilized their renowned hunting skills in the guide out fitting industry in north – eastern BC and Alberta. Also, some DFN members report that they trade killed wildlife with groups from the Fraser River and the BC coast for salmon and steelhead fish. With this said, hunting appears to generally occur to address family and community sustenance and socio – economic needs, however hunting is also linked to the desire and need to be in "bush" by many, thus hunting is closely tied to cultural, social and spiritual needs and obligations.

Based on anecdotal reports and emerging interview evidence, it is clear that hunting activities have declined somewhat over the last 20 – 30 years due to predominance of the cash economy in the community, habitat changes and impacts and shifts and drops in wildlife populations. Notwithstanding, a large percentage of Duncan's families reported that they continue to hunt numerous species and rely on country foods.

Based on the 2011 TLUS and 2012 County Food Harvest Survey it appears that a significant number of people within the community have hunted over their life time and continue to hunt mammals and birds. Key species hunted include:

- Moose
- White Tailed Deer

- Mule Deer
- Elk
- Caribou
- Bear (Grizzly and Black Bear)
- Other Ungulate (Includes Caribou, Mountain Goat, Sheep)
- Waterfowl (Geese and Ducks)
- Upland Birds (Prairie Chicken)
- Rabbit
- Porcupine
- Beaver

A significant number of moose kill sites (649 examples) are reported and the number of kill sites (examples) suggest that moose have and continue to be heavily hunted by community members. This survey documents such practices as occurring as far back as the 1940's and continuing the present day (the practice obviously existed beforehand, however other sources of information are needed to support this). Moose appears to a species that DFN community members prefer to procure, highly value and acts as key staple in the DFN diet. This is held to apply to 16.9% of the community. A significant number of kill sites (examples) are also recorded for Mule Deer, White Tailed Deer, Elk, Bear, other mammals, Upland Birds and Waterfowl. The combined identified count of sites for these species is 452 examples. Some caribou kills sites are documented within this mix of species. **(Source: DFN 2011 TLUS, 2011)**

In respect to the DFN's territory, it is clear that Peace River acts as a critical habitat for ungulate populations. Ungulates move to and with sources of water thus community hunters tend to find moose moving along the Peace River and along its main tributaries. In the fall, DFN hunters have observed that moose can be found along the Peace River in August through to October. As winter sets they tend to migrate back away from the Peace River into the hinterland through November to January. There is a marked movement of moose back to the Peace around February. **(Source: Personal Communication – Tom Green - DFN Lands and Environment Unit, 2012)**

Moose cross and attempt to cross the Peace in winter months. DFN hunters believe that moose favor the slopes of the Peace valley given the thermal cover afforded by both dense forests and the grade of the valley slopes, where colder air tends to flow to the bottom of the Peace valley. In the summer, moose appear to gravitate and are seen on islands in the Peace and back channel areas given the protection that these islands provide for birthing and rearing of young from predators. Notwithstanding the fact that the much of land has been cleared to the very crests of the Peace Valley on both sides, the steepness of the valley has in many instances been a deterrent to development and forested lands remain. The steepness also limits truck access along the Peace River from into Alberta. As such

community hunters report that when they go into the valley, they find that they are more secluded as are ungulates.

The vast majority of the community share the concern over the decline in the quantity and quality of wildlife habitat through the Peace Region. Since the 1920's, the DFN has come to be surrounded by cleared and fenced agricultural lands, requiring community members to travel further distances as the years progress. DFN community members travel from 50KM to 300KM away from the community to find suitable places that still support moose populations. In general, DFN hunters observe that they tend to experience more success in less disturbed areas that they do in areas that have higher levels of forestry, oil and gas development and linear corridors. Auditory, habitat loss, fragmentation, human access and increased predation by humans and wolves are seen as key factors in driving the decline of moose populations through the Peace River. Both in BC and Alberta, wildlife officials maintain that ungulate populations are healthy and thriving however such views do not appear to match up with community repeated and on the ground observation of this trend. **(Source: Personal Communication - Ken Rich - DFN Lands and Environment Director, 2012)**

Over the past four years, the DFN have taken action to place the Crown on notice about its observations of the decline of game within heavily developed areas and its concerns about the overall pace and scope of development within its traditional territory. The community has raised the issue of this decline and cumulative effects and impacts within the context of regulatory reviews and has requested that the Crown undertake a cumulative impact assessment of the region that considers the overall impact on the exercise of DFN rights and the way of life of the DFN people. At this time, no proponent or agency has agreed to enact to undertake a disturbance analysis that would allow all key parties to understand both the incremental and cumulative effects of a project within an appropriate context. **(Source: Personal Communication – Ken Rich – DFN Lands and Environment Director, 2012)**

Thus, the community finds that its hunting patterns are having to shift given the low moose populations found in areas that they have traditionally hunted in the earlier part of their lives. For example, DFN hunters report that they now travel to more intact areas such as:

- Remnant forest areas along the Peace River from the Notikewin River to the Smoky / Peace River confluence and from the Smoky / Peace River confluence to Dunvegan and from Many Islands to the Beatton River / Peace River confluence. The remnant areas of forest along the Peace and its tributaries are seen as critical, given the connectivity they provide allowing moose to move down to the Peace River and across the Peace River.

- The area to the east of the Peace River, north of the DFN's William Mackenzie Reserve, south – east of Cadotte Lake and up along the DMI Road, north of Three Creeks along east side of the Peace River.
- Another key area noted was the area north of the Clear Hills, west of Dixonville and Manning and south of the Chinchaga Valley.

(Source: Ken Rich – DFN Lands and Environment Director, 2012)

Some hunters travel the Peace by boat favoring to hunt in the style that their parents used. Two families in the community have used boats to travel up and down the Peace to hunt for moose and other species. Several community members documented one such trip in the past three years where they travelled upstream from Dunvegan to hunt along the shores up to Many Islands and back down river. Fishing occurs as well on such trips and it is understood that three camps were frequented during this trip. One band member has access to a river boat and undertakes numerous trips up river and fishes with nets and hunts from the boat. He shares what he catches with the community. **(Source: Ken Rich – DFN Lands and Environment Director, 2012)**

It appears that moose tend to favor the backwater areas and side channels and wetland areas found along the Peace River and they are often sighted and taken in such environments. However, some community members note that the numbers of moose found along the Peace River have declined substantially over the last two decades, however they can still be found there with some degree of success.

While elk and deer are not sought after as much as moose, they are hunted and contribute to the country foods based diet of Duncan's families. Community members observe that deer and elk are found in more diverse habitats species and are becoming more habituated to farmer's fields over the years and are developing an understanding that they can find some degree of protection near farmer's houses and out-buildings. Elk and deer are not a preferred species by community members as their meat has taken on grain fed taste and texture over the years.

It appears that caribou were once a preferred form of game, however, declining numbers has all but eliminated the DFN's hunt of caribou. Many hunters report that they elect not to hunt them due to their low numbers and their hope is that the species will recover through their former ranges. With this said, community hunters would like to continue the hunt, should their populations be restored. Community hunters fear that moose will become a species at risk like caribou if current habitat and overhunting trends continue. **(Source: Tom Green - DFN Lands and Environment Unit, 2011)**

Overall, the community appears to continue to have a relatively heavy reliance on game procured by way of hunting. Given the level of impact and rate of urban and industrial expansion, the DFN culture appears to be very resilient with a high percentage of the community being active hunters or reliant on community hunters. A culture of sharing what is taken from the bush is still in effect, with families sharing game with each other when a kill is made. The 2012 Country Food Harvest Survey confirms the key role of game in the diets of a large number of community households.

The skills and hunting of culture is clearly being passed along with the DFN. DFN elders can name younger men and women that are showing an interest in hunting, learning about hunting and being in the bush with their family. The 2011 DFN TLUS incorporated interviews with people of the younger generation. Based on these interviews, it appears that the younger generation of the DFN now appear to be accompanying their families into the bush and are now going into the bush by themselves. This finding was confirmed by responses of community households strongly indicating that the next generation are taking on an active role in hunting and that bush skills are being passed onto them.

The 2011 DFN Traditional Land Use specifically sought to obtain spatial data from respondents on examples of where specific wildlife species have been killed. The survey documents *examples* of *some* of the wildlife kill sites of a *limited* number of community members. The following locations are demarcated on the category (e.g. Moose Kill Sites) and thematic maps (e.g. Mammal Kill Sites) prepared from interview Bio – Maps:

Moose Kill Sites in Peace River Related Locations

- At Hudson's Hope and between Hudson's Hope and the Halfway Rivers
- On the lower Moberly River
- Along the east side of the Beatton and Doig Rivers
- At Taylor
- Along the Peace River from the BC / Alberta border to Dunvegan
- Along the Peace River from the Burnt / Saddle River to the Smoky / Peace confluence
- In the Carmon Creek watershed and at the Peace / Cadotte / Carmon confluence
- Along the Peace River between the Peace / Whitemud confluence and the Peace / Notikewin confluence

Elk Kill Sites in Peace River Related Locations

- In the upper Boucher Lake watershed and upper Pine watershed
- In the Pouce Coupe watershed
- The Peace River between the Clear River and Montageneuse Creek
- In the Hines Creek and upper Leith Creek watershed
- Along the Peace River south of the DFN reserve at Brownvale

Deer Kill Sites in Peace River Located Locations

- In the Beatton River watershed
- In the upper Clear River watershed
- At the confluence of the Peace River at the Saddle / Burnt River
- Along the Peace River between Dunvegan crossing and Shaftsbury crossing
- In the Heart River watershed
- In the Notikewin River watershed

Bird Kill Sites in Peace River Related Locations

- At Charlie Lake
- Upstream of the Clear / Peace River confluence
- In the lower reaches of the Montagenuese Creek
- Along the Peace River between the Leith / Peace confluence and Shaftesbury crossing

5.5 Fishing

At this time, no detailed research has been undertaken in relation to the historic fishing practices of the Duncan's People and this has been due to the funding to needed to research historic fishing practices. The 2011 DFN Ethno – Historical Review enabled the DFN to undertake a scoping level of research to determine publically available sources regarding land use and occupancy patterns and uses. The Ethno – Historical Review points to some historic evidence of the importance of fishing within the Peace Region. For

example, the Cree opted to settle at Slave Lake given significance of the fishery. Another source noted the modes of fishing adopted by the Cree along the Peace. **(Source: Bouchard and Kennedy - DFN Ethno – Historical Review, 2012)**

Chief Don Testawich recalls that fishing was an important aspect of his family's life. For the summer months his family would travel by boat / raft up and down the Peace. Sustenance activities were mixed with trading in furs, so families would hunt and fish along the Peace as they travelled down river to Keg River and up river to Ft. St. John. His father, mother, uncles and brothers and sisters would visit families along the Peace River and stay with them. Chief Testawich was told by his father, that people from all over the Peace would come to Peace River Landing and stay with his family. Thus it appears that for the summer months, family activities were concentrated on the river. Chief Testawich recalls fishing from off the boat as they travelled and fishing from the shore were they put at night to stay in camp. Fish was key to their diet as they travelled and was a staple that appears to have been an important bush commodity that sustained families at key times in the bush.

The ecology of the north and region dictated that the Duncan's families were required to break up into smaller sub groups or family groups through the winter to pursue game and trap. In summer months, larger family groups and families would come together along the Peace and at key lakes at fishing grounds and fish camps. Chief Testawich also recalls travelling with his family over the Peace River rail bridge when he was younger and going into the bush north – east of Peace River and Three Creeks near the Seal – Cadotte and Carmon Lake areas for the winter hunt and trapping. Ice fishing took place on the deeper lakes. **(Source: Chief Don Testawich, 2012).**

It appears that fishing has been undertaken as an activity unto itself – where a community member opts to go onto the rivers and lakes to catch fish. Fish is also undertaken incidentally while people are in the bush hunting and undertaking other activities. Over the past summer one family reported spending time on the river putting in at Dunvegan and going up river to Many Islands and floating back down to Dunvegan and also putting in at Shaftesbury Ferry and going up river to Dunvegan and floating back down. Numerous fish were caught. In one case, one DFN member has reported that his family undertook commercial fishing and held a commercial license to Slave Lake and Smoke Lake and Iosegun Lake south of High Prairie. **(Source: Matthew General - DFN Land Use Advisor, 2011)**

The 2011 DFN TLUS documents numerous people within the community who have and continue to fish and who are able to recall some examples of sites they caught fish species within the Peace River watershed and Peace River related locations. These include:

Northern Pike / Jackfish fishing was documented occurring in the following Peace River locations:

- At Charlie Lake
- In the Beatton River watershed and at the Beatton / Peace River confluence
- In the mid Pine River watershed
- At the confluence of the Alces / Peace Rivers
- At the confluence of the Clear / Peace Rivers
- On the Peace River near Many Islands Provincial Park
- At the confluence of the Clear and Peace River
- Along the Peace River between the Clear River and Smoky River / Peace confluences
- In the Carmon Creek watershed
- Along the Peace River between the Carmon Creek / Peace confluence and the Whitemud Rivers

Walleye fishing was documented occurring in the following Peace River locations:

- Between the Peace Canyon Dam and the proposed Site C Dam
- At the BC / Alberta border on the Peace River
- Along the Peace River between Many Islands Provincial Park and the Montagenuese / Peace River confluence
- In the upper Clear River watershed and at the confluence of the Clear and Peace Rivers
- Along the Peace River between the Leith Creek / Peace River confluence and the town of Peace River
- Along the Peace River at the Peace / Carmon Creek confluence and the Whitemud / Peace River confluence

Bull trout fishing was documenting occurring in the following Peace River locations:

- In the upper Halfway River watershed

- In the lower reaches of the Pine River watershed
- On the Peace River upstream of Montageneuse Creek

(Note – Bull Trout kill sites further downstream may be a result of mistaken species identification – may be other form of trout)

Other species are noted at being caught in the upper reaches of the Kiskatinaw River

Community fishers report that they have the best chance of catching fish in the Peace River at the confluence of the rivers where there is a mixing of water flows. Also, they note that the side and back channels of the Peace River also appear to be preferred by fish and they have a good chance of success in such areas, however often, these pools will get too low later in the summer. Pools and riffles and runs over cobble along the side channels of the Peace River are also reported to be good places to catch fish, when there is sufficient water flowing. **(Source: Tom Green - DFN Lands and Environment Unit, 2012)**

While DFN community members appear not to fish as much as they hunt, it is clear that fishing continues to play an important sustenance, socio – economic, cultural and spiritual role in the life of the community. Species fished include but are not limited to:

- Trout (Bull Trout and other species of Trout)
- Northern Pike
- Walleye
- Whitefish
- Other Fish (e.g. Burbot)
- Grayling

The DFN 2012 Country Food Harvest Survey found that the following species are currently harvested by numerous community households:

- Whitefish – 15
- Northern Pike / Jackfish – 15
- Walleye / Pickerell – 8
- Trout – 5
- Grayling – 1
- Burbot - 1

Many community member note that they have stopped fishing due to their concerns about changes in water quality and the fish themselves over the years. Where rivers once used to run clear and seem to have many more fish in them, the rivers have become more sediment laden. Community members have noted that this is true of the tributaries that feed the Peace River and site the Beatton, Kiskatinaw, Alces, Little Clear, Clear, Wapiti and Smoky Rivers as examples of rivers that have become less clear over time.

Community members also note that the flesh of the fish they catch has changed over time with the flesh not being as firm and tasting different than it did prior to the last two or three decades. Some say fish taste “muddy” now. River levels are noted to have dropped significantly and consistently over the last 20 – 30 years, with many creeks and rivers (that once used to have water running year through) now do not reach the Peace River. The Clear River is one clear, or not so clear example of this trend. The opportunity and will to fish in such areas has of course diminished. **(Source: Tom Green - DFN Lands and Environment Department , 2012)**

In respect to the Peace River, elders and the mid generation community members can recall water conditions in the Peace River from the 1940’s to the 1960’s and recall how flows changed and natural seasonal flow patterns were reversed. Community members have also noted how their success of fishing has declined over time where fewer fish can be caught now than once was. Water flows in the summer were clearer, there was more water and back and side channels dried up that once held much more fish. **(Source: Tom Green: DFN Lands and Environment Department, 2012)**

Numerous community members report they have stopped fishing due to their concerns about pollution in the Peace River and the Wapiti / Smoky Rivers. This in part due to their views that fish contain toxins from pulp mills, sewage outlets and chemical used in the resource and farming industry. It is reported that people used to fish downstream of Peace River however this practice stopped given people’s fears about dioxins and furans and that fish seemed to eventually disappear downstream after the DMI Pulp Mill came into existence. While new pulp mill technologies have eliminated the bulk of pollutants, people are still concerned about other effluent that is still discharged into the river from the mill. The Smoky and Wapiti Rivers are seen as being in very bad shape and Duncan’s people appear to have reservations about pulp mill, industrial and agricultural run-off. **(Source: Tom Green - DFN Lands and Environment Unit, 2012)**

The DFN is interested in seeing watershed management and restoration plans developed that will address their water quality, fish and fish habitat concerns. Community members have noted that they would fish if more fish were present as they once did and they knew that it was safe to consume them. The DFN is interested in getting engaged in watershed restoration projects, building their capacity to engage in fisheries management and in establishing a fisheries restoration program for the Peace River Basin**. (Source: Ken Rich - DFN Lands and Environment Director, 2012)**

5.6 Trapping and Traplines

Trapping of fur bearers was a key activity that was core to the DFN's way of life and culture. The DFN Ethno – Historical Review documents the role that the Duncan's ancestors played in establishing and supporting the growth of the fur trade along the Peace River. **(Source: Bouchard and Kennedy - DFN Ethno – Historical Review, 2011)**

Generally, it appears that many Duncan's members over the age of 50 took part in the trapping economy along the Peace River and through the Peace Region until the industry went into decline through the 1950's to the 1970's. Some DFN families continued to trap into the 1980's for commercial purposes. The DFN 2011 TLUS did not attempt to map trapping activity given the complexities involved, however it did take note of who had trapped within living memory. Under the DFN 2012 Country Food Harvest Survey, some community members report trapping activity, however this may have been confused with past and historic activity. Additional follow up will be required with each respondent to confirm this.

Numerous DFN members can recall that they travelled out to traplines and stayed in trapline cabins in years past and recall that their relatives told them that they held traplines. Today, the DFN and nor any DFN community member holds a trapline or Registered Fur Management Area (RFMA). Plans are underway to purchase two to three traplines near the Peace River to assist in re-establishing the practice and vocation of trapping with younger generations. There is a great deal of community support for this. **(Source: Chief Don Testawich, 2012)**

With this said, people report that from time to time they hunt fur bearers and snare and trap fur bearers out on the land when they make an extended stay on the land. This is generally done for sustenance and spiritual purposes. The DFN is concerned about the loss of pine forests from the beetle infestation from BC and fear that the loss of pine will impact many fur bearers that rely on pine stands for habitat. Even though the DFN may not have a current and substantial interest in fur bearers for trapping / commercial purposes, fur bearers play a key role in the food chain and their presence and absence can affect other populations. For example, the Government of Alberta has discovered that wolf populations may be on rise and opt to come into an area, based on the numbers of beaver available. As a by-product of this change, other ungulates such as caribou and moose are killed due to the increased number of wolf packs and the size of wolf packs. Several DFN elders also discuss the possible relationship between the drop in the beaver hunt and trapping and declining water quality through the region and have asked the DFN to undertake research to determine if such a relationship exists. **(Source: Tom Green - DFN Lands and Environment Unit, 2012)**

DFN members report that they have trapped and killed the following fur bearers:

- Marten
- Wolverine
- Link
- Otter
- Beaver
- Fox
- Wolf
- Coyote

In the summer of 2013, the DFN will be sponsoring a trapping course to help pass on skills and the DFN is looking to purchase a trapline or two to support the transfer of trapping skills to the next generation. One community member has just built a cabin to facilitate his family's and DFN family's hunting and trapping**. (Source: Ken Rich - DFN Lands and Environment Unit, 2012)**

5.7 Plant and Earth Material Gathering Sites

Duncan's families have always and continue to look to the land to meet their many socio – economic and socio – cultural needs. Everything that was needed by a family could be obtained from the land and many continue to rely on the forests of the Peace Region to provide food, medicines, plants and materials for sacred purposes, logs for building homes and cabins, fire wood and drinking water just to name some examples. The 2011 DFN TLUS documented and mapped some examples of sites where DFN community members have procured plant and earth materials which included:

- Berries
- Food Plants
- Medicine Plants
- Sacred Plants
- Construction Logs
- Fire Wood
- Specialty Rock
- Drinking Water
- Other Plant/Earth Materials

Given the importance and spiritual nature of medicine plants, the DFN has opted to not describe their purpose or specific locations within this report. Plants play a key role in the cultural, spiritual and medicinal life of the community and elders stress that not all culturally significant plant communities occur uniformly across the landscape. Rather some occur only in relatively select settings and conditions. The DFN does work with proponents to develop an understanding of the role of certain plants, however this can only be done in strict confidence. Some of the important medicinal plants of importance to the DFN are found within riparian areas / forests and wetland areas.

Berries and berry picking has always played an important role in the DFN community. DFN members travelled to and gathered in summers in areas where berries were abundant. “Early Gardens” is one such area located on the north bank of the Peace River and south of the current DFN reserve. This location is important to the DFN to this day and is the subject of unresolved claims. “Saskatoon Hill” or “Saskatoon Lake” is another well-known berry picking location which drew many Indigenous families. The 2011 Ethno – Historical Review documents Alfred Selwyn’s account and observations of indigenous people gathering berries on south facing slopes between Dunvegan and the Smoky River and their process of making pemmican. “Mosquito Prairie” is another location on the Peace River that was noted for its Saskatoon berry fields. **(Source: Bouchard and Kennedy – DFN Ethno Historical Review, 2012)**

The 2011 DFN TLUS documented that following species of berries that are procured with some degree of frequency (listed from more frequent to least):

- Saskatoon Berry
- Wild Raspberry
- Blueberry
- Wild Strawberry
- Choke Cherry
- Low Bush / High Bush Cranberry
- Other Berry

(Source: DFN Traditional Land Use Survey, 2011)

As part of the 2012 DFN Country Food Harvest Survey, a high number of community households reported consumption of the following plants:

Households Reporting the Use of the Following Plants and Earth Materials

- Berries (Undetermined)- 19
- Rat Root- 6
- Mint - 4
- Labrador Tea - 4
- Saskatoon Berries - 4
- Wild Strawberries -3
- Wild Rhubarb - 2
- Blueberries - 2
- Cranberries – 2
- Herbs (Undetermined) 2
- Diamond Willow - 2
- Dandelion – 2
- Rosehip – 2
- Red Willow – 1
- Chokecherry - 1
- Birch - 1

(Source: DFN 2012 Country Food Harvest Survey, 2012)

Earth and Plant Material Gathering by the DFN occurs through BC and Alberta. The map reveals a high degree of correlation of gathering sites and the Peace River, its key tributaries with gathering occurring on or near the banks of rivers. Plant and earth material gathering was documented as occurring in the following Peace River related locations:

- Upstream of the Halfway River / Peace River confluences
- At or near the Boudreau Lake protected area between the Moberly and Peace Rivers
- At Charlie Lake
- In the upper Beatton and mid Beatton River watershed
- Along the north side of the Peace River between the BC Alberta border and the Clear River / Peace River confluence
- At the confluence of Hines Creek and the Peace River confluence
- Along the Peace River between Hines Creek and Leith Creek

- From Leith Creek, south of the DFN reserve, north and south of the Town of Peace River and north Cadotte / Peace confluence

(Source: DFN Traditional Land Use Survey, 2012)

5.8 Overnight and Cultural Sites

It is important to note and appreciate the differences between Indigenous cultures and how those cultures adapted to address their hosting environments and ecological conditions. The Beaver, Cree and Iroquois People of the Peace Region moved across the landscape, planning and anticipating the movement and location of game. The seasonal round of activities required families to move to different locations to undertake different activities. Thus in some cases, families returned to certain locations (to gather berries, trap and fish) time and again. In other cases they travelled to where an abundance of resources could be found hunting, trapping, snaring, fishing and gathering as they went. Thus, the DFN, like other Beaver, Cree and Iroquois cultures of the north did not leave an abundance of fixed sites on the land such as permanent settlements like other Indigenous cultures did.

With this said DFN community members can identify numerous cabins, overnight camps, hunting and fishing camps special places, spiritual locations birth and burial sites throughout the Peace Region in BC and Alberta. In the 2011 DFN TLUS, examples of Overnight Sites were documented as occurring in the following Peace River related locations:

- Between the Peace River (south bank) and Boucher Lake
- At Charlie Lake
- In the upper Beatton River watershed
- In the lower reaches of the Pine River watershed and at the Pine / Peace River confluence
- At the Peace / Alces River confluence (south side)
- Along the Peace River between the BC / Alberta border and the Clear River (north and south side)
- Along the Peace between the Clear River and the Montagenuese Creek confluence
- Along the Peace River between the Burnt / Saddle, south of the DFN reserve, north and south of the Town of Peace River and north to the Notikewin / Peace River confluence

- In the lower Whitemud River watershed / Chinook valley

Cultural places were documented as occurring in the following Peace River related locations:

- On the Peace River downstream of Farrell Creek
- On the Peace River, south of Ft. St. John
- On the Peace River at the BC / Alberta border
- At the confluence of Hines Creek and the Peace River
- Along the Peace River from Shaftsbury crossing, by the Town of Peace River and north to the Carmon / Peace River confluence

(Source: DFN Traditional Land Use Survey, 2011)

5.9 Lands of Ecological and Socio – Cultural Importance to the Duncan's Community

In addition the above, as part of the socio – economic impact assessment, the DFN Lands and Environment Office participated in a meeting where it identified areas of "cultural value", areas of "critical community use", areas containing high "ecological values", areas with "high wildlife habitat values, areas where "wildlife is more consistently to be found" and areas where the community wish to be "preserved and or have limited levels of development". These ratings are based on the numerous contacts that the DFN Lands Staff has had with community members during the numerous meetings and workshops it has with various government and company agencies.

These areas are determined as critical by the community given the amount of development that has occurred through the balance of their traditional territory, trapping areas and the Peace region as a whole. In general, these lands are determined to be of high cultural and ecological value as they have not been fragmented to the degree that other areas have and have generally experienced less development than other areas. These include:

A) The Peace River Valley from the Beatton River to the Notikewin / Peace River confluence. It was noted that while much of land has been cleared and fragmented up to the Peace Valley on each side, the valley plays a critical role for wildlife and is a critical corridor for wildlife movement. The valley sides of the Peace River are seen as critical ungulate habitats. Moose are observed to return to the valley sides

during the coldest winter months. Denser areas of timber on the slopes and warmer temperatures are seen as providing important thermal values that help moose in the coldest periods of the winter. Community members also feel that ungulates gravitate to and rely on islands in the Peace. Side channels and back channels areas and synes are also seen as important as they are closer to the sides of the valley and are a water source preferred given the closer location to cover. The sheer drop of the valley sides has also tended to inhibit development, leaving the valley bottom somewhat remote where community members can still feel they can practice their culture in relative isolation.

B) The less developed area stretching from the William Mackenzie Reserve northwards through the Heart River watershed, up to the east side of Carmon Lake and northwards along the DMI Road along the Peace River to Notikewin Provincial Park. Some community hunters reported that wildlife have been “penned in” and now move from the east side of the Peace from the above noted area, across the Peace River at key times in the winter and summer and move through the Whitemud / Chinook Valley to the less developed areas on the west side of the Peace River (noted below). The “Chinook Gap” as it was termed in the meeting is seen as being vital as supporting the movement of moose. The ability of moose to cross the Peace River in these areas at key times of the year is seen as vital.

C) The area north of the Whitemud Hills and south of the Chinchaga Valley (west of Dixonville and Manning and east of the BC / Alberta border). This area is one of the least disturbed and fragmented areas in the Peace River region and is renowned for the amount of wildlife it still contains. The area contains a large number of moose, still supports caribou populations and contains a large patchwork of wetlands. First Nations from across BC and Alberta and Saskatchewan travel to this area for fall hunts. The area is also extremely popular with sports hunters. DFN hunters note that they are having to shift their hunting activities from areas that they formally relied on to this area far to the north of the DFN community.

D) Another area that was identified and discussed of being specific interest to the DFN was again the Peace River valley, but specifically those lands between Dunvegan crossing and Shaftesbury Crossing and up the confluence of the Peace and Smoky Rivers. These lands are seen as having important historical and cultural value to the DFN and are frequented by DFN members for a range of traditional, cultural and

spiritual pursuits. The lands that are capable of supporting wildlife populations are seen as critical, as many community members often don't have the ability to travel far given the price of gas and rely on moose that range down through the reserve to the Peace River and across in the winter and summer months. Fishing and the ability to fish along the Peace River in this area is seen as important. Families take their children to these areas for day or overnight trips to pass along cultural skills. The community has unresolved claims in relation to its old reserve lands that existed along the banks of the Peace River and they wish those lands returned them. In the interim they wish a freeze in development status on those areas pending negotiations with the federal government and are very concerned with any trend that degrades those lands or precludes the return of those lands.

(Source: Summary of "DFN Lands and Environment Department Workshop on Special Areas": August 5th: 2012)

6.0 Baseline Conditions in the Peace River: The Ongoing Operational Effects of Peace River Facilities

There is an important distinction between the impacts that arose as a result of the construction of a hydro – electric project, and those effects that arise from its ongoing operation through time. Over the past twenty years, BC Hydro was directed by the BC Government to undertake consultations with the public and First Nations to identify the range of operational effects that arise from the operation of its integrated electric system / hydro facilities. Both the BC Government and BC Hydro were able to delineate, very carefully, those historical effects that arose from construction of the dams from the effects that arise as a result of ongoing operational decision making and operations of the same dams.

BC Hydro makes decisions on a yearly, monthly, weekly and daily basis that determine how specific facilities and basins are operated. The decisions that BC Hydro makes results in a given operating regime. Each operating regime carries or results in range of ongoing effects. This is true of the operations of BC Hydro's Peace River facilities. In the 1994 Electric Systems Operation Review and the Water Use Planning exercise completed five years ago, BC Hydro carefully identified and categorized the range of effects that result from a preferred operating scenario/s for its Peace River facilities.

The DFN takes the view that a description of ongoing operational effects are needed and need to be taken into account, given that the current operating regime and resulting conditions in the Peace River set the base case against which the Site C Project must be assessed. The Site C Project will be inserted into this hosting environment and its potential incremental effects need to be measured against the back drop of current Peace River

operations. In addition, the EA process will require consideration of both the construction and operational effects of the project. Further, the effects of the Peace River facilities also are a key determinant of aquatic eco-system health, which are key in considering the DFN's current hunting and fishing activities along the Peace River and Peace River Valley.

The WAC Bennett and Peace Canyon dams in the upper portion of the Peace River Basin effectively reversed the natural hydrological regime of the Peace River causing higher flows in the winter and lower flows summer. While the annual volume of water flowing out of the Peace River hydro – electric facilities are the same as before the dams were in place, the timing of the flows are changed. The dams release significantly greater volumes of water during winter months and then holds back water to refill the reservoir summer months **(Northern River Basins Study, 1996)**

This change has a pronounced effect on the river from Hudson's Hope as far down the Peace River as Peace Point. For example, at Hudson's Hope the mean monthly flow is reduced by nearly 80% in summer months and increased by 500% in winter months. These effects diminish further downstream given the flows contributed by tributaries such as the Pine, Beatton and Wapiti / Smoky Rivers. However, notwithstanding the flows of a large tributary such as the Smoky River, average peak flows at the town of Peace River are 71% per cent of historical levels. **(Northern River Basins Study, 1996)**

The timing of flows is also altered immediately downstream of the Peace Canyon dam. Today, at Hudson's Hope, average seasonal low flows occur in June instead of March and average high flows occur in December instead of June. Prior to regulation, summer flows at Hudson's Hope were roughly twice that of winter flows. Following regulation, summer flows have been cut in half and winter flows are four times greater. The situation is less pronounced further downstream. At Peace Point, summer flows are 66% of historic levels, while winter flows have increased by 250%. **(Northern River Basins Study, 1996)**

In light of the higher winter flows on the Peace River, the relative importance of tributaries to the overall flow volume is greatly reduced during this period. Prior to regulation, tributaries would double the winter flow between Hudson's Hope and Peace Point. The same volume of tributary flow now accounts for only 20% of the winter flow at Peace Point. In contrast, tributaries now have an added significance during the summer months. **(Northern River Basins Study, 1996)**

River temperatures have also changed with cooler waters being released from the facilities in the summer with warmer water being passed down river in the winter. Regulation slows the rate of summer river flows which has consequences for temperatures, fish habitat and fish populations. Some scientists have advanced the view that higher river temperatures may induce the eggs of fall-spawning fish to hatch prematurely, which could affect survival.

The upper Peace hydro facilities also alter the extent and timing of ice formation. Where ice cover occurs, key winter habitats along shores can be covered with frazil ice reducing available fish habitat. Further higher flows in the winter can result in thicker ice cover which

can impact critical fish habitat and diminish open water sections on the Peace River which provide overwintering fish habitat. On the positive side, the resulting lack of ice cover in the upper reaches of the Peace River is beneficial and has created additional winter habitat for fish and wildlife that require open water such as beaver. (**Northern River Basins Study, 1996)**

Most sediments are added to the Peace River from downstream tributaries. However, the way in which BC Hydro operates its facilities affects the Peace River's ability to scour and transport the sediments that build up each year. Sands and silts continue to build up in key sections of the river changing the shape of the river channel which also alters vegetation and wildlife habitat. Changes experienced along the river vary from location to location and are dependent on several factors. The river narrows as silts and sand build up along the shores. Islands and sand bars are also growing in size and in number. Vegetation is taking root in these areas. Further many of the Peace River's side channels and backwater areas are being cut off and not being re-watered, leading to a drying trend. The drying trend is also evident across the low land areas next to the Peace River with new vegetation colonizing these areas. **(Northern River Basins Study, 1996)**

The NRBS acknowledged that the effects being experienced along the main stem of the Peace River have both negative and positive impacts and that these effects differ from location to location. The drying of side and back channels, wetland areas and synes along the Peace results in a net loss of important fish habitat. The drying of these areas also impacts waterfowl, shorebirds, amphibians and other species. However, this transition and the growth of shrubs and vegetation in these areas has created additional habitat for moose, deer and some species of birds. (**Northern River Basins Study, 1996)**

In 1993, BC Hydro was directed by the BC Government to conduct the Electric Systems Operation Review which (ESOR). In summary, the ESOR undertook a comprehensive review of BC Hydro's integrated operations, the operating regimes of all of BC Hydro's facilities, identified the impacts associated with those operating regimes and investigated the costs and benefits of altered operations. BC Hydro worked with a consultative group and key agencies and identified ongoing impacts and issues that arise as a result of Peace River system operations. These include:

<u>Fish</u>

- Dewatering of side and back channel habitats
- Fish stranding due to low in-stream flows
- Fish stranding, high temperatures and side and back channel de-watering
- Low reservoir levels causing fish mortality through entrainment at dam sites
- Low stream inflows below the Peace Canyon dam can impact fish and fish habitat
- Reduced access to tributaries due to low summer stream inflows
- Reverse of normal thermal conditions

Wildlife

- Difficulty for beaver trapping due to fluctuating downstream levels
- Drowning of wildlife due to high winter flows and open water in the winter
- Low in stream flows can impact wildlife and wildlife habitat
- Reduced habitat for fur bearers
- Moose and bear stranding on islands in the Peace River due to high water
- Ungulate birthing habitat on islands open to increased predation during low flow conditions
- Permanent loss of waterfowl habitat in back and side channels of the Peace
- Reduced waterfowl nest production and nesting habitat

Recreation, Navigation and Fishing

- Decreased tourism and recreation potential from lower flows
- Difficulty in launching boats during low flows in spring
- Large daily fluctuations in river flows can affect boating and localized fishing conditions

Water Use and Water Quality

- Hydrologic regime change due to ice jam at Peace River
- Reduced dilution of pollution downstream of pulp facilities and sewage treatment outlets
- Water supply for industrial and municipal users

(Electric Systems Operation River: 1995)

In the late 1990's, BC Hydro received direction from the BC Government to develop water use plans for all of its facilities, including BC Hydro's Peace River facilities. In this context, the Water Use Plan is a technical document that defines how BC Hydro's facilities are to be operated. Management Plans set out operating and non – operating actions to address identified impacts resulting from BC Hydro's facilities and ongoing hydro – electric operations. BC Hydro developed the draft WUP through consultative committees that involved key government agencies. The Peace WUP was tabled with the BC Comptroller of Water Rights in 2003 and the WUP was finalized and formally approved by 2007, five years ago.

The Peace WUP Management Plan made recommendations for improvements and monitoring work that would only apply to the BC portion of the Peace River (more specifically, the stretch of the river from the Peace Canyon Dam to the Pine River.

- Peace Side Channel – To increase fisheries habitat by physically enhancing side channels to allow them to be effectively watered. Successful implementation of the

demonstration side channel enhancement would reduce or remove the need for an increased base flow.

- Peace Ramping Plan – To increase fishery productivity by implementing physical work solutions (e.g. physically complex side channel habitat, dig deeper channel inverts etc.) and testing and monitoring the results. If successful, ramping rate changes would not be required.

- Peace Flood Pulse Plan – To improve fisheries productivity and riparian habitat for flora and fauna by investigating the feasibility of periodic flood pulse events to maintain side channel and riparian habitat downstream of the Peace Canyon Dam. If it is determined that a flood pulse is required to maintain the vegetative community the frequency, magnitude, duration and seasonal timing of planned (and unplanned) events will be investigated.

(BC Hydro Peace Water Use Plan, 2007)

The above noted mitigation measures were recommended in the WUP based on the range of downstream impacts resulting from BC Hydro's ongoing operations on the Peace River. As with case with Electric Systems Operation Review, while the Water Use Plan considered a range of alternative operating regimes, BC Hydro and the BC Government were generally only prepared to consider lower cost operating and non - operating mitigation measures given the significant costs associated with foregone generation and revenues. The Peace WUP will be a subject to a full renewal 10 years following the implementation of the WUP. The WUP will either have to be opened up and amended to account for operations for the new Site C Project / facility or a new WUP will need be developed in parallel to the Peace WUP to govern the operations of the Site C Project. BC Hydro officials have confirmed that the operations of Site C will be determined by operations and flows coming out of the WAC Bennett and Peace Canyon dams.

7.0 The Potential Incremental and Ongoing Operational Effects of Proposed Site C Clean Energy Project

BC Hydro's proposed Site C Clean Energy Project will be located on the Peace River, south of Fort St. John. The bank to bank dam will be over a 1000 metres long and 60 metres high and generate in excess of 1000 megawatts. The foot print impact of the project includes the creation of 83KM long reservoir backing up the Peace, Moberly, Halfway and other smaller tributaries, a 77KM transmission line on the south side of the Peace River, require realignment of sections of Highway #29 on the north side of the Peace River and require

three borrow pit areas. Key project components are depicted on maps prepared by BC Hydro **(Appendix 7: Site C Project Components)**.

BC Hydro anticipates that it will submit its project application / environmental impact statement in the winter of 2013. Given this, there is no complete or as of yet, comprehensive document setting out the potential range of potential effects or an assessment of the significance of those effects. Thus, to determine potential project – First Nations interest interactions for this exercise, the DFN had to rely on the Project Description that has been filed with regulators, summaries of studies produced during BC Hydro's Phase 1 and Phase 2 consultation rounds and known documented effects that arise with major dam construction and operation in western Canada.

In setting out the following list of impacts and changes, the DFN is not asserting that such impacts and changes will occur, however, it is using this list of potential impacts and changes as a higher level filter to determine potential areas of interaction between project components and DFN interests.

There are two types of effects that are to be considered to be germane to this analysis. First, are those range of incremental effects and more immediate changes that will result and stem from the construction of the dam and associated works. The second are those range of ongoing operational effects stemming from the operation of the Site C Project. The Site C dam will receive and manage flows and will become part of BC Hydro's Peace River integrated system of hydro – electric works that will potentially contribute to, and convey an attendant range of ongoing operational impacts and change in downstream areas. In short, Site C's operational effects will become one and the same as that of the WAC Bennett and Peace Canyon dams. The converse also holds true – that the ongoing operational effects of the WAC Bennett and Peace Canyon dams will be that of Site C.

To assist in the identification of possible intersection between potential Project effects and DFN interests, the DFN grouped effects according to the following separate impact areas. These include:

- Potential Incremental Upstream Impacts: Initial Foot Print Impact and Initial Ecological Change
- Potential Incremental Downstream Effects: Initial Foot Print Impact and Initial Ecological Change
- Potential Downstream Effects: Ongoing Operational Impacts and Ecological Change
- Impacts Associated with Transmission Line, Highway 29 Alterations and Borrow Pits

The specific range of potential effects for each area is detailed as follows:

Potential Incremental Upstream Impacts: Initial Foot Print Impact and Initial Ecological Change

The potential incremental upstream impacts are anticipated to be:

Terrestrial and Vegetation

- Loss of old growth forests / forest in valley bottom and slopes
- Loss of high conservation value forest on river valley slopes and bottom
- Loss of riparian areas and wetland areas
- Potential for elevated levels of methyl mercury following flooding and associated bio - accumulation / magnification issues

Wildlife and Wildlife Habitat

- Loss of high value and unique habitat area within Peace region
- Loss of islands, back channels, side channels, flood plain habitat for ungulates
- Change in wildlife dynamics (movement, distribution, density, breeding, birthing areas, survival and mortality)
- Injurious affections of adjacent wildlife habitat in which Peace River plays integral role
- Loss of thermal cover / critical winter habitat for ungulates on valley slopes
- Localized climate change effects on valley slopes / critical habitat
- Loss of connectivity for wildlife
- Potential water barrier cutting off access for some species
- Limited upstream fluctuations impact of aquatic fur bearer habitat
- Limited upstream fluctuations impact on waterfowl habitat
- Increased hunting levels in Peace valley, adjacent lands and region during construction period
- Increased wildlife mortality due to influx of vehicles along Peace valley, adjacent lands and region during construction period

- Shift of populations away from construction zone during construction period

Aquatics, Fish and Fish Habitat

- Change from natural (albeit regulated) river system to reservoir (Lotic / Lentic shift)
- Loss of fish habitat in main stem of Peace and tributaries
- Alteration of fish habitat in upper reaches of tributaries
- Barrier to fish moving upstream / downstream
- Shift in fish species composition, abundance and distribution
- Entrainment / mortality of fish via turbines
- Entrainment / mortality of fish via spillway when in operation
- Limited reservoir fluctuations impacting littoral zone
- Frazil ice formation impacting near shore habitat
- Upstream ice front impact to over wintering habitat
- Increased fishing levels in Peace River, tributaries, regional water bodies during construction period
- Oxygen depletion in deeper parts of reservoir / stratification

Heritage and Archeological

- Loss of archeological and heritage sites (known and unknown)
- Loss of portion of river having historical and ethno – historical significance
- Loss of historic habitation sites and preferred habitation areas

Socio – Cultural

- Loss of camp locations
- Loss of unique area to utilize, use and occupy

- Loss of free flowing segment of Peace River
- Altered cultural landscape
- Aesthetic / visual impacts of altered river regime and dam

Human Health and Safety

- See methyl mercury / bio-magnification – accumulation issues under fish section
- Sudden flow changes from Peace Canyon could impact fishers / boaters immediately downstream
- Debris in reservoir could impact fishers / boat hunters and trappers
- Change in ice conditions / freeze up for ice fishers

Potential Incremental Downstream Effects: Initial Foot Print Impact and Initial Ecological Change

The potential incremental downstream effects of the Site C project are anticipated to be:

Terrestrial and Vegetation

- Erosion of river channel below dam

Wildlife and Wildlife Habitat

- Possible shift of populations away from construction zone during construction period

Aquatics, Fish and Fish Habitat

- Fish can't access upstream / downstream spawning / critical habitat
- Loss of fish habitat in areas below dam
- Seasonal temperature and flow changes to alter downstream ice formation
- Reduced natural variability in river may affect fish populations

- Increase in methyl mercury in larger fish species below dam
- Fish mortality due to Total Gas Pressure during spill events
- Change in water quality downstream - temperature
- Change in water quality downstream - sediment transport)
- Change in flow levels and timing
- Change in downstream sediment load and river bed mobilization

Heritage

Socio – Cultural

- Loss of free flowing segment of Peace River
- Altered cultural landscape
- Aesthetic / visual impacts of altered river regime and dam

Human Health and Safety

- See methyl mercury / bio-magnification – accumulation issues under fish section
- Sudden flow changes from Site C could impact fishers / boaters immediately downstream
- Change in ice conditions / freeze up for ice fishers
- Change in timing and thickness of ice at Shaftesbury crossing

Potential Downstream Effects: Ongoing Operational Impacts and Ecological Change

The ongoing operational effects of the Site C dam are anticipated to be:

Terrestrial and Vegetation

- Changes in vegetation succession patterns
- Lack of recharge of flood plain wetlands

- Narrowing of main stem of Peace River

Wildlife and Wildlife Habitat

- Loss of wildlife habitat downstream due to change in plant communities
- Losses in aquatic fur bearer population
- Fluctuating levels impacting beaver lodges
- Drowning of wildlife due to high winter flows and open water in the winter
- Low in stream flows can impact wildlife and wildlife habitat
- Reduced habitat for fur bearers
- Moose and bear stranding on islands in the Peace River due to high water
- Ungulate birthing habitat on islands open to increased predation during low flow conditions
- Permanent loss of waterfowl habitat in back and side channels of the Peace
- Reduced waterfowl nest production and nesting habitat

Aquatics, Fish and Fish Habitat

- Decrease in annual variation in river level
- Hydrologic regime change due to ice jam at Peace River
- Drying and dewatering of backwater / side channels / syne habitats
- Infilling of Peace – tributary confluences with sediments
- Fish stranding due to low in stream flows and high flow events
- Fish stranding, high temperatures and side and back channel de-watering
- Reduced access to tributaries due to low summer stream inflows
- Reverse of normal thermal conditions
- Reduced dilution of pollution / organic effluent downstream of pulp facilities and sewage treatment outlets
- Near shore winter habitat impacted by frazil ice formation
- Higher winter flows result in thicker ice cover and diminishing open water that provides over wintering habitat
- Daily fluctuations in flows can quickly alter habitat / feeding conditions

Heritage

Socio – Cultural

- Decreased tourism and recreation potential from lower flows
- Difficulty in launching boats during low flows in spring

- Low flows can impact boat hunters / fishers in navigating and accessing all reaches of river
- Large daily fluctuations in river flows can affect localized fishing conditions

Human Health and Safety

- See methyl mercury / bio-magnification – accumulation issues under fish section

Impacts Associated with Transmission Line, Highway 29 Alterations and Borrow Pits

The impacts associated with the transmission line, highway realignment and borrow put components of the project are anticipated to be:

Transmission Line

- Disturbance to wildlife during construction
- Direct loss of forest resources and vegetation
- Increased access on T/L and indirect effect on wildlife populations from predation
- Fragmentation and increased linear disturbance in area of high wildlife habitat values (Peace Moberly Tract) and within Peace Region
- Raised potential for other industrial users to twin corridor, widening disturbance and area of effect

Highway 29

- Disturbance to wildlife and wildlife during construction
- Direct loss of forest resources and vegetation
- Loss of thermal cover on slopes
- Highway straightening may lead to increased highway speeds / increased mortality

Borrow Pits

- Disturbance to wildlife during construction

- Direct loss of forest resources and vegetation
- Increased wildlife mortality due to numbers of trips to and from pit along access routes and approaching highway

As noted, the sources for the above potential effects and impacts are derived from and checked against the following relevant resources:

- Section 11.0 “Preliminary Synopsis of Project Effects” from the BC Hydro’s Site Project Description
- BC Hydro’s Electric Systems Operation Review
- BC Hydro’s Water Use Plan
- Northern River Basins Study
- Generic Environmental Impacts Identified from Water Impoundment Projects in the Western Canadian Plains Region (Sadar and Dirschl’)
- Joint Review Panel Project Report on the Dunvegan Hydro Electric Project

8.0 The Potential Cumulative Effects of Site C and the Approved Dunvegan Project

In recent years, the Dunvegan Hydro – Electric Project was assessed by way of a harmonized environmental review. The report of the Joint Review Panel is available and its deliberations and findings are relevant and helpful to the analysis of downstream effects and impacts for the Site C Project. Trans Alta has deferred construction of the project and no timeframe has been publically announced for construction start.

The run of the river project would be located approximately 1KM upstream of the Dunvegan Bridge (across the Peace River) and would result in backing of water or the creation of a reservoir or head pond 26KM upstream at a point on the Peace River. The point where this backing effect is curtailed occurs at approximately 20Km downstream of Many Islands on the Peace River. The DFN does not intend to examine the effects of Dunvegan within the context of this SIA baseline profile exercise. With that said, some of the confirmed effects and impacts of the Dunvegan project have the potential to interact cumulatively with the effects of the Site C project. The DFN is concerned that there may be a meshing and aggregation of effects for both projects along a zone on the Peace River, which may act cumulatively to impact on aquatic and fisheries resources.

Both the proponent of the Dunvegan project and the Joint Review Panel acknowledged that there would be some intersection of effects between the two projects and that Site C was to be included in the list of projects to be considered within the proponent's consideration of cumulative effects. The Joint Review Panel concluded that "while BC Hydro's Site C Dam has been announced, specific details are not available for analysis and that the cumulative effects of the two facilities would be considered at the time of a review process for Site C". At the hearings, BC Hydro made the argument that as no decision had been made to build, the Site C project should not be considered within the cumulative effects assessment for the Dunvegan project. **(Source: Report of the Joint Review Panel - Dunvegan Hydro – Electric Project, 2008).**

Given that cumulative effects were not assessed within the context of the Dunvegan review and that BC Hydro has yet to filed its Environmental Impact Statement, it is difficult to identify what impacts and effects may occur as a result of the construction and operation of both projects. However, based on a cursory review of the Panel Report and data provided by BC Hydro (pre – EIS information) to date, on the face of it, there appears to be an array of potential interactions and linkages between the two projects that will affect Valued Eco – System components common to both hosting environments.

In respect to Site C, BC Hydro has noted that it believes that downstream effects will be felt along the Peace River, however such affects become attenuated further downstream due to contributions from tributaries. The Dunvegan dam head pond extends 26KM upstream and the project's EIS considered a range of effects within a Local Study Area and Regional Study Area for species that utilize the full range of the Peace from the BC / Alberta border downstream of the Town of Peace River. Dunvegan's studies identified 10 species of sports fish and 13 species of non - sports fish were present in the LSA and RSA where the following sports fish species were found to be most common (listed from highest to lowest)

- Mountain Whitefish
- Burbot
- Walleye
- Goldeye
- Northern Pike
- Kokanee
- Grayling
- Lake Whitefish
- Rainbow Trout

From an aquatic health perspective, Dunvegan is considered to be a significant area on as it marks the transition zone on the Peace for warm and cool water fish species. Knowledge and baseline data for fish movements along the Peace was a key issue that was acknowledged by the proponent and regulators and was one of the key reasons of why project approval was deferred at an earlier period. The EIS and Panel Report for the project documents the long distance migratory habits of some fish species present in the Peace River. For example, Goldeye migrate along the Peace River from BC / Alberta border down

to the Notikewin River and Walleye migrate between the Pouce Coupe River and the Smoky River. Within the EIS, the proponent determined that the there was a potential for significant effects for several species with the head pond altering upstream habitat. *The proponent deemed while the potential effects for fish upstream were significant, upstream fish habitat was deemed to be low quality due to limited habitat complexity and fluctuating Peace River flows which are largely determined by outflow from BC Hydro's upstream facilities.* **(Source: Report of the Joint Review Panel - Dunvegan Hydro – Electric Project, 2008)**

Effects on moose and ungulates was a factor considered in the scope of the assessment with the proponent acknowledging changes that will ensue upstream and downstream creating challenges for wildlife to cross the river in certain locations. In addition, flow changes that will result in the loss of islands (critical habitat for ungulates) in the Peace River or low flows that facilitate predator access to these islands would force ungulates to find other rearing areas, however within a landscape area with limited secluded habitat. Effects on ice formation was another strategic issue considered at length by the proponent and regulators with the project creating a shift to a two front ice system. In fact it appears that the two projects will shift the Peace from a one front system to a four front system between Peace River the upstream areas above Site C.

Thus the zone of interaction between two projects (between BC / Alberta border and Many Islands and Many Islands to Peace River) appears to warrant careful consideration for cumulative effects and their interaction with DFN's rights, uses and interests.

9.0 Potential Project Interactions: Land and Resource Use

As noted in the Methodology section of this report, the overall objective of this socio – economic scoping exercise is to determine the potential for interactions between potential Project effects and DFN interests. A potential interaction is deemed by the sum or a given convergence between a given project effect and an extant DFN interest.

These potential interactions were determined by creating a matrix that set out the range of potential Project effects on the "X' or down axis of the matrix and a range of DFN interests on the "Y" or cross axis. Where interactions were posited to occur, these were entered into the matrix. Thus the matrix sets out the key information that BC Hydro and Golder Associates wished to obtain for the socio – economic impact assessment. This includes:

- Identification of the potential project effect(s)
- Provision of a reasonable level of description for the potential project effect(s)
- Identification of the potential Duncan's First Nation interest (e.g. activity) that is present that may be affected by the project and its predicted attendant effects

- Provision of a reasonable level of description of the interest present and how that interest may be affected by the project and its predicted attendant effects
- Assigning a ranking or numbering of the potential interaction

In ranking an interaction as “2”, an interaction is deemed to be substantial and meriting further investigation and analyses in BC Hydro’s socio – economic impact assessment.

Often, First Nations resource use is understood and described in terms of activities such as “hunting, fishing, trapping and gathering” and other activities undertaken incident to these activities such as camp and cabin building. The DFN has and continues to currently undertake these activities, however the DFN has an interest in the land itself which is tied to ecological health that goes beyond the actual activities themselves.

The ability of the DFN to exercise a right (e.g. hunting) is contingent upon a healthy population (e.g. wildlife), which in turn requires a healthy habitat or eco-system (e.g. old growth forest or unfragmented forest). Thus in this socio – economic scoping exercise, the DFN has opted to track where the Site C project may also intersect with the following additional interests, values or where an impact on activity (e.g. hunting) may translate into an impact on the following interests:

- Socio – Cultural
- Community Health and Well Being
- Ecological and Treaty Interests

In the following sections, DFN provides a narrative summarizing the potential range of interactions, which are detailed in the matrix. **(Appendix 1: “Potential Site C Effect – Duncan’s First Nation Interest Interactions)**

9.1 Hunting

9.1.1 POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE - HUNTING

The DFN considered those potential impacts that are related to the upstream footprint of the Project, the immediate ramifications of the Project’s construction and the initial ecological change that will arise as a result in the upstream component of the Site C Project. These are broken down by key value or potential project effect:

Terrestrial and Vegetation

For the DFN, a key concern relates to the removal of forest and vegetation along the Peace River Valley and the permanent loss of forest and vegetation following inundation. As noted in the DFN 2011 TLUS, some examples of DFN hunting activity are documented as occurring along the Peace River to the north – west of Hudson's Hope. The forest and vegetation along the Peace River valley on the north side of the Peace Valley functions as important ungulate habitat and contains key wildlife attributes and values. This is true even though this side of the Peace Valley has experienced farming and timber harvesting. The loss of forest and terrestrial resources has the potential to significantly impact forests that moose and ungulate populations rely on. This has the potential to translate into an impact on the DFN's ability to successfully hunt in this area well into the future.

Wildlife and Wildlife Habitat

The clearing and creation of the upstream reservoir will have a considerable impact on wildlife and wildlife habitat. The Peace River Valley has and continues to play a key role that governs regional wildlife movement and acts as anchor to regional ungulate populations. The islands in the Peace, its back and side channels, the riparian zone, the slopes of the valley and adjacent lands are all components of a complex interplay of habitat attributes. The area hosts significant ungulate populations that are of key interest to the DFN. The 2011 DFN TLUS documents examples of hunting that occurs along the upstream inundation zone and in adjacent areas. DFN moose and elk hunting occurs in an arc from the upper Halfway River watershed to Hudson's Hope to Moberly Lake and around the Upper and Lower Pine watershed.

Immediate impacts from construction are possible with the sheer level of activity and disturbance resulting in a shift of ungulate populations out of the area. The presence of a large workforce in the area, could also have an indirect effect on wildlife populations through a marked increase in hunting and mortality via vehicle collisions.

The longer term impact may stem from the loss critical habitat attributes such as valley slopes which provide critical thermal cover and gradient in winter months and the loss of islands in the Peace which are utilized by ungulates for calving in the spring and summer months. Back and side channels would also be flooded. While moose can swim large distances, they are reported to prefer short spans thus the reservoir could create a barrier to ungulate movement and impact migration and connectivity. Given the range of moose, the effect may go beyond the immediate valley, but to adjacent areas (into the Peace Moberly Tract) and the region as a whole.

9.1.2 POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE - HUNTING

The DFN considered those potential impacts that are related to the immediate downstream consequences and ramifications of the project's construction and the initial ecological change that may arise in the downstream component of the Site C project. These are broken down by key value or potential project effect.

Wildlife and Wildlife Habitat

It is possible given the scope of work being undertaken during the construction phase, effects on wildlife may occur in the areas downstream. The DFN 2011 TLUS documents some examples of DFN hunting occurring at the confluence of the Pine and Peace Rivers. It is possible that populations may shift out of the area due to auditory and human disturbance. Ungulate populations could also experience a decline due to additional hunting pressure from the large influx of workers.

Human Health and Safety

Many DFN community members utilize the Shaftsbury Ferry in summer and winter months. Many hunters travel to the south of the community in winter months to hunt on the south side of the Peace River north of Tangent and Watino. They do so, given that this area is in close proximity to the community and the ferry allows the most direct access. Otherwise DFN hunters have to travel west to the Dunvegan Bridge crossing back country or travelling east to the Town of Peace River and back. The ferry permits relatively quick access to this area that supports a strong wildlife population in winter months. Hunters can rely on the access and save fuel, which is also another factor of they opt hunt on the south side of the Peace River. The 2011 DFN TLUS documents the number of ungulate kills that occurs in this area. The DFN are concerned about timing and strength of the ice flow at this important crossing close to the community.

Community members also use the Shaftsbury crossing to save time and fuel when travelling south to Slave Lake and Edmonton in winter months via highways 740 and 49. Changes and uncertainty around freeze up and the condition of the crossing is of interest to some of the community given the additional time and fuel costs involved in going by way of Dunvegan and the Town of Peace River.

9.1.3 POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL IMPACTS AND ECOLOGICAL CHANGE - HUNTING

The DFN considered those potential impacts that are related to the ongoing operation of the Site C project and the role it will play in BC Hydro's integrated Peace River electric systems operations. BC Hydro has maintained that Site C's operations and its attendant effects will be one and the same as that of the WAC Bennett and Peace Canyon facilities. Thus the

following identifies the ongoing operational effects and their potential interaction with DFN interests in downstream Peace River areas. These are broken down by key value or potential project effect:

Terrestrial and Vegetation

Year by year the main stem of the Peace is becoming narrower becoming more confined to a single channel, while back channel, sides channels and synes are dewatering and drying. Further, every year, the tributaries further silt in / silt up given the year to year decisions to release a given amount of water from Williston Reservoir. This overall ongoing impact results in a change of vegetation and plant communities in the riparian zone and flood plain. The loss of backwater areas and the vegetation found in such areas is being lost and impacting ungulates. The presence of water, forage, cover and escape are important elements that govern habitat utilization by moose. With this said, other types of plant communities are coming into the dried areas, however these communities appear to be favouring and supporting elk and deer browse and habitat conditions.

The potential shift in vegetation may in turn have effects on the DFN and their preference of hunting moose from boat and long the shores of the Peace River and its tributaries. The 2011 DFN TLUS documents some examples of hunting occurring along the Peace River that is experiencing the shift in vegetation communities. This includes the Peace River from the BC / ALTA border to Smoky / Peace River confluence to Cadotte/Peace River confluence to Notikewen /Peace River confluence.

Wildlife and Wildlife Habitat

The changes to plant communities as a result of the operation of BC Hydro's Peace River facilities along with the Site C project will potentially impact ungulate populations along the Peace River (as set out in the preceding section). The 2011 DFN TLUS documents some examples of hunting occurring along the Peace River that is experiencing the shift in vegetation communities. As noted above, the Peace River Valley is a key hunting area for the DFN with examples recorded along the Peace River from the BC / ALTA border to Smoky / Peace River confluence to Cadotte/Peace River confluence to Notikewen /Peace River confluence.2.

While no formal traditional knowledge study or change analyses has been conducted to document this yearly shift, most DFN community members are able to discuss the change that is occurring, the drying of important moose habitat along the Peace and the displacement of moose by elk and deer along the Peace River.

As noted the Peace River acts as an important anchor for moose and other ungulate species. Moose tend to be found along the Peace River in the fall months and then move back to the hinterland and high ground areas to the east and west of the Peace River from

November to January / February. Depending on winter conditions, moose are found to migrate back towards the Peace River utilizing the slopes for thermal cover purposes and crossing ice covered sections or swimming open water sections. BC Hydro's year to year decision to release higher flows can lead to drowning of moose and other ungulates. Changes to ice formation may affect movement corridors in winter months.

Further in the summer, the islands in the Peace River are utilized by moose and other ungulates given the protection and isolation they afford during calving season. BC Hydro's year to year operating decisions and resulting operating regime results in lower summer flows which can expose the islands to increased predation. This trend could impact on ungulate populations from the BC / Alberta border to the Notikewin / Peace River confluence where some examples of DFN hunting on the Peace are documented.

Year to year changes in downstream flows and preferred operating regimes can impact waterfowl nesting and nest production. This could include the drying and dewatering of side and back channels and synes. The 2011 DFN TLUS documents bird hunting along the Peace River upstream of the confluence of the Peace River and the Clear River and the stretch of the Peace River between the Lieth and Peace River confluence to the Smoky and Peace River confluence.

Most DFN families can recall hunting and fishing along the Peace River by flat bottomed boats and canoes. Today, DFN people have and wish to use power boats to support shore based hunting and fishing. Some community members have anecdotally reported on the difficulties in accessing shores and back water areas, due to low flows during the peak of their preferred hunting season in the late summer and early fall. In general, boaters have trouble in reaching near shore areas along the Peace River with boats with outboard motors. Ideally, a shallow draft river boat is now more suited to the conditions on the Peace River, however these craft are cost prohibitive to DFN families. The change in the river (with low summer flows) has all but reduced DFN families ability to use boats to hunt in their preferred manner. Further low wages and the lack of employment in the community has barred boat ownership for most. However, in recent years three families have purchased smaller boats which they have to assist them in hunting and fishing. BC Hydro's year to year operating decisions and operating regime (with low flows in summer) has and continues to hamper DFN access and travel along the Peace River – their once preferred mode for fishing and hunting. One community member has access to a river boat and he undertakes a considerable amount of net fishing and hunting, providing fish and game to DFN houses. **(Source: Ken Rich – DFN Lands and Environment Director, 2012)**

9.1.4 POTENTIAL IMPACTS ASSOCIATED WITH TRANSMISSION LINE, HIGHWAY 29 ALTERATIONS AND BORROW PITS - HUNTING

The construction and ongoing existence of the transmission line from the Site C dam, through the Peace Moberly Tract to the Peace Canyon dam could have ramifications for wildlife populations and especially that of ungulates. The construction of the transmission

line over a two year period may result in a displacement of wildlife populations for a period of time. The transmission line will widen and existing transmission corridor. This will in turn widen a corridor in an area containing substantial wildlife habitat attributes which is far less fragmented and disturbed than other areas within the Peace Region and adjacent to the Peace River.

The Transmission Line ROW may result in increased fragmentation and promote access which could lead to an increased level in ungulate kills. Once BC Hydro has widened this corridor, other companies will be interested in twinning that corridor (e.g. TCPL's recent plans to build a pipeline along the same ROW corridor). The 2011 DFN TLUS documented some examples of DFN hunting occurring in and adjacent to the Peace Moberly Tract.

One concern related to the alteration of Highway 29. It is possible that a straightening of the road could lead to increased traffic speeds and a greater level of vehicle / ungulate collisions over time.

An additional concern arises in relation to the borrow pit that is proposed for the east end of the Peace Reach. It is possible that the sheer number of truck trips to and from the pit and dam site could result in an increased level of ungulate / vehicle collisions.

9.2 FISHING

9.2.1 POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE - FISHING

The DFN considered those potential impacts that are related to the upstream footprint of the project, the immediate ramifications of the project's construction and the initial ecological change that will arise as a result in the upstream component of the Site Project. These are broken down by key value or potential project effect.

Terrestrial and Vegetation

BC Hydro proposed to harvest up to 1 million cubic meters of timber from the upstream area of the reservoir and remove as much vegetation from the valley slopes and floor as possible. Given this, the potential for methyl mercury releases will be much less than what has occurred with reservoirs where the land base was logged and cleared less. However, it is anticipated that there will be spike in methyl mercury that will be present for some period of time. There is a reasonable concern for the potential for bio accumulation / bio-magnification issues that need to be addressed.

The 2011 DFN TLUS documented some examples of DFN fishing in the Peace River downstream of the Peace Canyon dam. There is potential for impact to fisheries resources in this area that has been fished by the DFN.

Aquatics, Fish and Fish Habitat

The construction of the Site C dam and the 82KM reservoir will result in marked and immediate changes for the upper Peace River in respect to water quality conditions, fish and fish habitat. The mere change of a natural river system from a lotic state to a reservoir in lentic or semi – lentic state may have effects on fish populations. This change may result in a shift in fish species composition, their abundance and distribution in the new reservoir and tributaries. The natural river system and habitat in place will be lost and or altered with differences in water temperature / oxygen levels / stratification effects potentially arising.

Overall a shift in fish species composition, abundance and distribution may potentially occur. While the new reservoir will not function as a storage reservoir, there may be some fluctuation in reservoir levels impacting littoral zones. The creation of a bank to bank dam may pose issues for upstream and downstream fish passage and limit habitat for fish. Fish mortality may arise from entrainment of fish via the turbines and spillway, when in operation.

The 2011 DFN TLUS documents some examples of community fishing activity occurring on the Peace River downstream of Farrell Creek, at the confluence of the Peace and Moberly River and at Moberly Lake.

Human Health and Safety

Methyl Mercury issues may arise in the area upstream of the Site C dam thus there are concerns regarding bio – magnification and bio – accumulation. The 2011 DFN TLUS documents some examples of community fishing activity occurring on the Peace River downstream of Farrell Creek, at the confluence of the Peace and Moberly River and at Moberly Lake.

9.2.2 POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE - FISHING

Aquatics, Fish and Fish Habitat

As is the case with the upstream scenario, the Site C dam may give rise to upstream and downstream fish passage issues. Fish will be passed through the turbines and over the spillway, when in operation. Discharge from the dam may alter aquatic conditions and conditions for fish from areas immediately downstream of the Site dam to the BC – Alberta

border and beyond. Total Gas Pressure (TGP) issues may arise if and when water has to be passed via the spillway. The dam will result in the change of a one front ice system on the Peace to a two font system. If the approved Dunvegan dam is factored in, then the Peace may witness a four front ice system in place and the timing and change in ice formation (extent and thickness) may result in impacts of over wintering habitat for fish and create near shore habitat issues with frazil ice formation.

Existing effects from BC Hydro's operations are anticipated to be transferred / transmitted further downstream with the placement of the new dam. The reduced natural variability in the river may affect fish and fish habitat. Change in downstream water quality and temperature is also anticipated which may have ramifications for downstream fish populations. Reduction of downstream flushing flows may continue the effect of sediment build up at tributary confluences and reduction in the main stem of the Peace will impact and reduce the overall habitat available to fish.

The 2011 DFN TLUS documented some examples of DFN community fishing occurring on north bank of the Peace River upstream of Talyor bridge; in the lower reaches of Pine River; at the confluence of the Beatton and Peace River, at Charlie Lake and in the upper Beatton River; on the Peace River at BC / ALTA border; at the confluence of the Clear and Peace River; on the Peace River at Many Islands and at the Fourth Creek - Peace Confluence.

The above noted changes, consequences and effects may have the potential to interact cumulatively with changes, consequences and effects that may arise as a result of the construction and operation of the Dunvegan Hydro – Electric Project. The effects could be both bio physical in nature as well as effecting the DFN socio – cultural reliance on waters, fisheries and the aquatic environment.

Human Health and Safety

Concerns for methyl potentially arise in areas immediately downstream of the Site C dam. Two community fishers have anecdotally reported that they like to fish below the Peace

Canyon dam given that Bull Trout appear to congregate there. These larger species may tend to feed on fish that have been entrained through the Peace Canyon dam thus bio accumulation / bio – magnification concerns may arise if community fishers begin catching and taking home Bull Trout and larger fish species from the area below the Site C dam.

9.2.3 POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL IMPACTS AND ECOLOGICAL CHANGE - FISHING

Aquatic, Fish and Fish Habitat

As noted, the Site C facility will become part of integrated Peace River system, where operating decisions are made about how those facilities should be operated on a yearly, monthly and daily basis to address electricity demand. Given these demands, Site C, along with WAC Bennett and Peace Canyon dams will be operated in a way that reverses that natural hydro-graph of the Peace River. This results and will continue to result in annual variation in river flows, with much higher flows in the winter and lower flows in the summer and fall. One key issue is the lack of higher water events that mobilizes sediments. As a result the Peace River and lower reaches of Peace tributaries will fill with more sediment year by year. This impacts and reduces fish habitat. This effect is particularly troubling given that such these zones provide the best opportunities left on the Peace River to DFN fishers.

Natural pulse events (high water flow events) that occurred naturally no longer occur and as a result, side and back channels have and will dry out as a result, further eliminating the riffle habitat where fish once used to utilize. When higher flows do occur and fish to migrate into side and back channels, they can become stranded when levels drop again or stressed and killed with raising temperatures in these areas.

Normal thermal conditions have and will continue to be reversed affecting fish and fish habitat. Downstream ice formation will change and alter and impact on overwintering habitat and near shore fish habitat. The Peace River my move to a four front ice system with two each possibly being created for Site C and Dunvegan, which will play a role in the location and may result in shifts in overwintering habitat. Near shore frazil ice formation may also impact fish and fish habitat in winter months.

Fish feeding patterns and periods within the mainstem of the Peace River are altered by flow changes. DFN fishers will choose a day within a given season to go out and fish. While conditions may initially appear optimal, flow fluctuations within the course of that day can occur which can all but eliminate the ability to successfully fish within that day.

The 2011 DFN TLUS identified some examples of DFN fishing activity occurring from the Site C location to the BC / Alberta border, from the BC / Alberta border to Many Islands on the Peace River, from the Many Islands to Dunvegan, from Dunvegan to the confluence of the Peace and Smoky Rivers and from there north to the south end of Notikewin Park on the Peace River.

Socio – Cultural Resources and Values

The ongoing siltation of tributaries and drying of back channels and side channels and low flow conditions in the summer and fall can create challenges for DFN community members to launch their boats and accessing the reaches of the river that tend to contain more fish.

Community Health and Well Being

DFN members continue to have a fear about fishing downstream of the DMI Mill on the Peace River. Even though improvements have occurred to reduce pollutants and effluent, community fishers not their concern about water quality and fish downstream and believe that fish and river sediments are not to be trusted. Thus community members avoid the downstream area, however report that few fish tend to be found in this area now. Effluent, suspended sediments and organics are still released from the DMI mill which may result in reduced oxygen levels in this area, which may become more of a limiting factor under low flow conditions. **(Source: DFN Lands and Environment Director, 2012)**

Cumulative Interaction with Dunvegan

The above noted changes, consequences and effects may have the potential to interact cumulatively with changes, consequences and effects that may arise as a result of the construction and operation of the Dunvegan Hydro – Electric Project. The potential effects could be both bio physical in nature as well as potentially effecting the DFN's socio – cultural reliance on waters, fisheries and the aquatic environment.

9.3 Trapping

In the 2011 DFN TLUS, the DFN made an active decision not to document trapping given the complexity in marking trapping activity so as not to detract from its primary research objective and degrade data quality. The consequence of this decision, is that DFN does not currently have any data on trapping activity.

From an historical perspective, the ancestors of the DFN were heavily engaged in the trapping trade along the Peace River. Through TLUS interviews, some participants were able to recall trapping into the 1980's and can recall travelling to trapping areas to trap. Further research is required to determine what traplines were historically held by DFN members and how these devolved to other parties or were clawed back by government agencies.

The DFN is currently undertaking planning to set up trapping training program to train interested community members and to buy back available trapline areas along the Peace River. The course is planned for this coming winter and spring. Two existing trapline

holders in BC and Alberta are actively involved in discussions with the DFN regarding the sale of traplines to the DFN.

The DFN are actively seeking research funding and a research partner to study the relationship of the decline of First Nation trapping, the rise of predators such as wolves (and their raised predation of ungulates) and the rise of beaver populations and the commensurate effect on water quality. It is possible that DFN and other First Nations may need to become actively engaged in trapping to maintain wolf and beaver populations to address the resource management objectives of a large and healthy moose population and to increase water quantity and quality in key Peace River tributaries. **(Source: Ken Rich – DFN Lands and Environment Director, 2012)**

9.4 Earth Material Gathering

9.4.1 POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE – EARTH MATERIAL GATHERING

Terrestrial and Vegetation

The creation of the reservoir will result in the loss of old growth forest and high conservation value forests on the valley floor and slopes. Alteration and loss of such forests changes ground vegetation and plant communities that tend to favour the unique growing conditions offered by the Peace River valley. Changes are underway, given the Pine Beetle infestation that has run through the area in the past decade. The DFN 2011 TLUS documented an example of a plant gathering site Peace River north of Peace/Halfway confluence.

9.4.2 POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL IMPACTS AND ECOLOGICAL CHANGE – EARTH MATERIAL GATHERING

Terrestrial and Vegetation

The Peace River system, which will include the WAC Bennett, Peace Canyon and Site C dams will continue to give rise to the drying of the downstream flood plain, back channels, side channels and synes. The vegetation and plant communities within these areas are undergoing transformation which may including culturally significant vegetation to the DFN.

The 2011 DFN TLUS identifies earth and plant material gathering at Clear and Peace River confluence; at Many Islands on Peace River, at the Peace River - Hines Creek confluence and the area stretching from the Lieth Creek and Peace River confluence to Cadotte and Peace River confluence.

10.0 Overnight Sites and Culturally Significant Areas

10.1.1 POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE - Overnight Sites and Culturally Significant Areas

Overnight Sites and Culturally Significant Areas

One overnight site was documented between Boucher Lake and the Peace River on the south bank of the Peace River. It appears that this site would not be disturbed, however the surrounding area would be dramatically altered.

Socio - Cultural Resources / Values

The node of cultural activity that occurs north-west of Hudson's Hope suggests that overnight camping is an important incidental activity that is needed to support those activities or rights. Even though only one example of an overnight site was documented, the loss of these lands will eliminate the opportunity to undertake many cultural activities and largely preclude camping along the free flowing stretch of the river.

Heritage and Archeological Resources

While the DFN has not had the opportunity to review the archeological impact assessment for the Site C project, it understands that the focus of the investigations has been in the dam footprint area and upstream flood impact zone. It is possible that an altered flow regime downstream of the dam may result different currents that could impact and expose archeological and heritage resources downstream over time. This would have the highest likelihood of occurring at where the Peace River bends to the north. The DFN would have an interest in impacted archeological sites should this effect be borne out.

10.1.2 POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL IMPACTS AND ECOLOGICAL CHANGE - Overnight Sites and Culturally Significant Areas

Culturally Significant Areas

As noted in the baseline section of the report, there are few areas left within the Peace Region and within the DFN Traditional Territory that have not been heavily fragmented and impacted by access roads, oil and gas infrastructure, timber harvesting, power corridors and agricultural clearing. This means that there few areas that are still intact that still provide strong connectivity for wildlife and that support DFN hunting, that contain rivers that

hold healthy fish populations and that are isolated or buffered sufficiently where the DFN feel that they can still go to practice their culture and traditional vocations. The key values of water, wildlife, fish, wetlands and relative isolation are key to DFN's ongoing use and utilization of the Peace River. The importance of this valley and aquatic system health within the Peace River is crucial given the losses that have been incurred in other regional water bodies and overall declines in fish and wildlife populations.

The Peace River Valley is one of the key areas left within the DFN's traditional territory that still supports these above key values. This is notwithstanding the fact that much of lands have been cleared to the bench lands above the Peace. The depth of the valley and the steep slopes along the Peace from the Beatton and Peace confluence down to the Notikewin and Peace confluence have acted as a deterrent to development, and the residual forested areas provide a sufficient buffer and connectivity for wildlife.

Given the drying out of and poor water quality conditions in Peace River tributaries and the impact to fisheries in more accessible rivers and lakes (e.g. "Figure 8 Lake", "Sulphur Lake, Boundary Lake"), DFN members can still catch fish where the tributaries meet the Peace and when and where backwater and side channels in the main stem still have adequate water in them. The importance of what remains in the Peace River Valley needs to be understood within this overarching context.

The valley itself still hosts critical values that act as a biophysical and cultural anchor or center point. On a review of the DFN 2011 TLUS, it is clear that a concentration of DFN activities occur along the Peace River and this concentration of activity occur due the many values present that have and continue to support the exercise of treaty rights by the DFN.

11.0 Socio – Cultural

11.1.1 POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE – SOCIO – CULTURAL VALUES AND RESOURCES

Heritage and Archeological Resources

As described in the 2011 DFN Ethno – Historical Review, the DFN have a long established relationship with the Peace River prior to, during and after the fur trade. The DFN, along with other Indigenous People along the Peace River, were key to the fur trade's expansion and success. BC Hydro has been conducting archeological investigations that have

resulted in the identification and recovery of pre and post contact heritage and archeological resources. The DFN is unsure at this point whether field investigations have been carried out the at Ft. De Pinette site or not. All First Nations along the Peace River, including the DFN a shared interest in sites and resources that were not identified will be lost as a result of flooding.

Socio – Cultural Values and Resources

There are some effects of projects that are hard to identify and quantify in measurable terms. The Site C Project may result in effects and change to the Peace River and the Peace River Valley that are in some ways measurable and in other ways that are not. An example can be seen in relation to the expansion of oil and gas fields near the Peace River. While community members can point to examples of change and impact, the most prevalent statement about such areas is, “it’s no longer the same”, “we can longer use the area anymore like we did”,” there is no point in going to the place anymore – it’s lost to us”.

Such comments are often based on perception of change about an industrially altered landscape and also based direct observation of an eco-systems response to stressors (e.g. there are less fish in this area than there once was, the water is less clear in the fall than it used to be etc.). The construction of the Project, the shift of natural river system to a reservoir and the overall alteration of the Peace River valley will potentially impact the DFN’s use and utilization of the river and valley and their long term relationship with the river valley itself. It is unlikely that any DFN hunter, fisher, gatherer or family will opt to spend time in the Peace River above the Site C dam given the change dramatic shift that will occur.

11.1.2 POTENTIAL INCREMENTAL DOWNSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE – SOCIO – CULTURAL VALUES AND RESOURCES

The 2011 DFN TLUS documents a node of cultural use activities and sites occurring between the Peace River and Pine River confluence and the Peace River and Beatton River confluence. There are numerous potential Project effects that potentially come into play in the immediate downstream area. Some examples of hunting and fishing occur within this area. Given the proximity of this area in the immediate downstream impact zone and the nodes of activity, a potential nexus of Project effects and DFN socio – cultural values and resources is deemed to exist which merits further investigation within the SIA.

11.1.3 POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE- Socio – Cultural Values and Resources

When viewing the DFN 2011 Ethno – Historical Review and the 2011 DFN TLUS a clear pattern of ongoing use and occupancy along the Peace River emerges for the community. All examples of traditional and cultural use activities are anchored to the Peace River and its tributaries. The range of community land and resource use examples depicted in DFN maps occur there due to the eco-system values held within and supported by the Peace River. Thus aquatic system health and any stressors affecting Peace River aquatic system health can and do place limits on DFN's ability to utilize the river and river valley.

Most notable are the ongoing effects of reduction in seasonal variability, very high flows in the winter, low flows in the summer, an altered temperature regime the loss of river width, the drying out and loss of back and side channels and synes, the infilling of tributary confluences and changing ice conditions. All of these bio – physical effects can and do translate into habitat limitations for fish and wildlife and even some plant communities.

This either potentially means a decline in populations of shifting away of populations to other areas, if they are able to make that shift. Given the opportunity, the DFN community could identify the real world effects and change that occurs year to year on the river and how this can affect their use of the river, its banks, floodplain and valley.

One example of how these effects play out on a year to year basis is for moose. As noted, the Peace River plays a critical role or acts as anchor for moose populations and movement. Historically, the moose come to the Peace River to take advantage of habitat attributes that the Peace River provides such as shelter, nearby cover for escape, connectivity via sloughs and valleys, and more secluded back and side channels that contain both water and aquatic plants. The loss or reduction of watered back and side channels, synes and former wetland areas along the Peace River reduces available and preferred habitat for moose and is causing moose to select other habitat areas. What this means for the DFN is that their historical patterns of river hunting have also had to change as their preferred species to hunt is not as frequently found in the preferred places to hunt.

Another example can be provided for fishing. Community fishers report that their ability to successfully fish in the main stem of the Peace River has been reduced. The preferred time to fish in the Peace River has been the late summer and early fall. Lower water levels in the Peace have reduced the watered run and riffle habitats that fish used to be caught in. More often than not, Duncan's fishers now tend to rely on and fish at the confluence of the Peace and cooler and clearer tributaries. Duncan's members report that they have the best chance of catching fish where the waters mix. However, as the confluences of rivers have built up

with silt and the silt is not moved or flushed out on a year to year basis, this critical remaining habitat for fish has declined and less fish are caught.

The approval, construction and operation of both the Site C Clean Energy Project and the Dunvegan Hydro – Electric Project introduces a large question in the minds of the DFN, of how the effects of both projects will mix, blend and interact? A key portion of the First Nations' traditional use area and traditional use activities centers on the Peace River in the zone where there may be this conflation of effects could occur impacting the socio – cultural interests of the DFN.

Further, the losses or limited ability to rely and utilize the Peace River by the DFN also needs to be considered in a regional of watershed context. The Peace River Basin and the Peace River Region has been impacted by various degrees by various forms of development and human activity, of which hydro – electric power production is one form. The stressors from multiple activities have acted in a manner to reduce and place additional stress on fish and wildlife populations in the Peace Rivers, in tributaries or sub – basins. For example poor water quality in the Clear River and possible overfishing has all but eliminated fish from this Peace River tributary. The same can be said of the Kiskatinaw River. Thus in DFN's viewpoint, all of the potential effects from the Site C Project need to be considered within this socio – economic and socio - cultural context.

As noted within the upstream effect section of the report and matrix, the very knowledge that the Peace River is being further altered, regulated and that its free flowing span is being reduced may have an effect and impact on the DFN's willingness to use that river. In many community members lifetime, the river has been changed and their relationship and use of the river has been altered as a result. The extension of regulation down river and works down river, may further affect the DFN's existing and increasingly tenuous relationship with the Peace River.

Further changes in and reduction in fish and wildlife habitat and presence in and along the Peace may very well lead to the DFN relying less on the Peace River and Peace River Valley as an area of critical community and cultural use. The project's construction and ongoing operation may carry attendant effects that have the potential to alter the very relationship that the DFN have had with the river. Such risks and potential changes are hard to measure, quantify and document and are often seen as "soft effects". However such change can and does affect a community's perception of an area including its utility, integrity, natural state, health and function and a place where people wish to go to and spend time in.

Given the above reasons, the DFN added "socio – cultural" as a value or sub – interest under the overarching heading of Land and Resource Utilization. In this case, the DFN thinks this value needs to be considered and where intersections between potential Project effects and the DFN's socio – cultural interests potentially occur, the DFN believes that such interactions require investigation under the Socio – Economic Impact Assessment, within the Environmental Assessment.

12.0 Community Health and Well Being

As can be seen, there are different ways of viewing, classifying and considering potential Project effects and the intersection with the key DFN value of Lands and Resource utilization. The vast majority of this document attempts to identify how potential bio – physical effects play themselves out and potentially impact on DFN various uses of the land. In the preceding section, it was noted how the same potential bio – physical effects can also translate into another range of effect and impact under the rubric of "socio – cultural effects. Another sub – interest or value in need of consideration is that of "Community Health and Well Being".

In this case "Community Health and Well Being" goes beyond conventional descriptions of community health and wellness (e.g. the presence or absence of physical health issues and the infrastructure and services in place to address community health needs). Rather, this sub-interest and value relates to the long term relationship that the DFN have had with the lands and waters in the Peace Region and how this translates into a critical aspect of community health and wellbeing.

Mainstream environmental assessment often inadequately addresses health, social and cultural impacts of concern by Indigenous People affected by resource development. In recent years, more attention is being paid to the inability of conventional environmental assessment and socio–economic impact assessment to address the long term and systemic impacts of historical environmental dispossession in Indigenous People and how this translates in to real world health impacts and health inequities. **(Source: Windsor and Mcvey, 2006).**

While statutory requirements pertaining to the conduct of EA's have come some way in mandating the assessment of health effects with an project specific assessment, significant limitations still exist within environmental assessment as currently practiced. Generally, their focus and concentration remains fixed on bio – physical effects and not the socio – cultural ramifications of major projects on Indigenous People. **(Source: Bronson and Noble, 2006)** While EA frameworks are moving to acknowledge the need to address such issues, the scoping of EA's and the practice often results in EAs that do not address the issues of most significance to Indigenous People – that of the cultural, social and health effects that stem from the cumulative impact of development of currently proposed projects viewed against a back drop of increasing industrialization and the process of alienation of the land by Indigenous Peoples. **(Source: Kryzanowski and McIntrye, 2011)**

With the above background providing some context, the DFN has some backing for its assertion that the further hydro – electric development of the Peace River could result in effects to community health and wellbeing. The DFN experience has been similar to that of other Indigenous People within Canada. It could be said it has in some ways been worse given the layering of development around the core community and through its traditional territory through the years. According to Councilor Martha Gladue, DFN elders and community members have discussed and talked at length about the following consequences of land use alienation and dispossession on the culture, health and wellbeing of the community:

- The surrounding of the community by cleared and fenced farmlands for many miles has contributed to a sense of isolation and being cut off from their traditional lands and culture. This has given rise to a sense that “the old way of life” is no longer relevant and created conflict in views on the importance of culture in the present
- Large portions of DFN’s traditional territory have been taken up by forestry, oil and gas, road and energy infrastructure. Elders have a feeling of “being lost” when they go out into the bush as travel routes, forests and geographic landmarks have been altered so dramatically. This contributes to a sense of loss, anger and bewilderment in the community and elders having difficulty in passing on culture to the next generation.
- Community members have and increasingly experience a difficult time in locating fish, wildlife populations and plant communities compared to decades earlier. It has resulted in community members having to travel greater distances and new areas with lower degrees of success. This contributes to a sense of frustration, anger and that hunting, fishing and gathering is no longer viable and the investment in time and resources is not helping feed families.
- The Peace River, once acted as the heart of the community’s culture and territory, however, the shrinking of forests around the Peace River, the decline of fish and wildlife resources in and alongside the Peace and river water quality is impacting people’s view of the river as healthy and vibrant and an isolated place where they desire to go to.
- Some people have stopped consuming country or bush foods and commodities given their concerns about toxins in the environment that could affect their families. This resulted in a loss of cultural skills and knowledge to the next generation, increased costs and a diet that may not be best suited to a people and culture that has been attached to the land for thousands of years and used to bush foods.

- The introduction of government regulations, no access areas, fenced lands, the trapline system and other forms of hard boundaries and real barriers contribute to a sense of a loss of freedom and that all that remains are small islands of forest and unfragmented lands which still affords some limited ability to DFN families to exercise their rights and practice their culture.
- Many community members feel that there is a need to re-strengthen family's connection with their land as people can "clear their mind" and have "a sense of wellbeing when they are in the bush".
- Those in council feel that successive administrations and generations lost time and the ability to put a stop to unfettered development when they were not able to appeal to the courts, did not have the resources to seek remedies and did not have the research and evidence to assert their rights and the impact to their rights.
- There is shared sense of anger in the community over how slow corporations and government are to address the real concerns of the community in relation to development. The community is tired of engaging in consultations and environmental assessments that generally always find that no significant effect arises from any project, that there are no cumulative effects at play that affect their use of lands and resources and culture and the bounds that are placed on the discussion, process and study. All the community sees is successive government approvals against a backdrop of a damaged and an increasingly degraded environment and rights that aren't being acted on and enforced by government.
- Community members are frustrated given that they are generally left to live with the consequences of the impacts while other parties gain the substantive benefits of resource development
- All of the above issues contribute to a sense of repression and dispossession. Many in the community feel that the rise in in drug and alcohol use through the last twenty years has been brought about by the sense of dispossession and powerlessness people have felt. There is a sense that this has contributed to internalized oppression and lateral conflict and violence in the community.
- There has been an awakening in the community and understanding of the above relationship between resource development, the colonial relationship, ecological impacts, social relations, a sustained culture and the maintenance and strengthening of community well-being and health and personal health and community health. There is a clear understanding of this relationship and the DFN has committed to re-strengthening family and community relationships and an

overall connection to their land base through planning, strategy, community consultation, cultural programs backed up with an investment in resources

(Source: DFN Councilor Martha Gladue, 2012)

The above information is set out as the DFN takes the view that Community and Well Being is a sub – interest and value of overall land and resource use. There is a sense that the EA for the Site C Project will mirror that of other past and more recent project assessments that simply doesn't take into account this critical facet of the community's life and reality.

An alternate framework to the EA process in general that considers such ramifications would be helpful and is needed, however, based on past experience, is not likely to occur in relation to the Site C Project. With that said, the further regulation of the Peace River and conversion of the river into a managed eco – system (with its attendant effects) may further exacerbate the alienation of the DFN people from the Peace River and Peace River Valley. Thus DFN takes the view that there will be an intersection between potential Project effects and community health and wellbeing and this intersection should be considered within the context of the environmental impact statement and socio – economic impact assessment.

13.0 Ecological / Treaty Area Interest

Environmental assessments consider effects of projects. The *BC Environmental Assessment Act* and *Canadian Environmental Assessment Act* contain statutory provisions that generally mandate the gathering of information to assess effects on Aboriginal people's use of land and resources. At this time, proponents are not directed to determine a project's impact or effect on the exercise of aboriginal and treaty rights. In theory the Crown is supposed to conducted separate consultations to determine this. In practice, the Crown uses the proponents EA and the results of the EA review process to make a judgment on the potential infringement of and impact to First Nations rights and interests. Thus, intersections between potential projects effects and information about the existence and exercise of rights are then identified to highlight the potential for the risk of infringement and impacts.

Whether this is a correct framework and approach or not, the project's potential effects on the First Nations' rights and interests needs to be considered. Thus within this document and the associated matrix, the DFN has included a section on "Ecological and Treaty Interests" of the DFN. Where a potential Project effect and impact is identified, the DFN deems that an intersection also occurs with their ecological and treaty interests.

The justification for this is, is as follows:

- The DFN has a clearly established treaty right to wildlife, fish, vegetation populations and communities
- The right to these resources can only be exercised and or reasonably exercised if there are sufficient populations available
- Sufficient populations are largely determined by habitats of sufficient quality and quantity or to support populations which rights are predicated upon
- Thus the First Nation treaty right goes beyond the mere undertaking of an activity – the interest is based on healthy populations, healthy habitats and any impact or effect that may affect the bio – physical environment

Another consideration needs to be taken into account. What has come into practice is a school of thought and action that only take into account effects and impacts where a First Nation can demonstrate historic and ongoing use and occupancy. While it is important to consider this, what also must be considered is the potential area over which rights can and may need to be exercised. As has been noted, the sheer level of impact that has been experienced in the Peace River Basin and Peace River Region is requiring DFN members and families to turn to far flung areas and areas considerable distance from their community. As has been noted, Indigenous People from Saskatchewan and the High Level area now come south to the Notikewin and Whitemud watersheds and the Sulphur Lake area given the numbers of caribou and moose that can be procured there. These people are having to travel further as they have run out of moose and other preferred resources close to their home and in their usual and accustomed hunting and fishing locations. The DFN are having to do the same. Thus the area where someone has fished, hunted and gathered in the past may no longer be able to support the need of a given family in the present and into the future.

Given this, even though a DFN member may not have hunted in the Rocky Mountain House area or Pink Mountain area, they may very well need to. They certainty have the right to do so, thus they also have an interest in any effects that projects may have on the bio – physical environment – even if it is an area where they have not exercised a given right.

The needs of the next generation must be considered in this context. The areas their mother and fathers have used and have shown them how to use, may not necessarily be the areas that they will use or need to have access to in their lifetime. Thus within this exercise the DFN created an additional sub – interest and sub – value under Lands and Resource Use, labeled “Treaty and Ecological Interest”. The DFN deems that where the Site C Project results in a potential bio – physical effect, an intersection exists with this DFN interest. These have been conservatively employed in the accompanying matrix.

14.0 Cumulative Interactions with Dunvegan Hydro Project

The DFN has contemplated the effects of the approved Dunvegan Hydro – Electric Project and how the combined, aggregated effects of both projects may potentially interact and jointly intersect with the DFN Lands and Resources Interest and the listed sub-values and interests. The run of the river project would be located approximately 1Km upstream of the Dunvegan Bridge and would result in backing of water or a head pond of 26KM upstream at a point on the Peace River due west of Fairview and approximately 20Km downstream of Many Islands on the Peace River.

In respect to Site C, BC Hydro has noted that it believes that there will be potential downstream effects felt along the Peace River, however such affects will become attenuated further downstream due to the flow contributions of downstream tributaries. The Dunvegan dam head pond extends 26KM upstream and that project's EIS considered a range of effects within a Local Study Area and Regional Study Area for species that utilize the full range of the Peace from the BC / Alberta border downstream of the Town of Peace River. Dunvegan's studies identified 10 species of sports fish and 13 species of non - sports fish that were present in the LSA and RSA. The following sports fish species were found to be most common (listed from highest to lowest occurrence)

- Mountain Whitefish
- Burbot
- Walleye
- Goldeye
- Northern Pike
- Kokanee
- Grayling
- Lake Whitefish
- Rainbow Trout

Dunvegan is considered to be significant as it marks the transition zone on the Peace for warm and cool water fish species. Knowledge and baseline data for fish movements along the Peace was a key issue that was acknowledged by the proponent and regulators and one of the key reasons of why project approval was deferred at an earlier period. The EIS and Panel Report for the project documents the long distance migratory habits of some fish species present in the Peace River. For example, Gold eye migrate along the Peace River from BC / Alberta border down to the Notikewin River and Walleye migrate between the Pouce Coupe River and the Smokey River. Within the EIS the proponent determined that the there was a potential for significant effects for several species with the head pond altering upstream habitat. The proponent deemed that while there was a potential for significant effects for upstream fish populations, upstream fish habitat was deemed to be low quality due to limited habitat complexity and fluctuating Peace River flows(which are largely determined by outflow from BC Hydro's upstream facilities**). (Source: Report of the Joint Review Panel - Dunvegan Hydro – Electric Project, 2008)**

Effects on moose and ungulates was another factor considered in the scope of the assessment with the proponent acknowledging changes that would ensue upstream and downstream creating challenges for wildlife to cross the river in certain locations. In addition, flow changes resulting in the loss of islands (critical habitat for ungulates) in the Peace River or low flows that facilitate predator access to these islands would force ungulates to find other rearing areas, however within a landscape area with limited secluded habitat.

Effects on ice formation were another strategic issue considered at length by the proponent and regulators with the project creating a shift to a two front ice system. In fact it appears that the two projects will shift the Peace from a one front system to a four front system between Peace River the upstream areas above Site C.

Thus the zone of interaction between two projects (between BC / Alberta border and Many Islands and Many Islands to Peace River) appears to warrant careful consideration for cumulative effects and their interaction with DFN's rights, uses and interests.

15.0 Interest Area 2: Community Demographics, Services and Infrastructure

15.1 Population

Prior to reviewing DFN population statistics, the DFN feels that there are some important considerations and perspectives that need to be take into account. The DFN has always taken the position that as a sovereign jurisdiction, the Duncan's People are the correct body that should determine who is, and who is not one of their citizens. The DFN has and continues to disagree with the notion and the Government of Canada's categories of "Status", "Non – Status" and "Metis" People and its power to determine who is, and who not a citizen of the Duncan's First Nation. From the DFN's perspective, they are Cree, Iroquois and Beaver People who continue to exist as an independent people and they alone should be able to determine their citizenship, as a sovereign people.

Another note needs to be made in respect to the different sources that track DFN population statistics. There are discrepancies in what is noted within the tables prepared by Statistics Canada, Aboriginal and Affairs and Northern Development Canada (AANDC) and that of the DFN. The DFN administration cautions that all parties should confirm statistical information directly with DFN. Given this, this community profile will reference Government of Canada statistics but rely on the overall population statistics provided by DFN. Clearly, a more fulsome assessment is required to understand the gaps and deficiencies in

government analysis and methodologies however such work is simply beyond the scope of this baseline report.

As of July 2012, the total DFN population is estimated to be 295 people, which is comprised of 126 Off Reserve Band Members, 126 On Reserve Band Members along with 43 Non – Band Members who reside on the DFN reserve. The total female population is estimated to be 153 and the total male population is estimated to be 142. 67 of those people are estimated to be between the ages of 0 – 14, 108 being between the ages of 15 – 35, 90 between the ages of 36 – 64 and 30 people 65 years and older. The DFN prepared the following chart that sets out the breakdown of the DFN population by residence, sex and age:

DFN Population Statistics

		0 – 14		15 - 35		36 - 64		65 +	
Totals		**Male**	**Female**	**Male**	**Female**	**Male**	**Female**	**Male**	**Female**
126	Off-Reserve	11	7	21	24	17	30	8	8
126	On-Reserve	25	17	22	28	14	12	4	4
43	Non-Members On-Reserve	2	5	9	4	7	10	2	4
295	Totals	38	29	52	56	38	52	14	16
		67		108		90		30	
		July 30, 2012 @ 295 - Total Population Sample							

Males	@	57	Off-Reserve Members	
	@	65	On-Reserve Members	@ 122
	@	20	On-Reserve Non-Members	@ 20
		====		=====
		142	Total Males	@ 142
		====		=====
Females	@	69	Off-Reserve Members	
	@	61	On-Reserve Members	@ 130
	@	23	On-Reserve Non-Members	@ 23

====		=====
153	Total Females	@ 153
====		=====

(Source: Audrey Lawrence for the Duncan's First Nation: July 2012)

DFN Population Age Distribution: As of July 30, 2012

0 – 14	67 of 295	=	23 %
15 – 35	108 of 295	=	37 %
36 – 64	90 of 295	=	30 %
65 +	30 of 295	=	10 %

(Source: Audrey Lawrence for the Duncan's First Nation: July 2012)

Aboriginal Affairs and Northern Development Canada (AANDC) holds that the total DFN Registered Population consists of 266 people with 138 or 48% of total population being female and 128 or 48% of the total population as being male.

Total Registered Population	**266**
Total Registered Male Population	**128**
Total Registered Male Population as % of Total Population	**48%**
Total Registered Female Population	**138**
Total Registered Female Population as % of Total Population	**52%**

(Source – Aboriginal Affairs and Northern Development Canada: June, 2012)

Overall the difference between the population statistics of the DFN and federal government sources clearly differ to some degree, however they are not so dissimilar as to prevent analysis in respect to the change in population and being able to draw comparisons between the DFN community and other provincial and regional populations.

Between 2001 to 2006, Government of Canada statistics hold that there was an overall population change in the DFN population of -15.7%., whereas between 2006 and 2009, a population change of 29.4% in the Alberta population occurred.

Similar to the national Aboriginal demographic trends, the DFN have a very high youth population: the median age being around 25, and getting younger. The youth population

has grown over 10% in the past 10 years and now makes up around 50% of the on-reserve population (this is consistent with the national Aboriginal statistics of 48% under 25 and a median age of 27. For comparative purposes these figures are much higher that non-Aboriginals: assuming that the regional and Alberta numbers are similar to national ones, then 31% are under age 25, the median age is 40, and the growth rate for the 15-29 age group is 6%. **(Source: Statistics Canada, 2009)**

Changes to law regarding Indian Status which has led to increases in the DFN registered population (as with other First Nation), which occurred most recently following the recent McIvor case. The DFN welcomes the registration and reinstatement of new registrants by the government, however it, like all other First Nations, has great concern about the limited funding and services that it has to service the existing population, let alone and expanded population. **(Source: DFN Councilor Martha Gladue, 2012)**

The actual DFN on - reserve population rises and falls during the year with students returning from school in the summers, with people going to camp in the winter to work and with a large number of people going to summer and fall camps for the key hunting and fishing season. The population statistics for the DFN are relevant to several key interest areas of the community vis a vis the Project and resource development and sustainability issues in general. These are elaborated on in other sections of this profile however can be summarized in the following way:

- Demographically, the DFN has a growing and relatively young population. As with many other First Nations, the growth of this segment of the community is of key interest and concern. The DFN is moving to establish new programs and trust funds to support the growing demand for education, training and skill development to meet growing need and demand. The vision of the younger generation and their desire to be part of shaping DFN's future is acknowledged and being acted on. The TLUS and Country Food Harvest provides some strong indicators of cultural resiliency in the DFN community and the interest by coming generations to continue to be tied to the land and practice their culture while engaging in the regional economy. **(Source: DFN Councilor Donna Testawich, 2012)**

- As a small community, the DFN has had few resources and relatively limited funds to support the needs of the community. The reality is that the community has faced static levels of funding in key government services for years. For example, under the post-secondary education funding envelope, the DFN is allocated enough money to send one (1) to (5) five students per year to secondary school. Further, the limited and aged housing stock in the community has not been sufficient to address the needs of a growing community and has placed considerable pressure on the community. The DFN has moved in recent years to construct new homes and upgrade existing homes at its own expense, given the lack of funds allocated through government sources. **(Source: Chief Don Testawich, 2012)**

- As noted with the DFN 2012 Country Food Harvest Survey, a not insignificant amount of country foods are derived from the Peace River Basin and Peace River Valley by DFN families. While a key driver for consumption of country foods is the DFN's way of life and culture, family sustenance needs is another key factor. Families need to be able to go into the bush and onto the waters to obtain food to support family needs through the year. The losses already experienced by the community over the last forty years (concomitant with the rise of regional resource development) has created a level of hardship for DFN families. The loss of fish and wildlife populations and or the shifting of these populations has had an especially acute effect on the community, given the lack of skills, education, capacity, resources and positive agreements with industry and the Crown to offset, mitigate against and compensate for these effects. (**Source: Ken Rich – DFN Lands and Environment Director, 2012)**

15.2 Housing

There are a total of 55 households on the DFN reserve near Berywn, Alberta. At this time there are no housing units on the William Mackenzie Reserve on the east side of the Peace, however community members spend considerable time at this reserve camping and using the reserve as base for hunting and other traditional and cultural activities.

There are 39 housing units located in a main sub –division in the geographic center of the reserve with another 16 houses located of the subdivision. All the units within the subdivision are serviced with piped water, sewer and natural gas. The other 16 units on the reserve use cisterns and septic systems, with water being delivered by truck twice a week.

The average household size or occupancy level is held to be 4 people per household. Most houses are of the typical single family residence style, however the DFN has just completed 3 apartment style complexes which have four, two bedroom suites to address the unique housing needs of single parent families. New housing starts have been relatively stable with few new homes being constructed however between 2005 and 2006, 14 new homes were built and two mobile homes were purchased. **(Source: DFN Community Researcher Audrey Lawrence –Personal Communication, 2012)**

There is a variety of ways and means by which on reserve housing is funded, paid for and financed. A key point of note is that even though all community members and the band pays for on reserve housing units, at the end of the day, they cannot legally own the land the house is situated on. This of course has placed significant limitations on the ability to leverage and obtain business financing, which has been a cornerstone of Canadian growth and economic development. The following types of house funding / holding arrangements apply to housing on the DFN reserve:

- Band-owned Housing Unit (purchased/built with DFN housing funds or a unit where the mortgage has been paid off and the unit is no longer a rental unit)
- Privately Owned by Member (purchased/built without DFN funds)
- Band-owned Rental Unit (purchased/built with DFN funds, without CMHC assistance)
- CMHC Section 10 Rental Unit (purchased/built with DFN funds & PHT loans, with CMHC assistance)
- CMHC Section 95 Pre-95 Rental Unit (purchased/built with DFN funds & PHT loans, with CMHC assistance)
- CMHC Section 95 Post-96 Rental Unit (purchased/built)

The Government of Canada allocates an annual investment to First Nations for on reserve housing through the Canada Mortgage and Housing Corporation and Aboriginal Affairs and Northern Development

Some of older housing stock is deemed to be in need of repair. In the last two years, the DFN undertook, at its own cost, a major renovations program for numerous households. 10 houses are deemed to be in need of major repair and 12 are deemed to be in need of minor repair.

This year the DFN is working to address mold issues that have arisen in 10 homes. In the 2003 – 20012 DFN Community Plan, 18 additional housing units were identified as being needed to address overcrowding and potential homelessness issues as the DFN population rises. Like many other First Nations, the DFN faces significant challenges in respect to building and maintaining its housing stock to meet a growing population. Income levels also make housing affordability a key issue. A priority for the community is to have housing in place to address the needs of elders and those that may need in home health support services and the needs of young men. There is an immediate need for an additional two four-plexes to meet the housing needs of young men and the over-crowding issues. **(Source: Councilor Martha Gladue – Personal Communication, 2012)**

A key issue that the community continues to grapple with is that of rent and payment affordability. While many community members are working to obtain training and educational credentials to secure more long term employment, the lack of employment or seasonality of regional employment results in many community members being employed a portion of the year. The lack of a stable income source can affect community member's ability to afford housing and to keep on top of their payments, which can in turn affect band

finances. The DFN shares this challenge with many other First Nations through the region. The DFN is working to establish a fund to support the income needs of elders to assist with high cost items such as housing and building training, education and employment opportunities to provide increased earning opportunities for community members so that they can afford housing.

The DFN is aware of the Government of Canada's interest in designing new legislation that would allow band members to own their own homes and the land it sits on. Home and land ownership has been a key that has allowed countless people within Canada to establish and build businesses. This option and ability has not been available to Aboriginal People which has impacted business development and job creation for communities like the Duncan's First Nation. With this said, the DFN is also concerned about the implications of converting reserve and Indian lands to fee – simple lands or similar arrangements that would erode the Crown – First Nation relationship, harm Aboriginal Title in relation to existing reserve parcels (and adjacent lands) and potentially lead to a breaking up and selling off of reserve lands impacting community cohesion and families**. (Source: Councilor Donna Testawich, 2012)**

15.2.1 Housing – Site C Project Interface

No specific effects or impacts arising from the construction and operation of the Site C Project are anticipated to arise in relation to DFN housing interests. Should BC Hydro enter into an agreement or take special measures to train, employ or contract DFN members in the construction of the Site C Project, there could be a positive effect arising from the project in that some DFN members would have more income to allocate towards housing costs. If BC Hydro entered into some form of impact benefit agreement with the DFN that is being contemplated for Treaty #8 First Nations in BC, presumably the DFN would have access to additional resources to address community infrastructure and identified housing needs and shortfalls. However, no such mandate has been granted thus no positive net benefit would be seen to arise from the construction and ongoing operation of the Project.

15.3 Infrastructure

Water Supply & Distribution System

DFN's water supply system was built between 1992 and 1994 and is comprised of one underground water supply ½ km south of the DFN's water treatment plant, raw water supply lines, reservoir, truck fill station and distribution system. The majority of the residences and buildings have piped water service through a series of water distribution mains. The mains consist of two main loops with laterals to the cul-de-sacs and village core area complete with 19 fire hydrants. There are 15 residences in the rural area, known as off-subdivision units with their own water cisterns and one has a well. The existing water supply system

has the required capacity for existing and future needs of the community, although it requires repairs and maintenance. There are 39 households on accessing piped water service, on the area known as the sub-division or the town site. **(Source: Duncan's First Nation Community Development Plan, 2003 – 2013)**

The system is rated as being in an operating and safe condition, however boil water advisories have been issued intermittently. Water hardness is also an issue that may need to be dealt with to bring the DFN's potable water supply in line with Canadian drinking water quality guidelines.

Sewage Collection and Treatment System

The town site is served by a sewage collection system that consists of gravity collection sewers, one lift station with force main, and a sewage treatment lagoon. Households in the rural area and the off-subdivision units, have private mound systems. The sewage lagoon was constructed in 1992 with the collection system. The treatment system consists of one facultative cell with 60-day detention and one storage cell with 365-day detention. The lagoon is located immediately west of the community.

The sanitary collection system consists of sewer mains with service connections. Flow from a majority of the community is directed to a lift station located in the east central portion of the residential core area. This flow is then pumped to the downstream portion of the gravity collection system and ultimately the sewage lagoon. It is expected that future development will be to the east and flows generated from this development will be directed into the existing lift station and force main. The existing lift station and force main have the required capacity to accommodate future developments. **(Source: Duncan's First Nation Community Development Plan, 2003 – 2013)**

Solid Waste Disposal

There is no landfill site on the First Nation. Solid waste is trucked to the Municipal District (M.D.) of East Peace Landfill site. The DFN pays tipping fees for this service.

Power, Heat, Telephone & Internet

The DFN has all key utility companies on reserve. These are as follows:

North Peace Gas: NPG has main gas lines installed in the subdivision and off- subdivision. For each new housing unit constructed in the future, there are no present limitations for expansion.

Direct Energy: The reserve is served by a rural single-phase 14.4 KV circuit, which could be extended at a minimal cost to accommodate other residential and smaller commercial types of load. Three-phase would require additional lines being built for a minimum of two miles at a substantial cost.

Telephone Service: The community is able to access a variety of telephone companies, with TELUS being the norm. For cellular service, the community members are able to access a variety of cellular companies.

Internet: DFN has a contract with an internet provider for its band administration offices and health centre. The DFN has upgraded wireless service to support the new adult education upgrading centre in the DFN community hall. The community members have a choice of internet providers. While no survey has been taken in respect to the community ownership of computers, it is estimated that at least every house in the community has a computer.

Community Buildings

The following is a listing of key community buildings and the date each piece of infrastructure was constructed:

Historical Church	**1992**
Band Office	1992
Band Office – Addition	1992
Health Centre	1993
Public Works Building	1993
Public Works Storage Facility	1993
Admin – JT Centre	1992
Recreation – JT Centre	1992
Water Treatment Plant	1992
Health Centre Storage Shed	1992
Band Office Storage Shed	1992
Water Treatment Plant Storage	1993
Head Start / Daycare	1993
Store	1992
Health Care Storage Building	1992
Public Works Storage Shed	1992

There are some exciting developments underway at the DFN community, with new community buildings being constructed to better address and accommodate the needs of the growing community and reflect the community's aspirations and goal of capacity building and self-reliance. In the last three years, the DFN has worked with supportive industry partners to make investments to the community recreation centre. The recreation centre supports a variety of cultural and youth programs housing a full sized gymnasium and new fitness and weight room. The community meals on wheels program operates out of the kitchen within the facility. In addition, the new adult education upgrading / e – learning centre has been added to the building supporting this new and important educational initiative driven by the DFN and supported by interested and supportive resource companies.

The band has just commenced construction on a new community administration complex that will be the new centre of governance for the community. This building is required given the deteriorating condition and inadequate space afforded by the existing building. Health concerns have been identified with the existing office space and the new building will be a welcome addition. The centre will have many features and amenities that promote and focus on the culture of the DFN, elders, including a repository for cultural and archaeological resources.

Within the past year, a band member owned and ran a store in the core area of the community. However, products and services were very limited. Gas was also available at the store. While the store was limited in what it provided, it did provide a place where community members could obtain some basic food supplies and gas. The DFN has worked with an interested and supportive resource company that is working with DFN to construct a new community owned store and gas station. The store will be leased out. The DFN wishes the store to provide a better range of staples and products to support the needs of families and to reduce their transportation costs.

15.3.1 Infrastructure – Site C Project Interface

No specific effects or impacts arising from the construction and operation of the Project are anticipated to arise in relation to DFN transportation interests. If BC Hydro entered into some form of impact benefit agreement with the DFN that is being contemplated for Treaty #8 First Nations in BC, presumably the DFN would have access to additional resources to support community infrastructure and identified transportation improvements. However, no such mandate has been granted thus no positive net benefit would be seen to arise from the construction and ongoing operation of the Project.

15.4 Transportation

The DFN holds two parcels of reserve lands. This includes the Duncan's 151A located approximately 425KM south – west of the Town of Peace River and the William Mackenzie

Reserve 152C located approximately 35 KM south – east of the Town of Peace River. In terms of driving distance and time the Duncan's First Nation is located approximately:

- 42KM from the Town of Peace River which takes 25 min to drive the distance one way
- 30KM from the Town of Fairview which takes 20 min to drive the distance one way
- 170KM from the Town of Grande Prairie which takes 1Hr 40 min to drive the distance one way

The DFN accesses these destinations via Highway #2 or the "Mackenzie Highway" which runs north and south from Grande Prairie and north to the North West Territories. Several DFN members also travel south – east of the reserve and use the Shaftsbury River crossing in winter and summer seasons. Numerous community members report use of the ferry in the summer and the ice bridge over the Peace River during winter months to access hunting grounds to the south of Peace River (approximately the area south of the Peace River and north of Watino). Others will also use this route in winter and summer months to drive south to Edmonton as it can eliminate up to 30 – 40 minutes off the trip.

Given the lack of services available on the reserve, community members are required to take frequent trips to these centres to avail themselves of all key services and goods such as food, house supplies, fuel, other commodities, health services and government services. Highways are well maintained however driving in winter months can be challenging given quickly changing weather conditions and the amount of industry traffic that uses the road. Frequent trips drive up gas consumption costs for community members and the DFN.

All roads leading into the Duncan's community, in the community and in the reserve subdivision are gravelled surfaces. These roads are generally well maintained which means that there is not as much wear and tear on community vehicles as experienced in other northern reserve communities. However a permanent, sealed road might assist in maintaining the longevity of community vehicles. DFN contracts the services of La Prairie Group, from Grimshaw to help maintain key access roads into the community, community roads in the sub-division and entrances to private driveways. When extra funding is available, DFN hires community members to help with the ongoing maintenance of the network of gravel roads on the reserve given the wear tear from agricultural, industrial and community users. In the past year, the DFN re-gravelled all the drive ways for community members to make access to their homes easier and drier. The William Mackenzie Reserve to the south – east of Peace River can be easily accessed by range and township roads or by of the Harmon Valley Road. There are two secondary gravelled roads that allow access into William Mackenzie Reserve.

While numerous community members hold drivers licences and can afford vehicles, many do not have licenses or have a permanent employment that would allow them to afford a vehicle and associated upkeep and insurance costs. This means that many people are not

able to access outside services and obtain commodities and have to obtain the assistance of family and neighbours. The lack of driver's licenses is also identified as a barrier to some forms of employment and contract opportunities that require a license. The DFN will be hosting driver's education training to assist up to 16 community members to obtain their driver's licenses.

Until recently, bus Greyhound Bus services were available north and south on the Mackenzie Highway that DFN members could avail themselves of. Greyhound has been cutting services in the north and now a private bus service provides a daily service between High Level and Grand Prairie and High Level and Edmonton. Greyhound buses can still be taken from Peace to the NWT and to Edmonton. The DFN has two schools buses that transports 45 students to Berywn, Grimshaw and Peace River. A medical bus is also available to take community members to medical services.

Community members can access air services via Peace River and Grand Prairie; however airfares from Peace River to Edmonton are cost prohibitive. There is an airport at Peace River with connecting flights to these centres however the costs of airline tickets are generally much greater than what a person can drive for and as such, DFN members generally drive when required. Prices can vary from $600.00 one way per ticket to $1,200.00 depending on the time of year. Air Canada and Westjet flights can be accessed via Grand Prairie for more cost effective prices to major urban centres, however an hour and half trip is required from the community. Community members generally access major centres such as Edmonton and Calgary by way of car.

The issue and challenges around transportation are made all the more significant and problematic given the lack of commodities and services on reserve. The privately owned gas station and store closed within the past year. The DFN is now commencing construction on a new store and gas station to help community member lessen the number of trips they need to take to off reserve centers of commerce. The cost of transport to families and community members cannot be overstated and the issue is becoming more significant with rising fuel costs. In light that a person on Income Support received only $260.00 per month, the cost of fuel is a significant factor that impacts a person's quality of life. **(Source: DFN Community Researcher Audrey Lawrence, 2012)**

15.4.1 Transportation – Site C Project Interface

As noted in the Land Use Interest section of the report, the only identified impact and concern related to Transport and the Project is related to ice formation timing at the Shaftsbury Crossing. Community hunters that hunt south of the river in winter months may have to alter their travel plans and patterns and incur additional costs by travelling around for more weeks via Peace River or the Dunvegan crossing. Further some intermittent travel may be affected for those people that use the Shaftsbury Crossing in winter months to cut time off to reach Edmonton.

Potential effects on community members travelling on the Peace River is discussed in the Land Use section. Those that do hunt and fish on the Peace River using boats will not likely be impacted given that no band member has reported that they travel by boat upstream of the Beatton / Peace River confluence. Most boat based hunting and fishing on the Peace appears to occur from the BC – Alberta border down to Dunvegan. With that said, navigation and transport issues will arise as a result of the ongoing operational regime of Project and the upstream BC Hydro facilities.

Apart from these two exceptions, no specific effects or impacts arising from the construction and operation of the Project are anticipated to arise in relation to DFN transportation interests. Should BC Hydro enter into an agreement or take special measures to train, employ or contract DFN members in the construction of the Site C Project, there could be a positive effect arising from the Project in that some DFN members would have more income to allocate towards fuel and the purchase and maintenance of personal vehicles. If BC Hydro entered into some form of impact benefit agreement with the DFN that is being contemplated for Treaty #8 First Nations in BC, presumably the DFN would have access to additional resources to better address community infrastructure and identified transportation improvements. However, no such mandate has been granted thus no positive net benefit would be seen to arise from the construction and ongoing operation of the project.

15.5 Health and Social Services

The DFN places a high priority on community health and needs. It has a Director responsible for overseeing all health related initiatives. Some of these services that DFN currently delivers include:

Homemaker Aide: Provides assistance for the elderly and disabled for the cleaning of the client's home. The program is accessible once a health assessment is completed by the Community Health Nurse for a community member. This program provides part-time employment for 4 or 5 community members. At this time, all Homemaker Aides are resident on-reserve.

Life Line – Telephone Emergency Line: This service provides additional safety and security for the elderly and the disabled who live alone. This year, 3 community members will receive the Life Line service. The equipment and installation are paid for by Alberta Health, with the client paying the regular monthly telephone billing.

Meals on Wheels: This program provides a meal three times a week for the elderly and disabled. The program provides part-time employment for 2 community members.

Respite Care: This service is provided by DFN and not through a government sources. The closest respite care centres are located at Grimshaw and at Peace River.

Home Care Visits: This service is provided on a weekly or as-needed basis by the Community Health Nurse (CHN) and the Community Health Representative (CHR) to the elderly, the disabled, and mothers with newborns. Both positions are staffed by non-community members. At this time, DFN does not have a community member who is trained as a CHN. There is only one community member who is a trained CHR. At this time, a young community member enrolled in Grade 12 has articulated the desire to enter into entering nursing studies.

Health Screenings: Through the year, certain screenings are held at the Community Health Centre. For example, twice a year, community members are screened for diabetes and other diseases via a retinal screening test. The annual retinal screening has been able to catch members who are experiencing early stages of diabetes. However the government just announced that this program is to be cut, leaving DFN in a position to come up with other funding to continue with this important service.

Tele-Health & Health Library: This service is located at the Health Centre and functions as a centralized Health Library where all community members can access medical information, including videos. Tele-Health is also available every week. A schedule of topics is available from the Health Director or the CHR / CHN.

Diabetic Testing: Community members with diabetes are able to come to the Health Centre, on a daily or weekly basis or as needed. Vegetable & food coupons are also given to community members with diabetics, on a weekly basis.

Chronic Care Management: This service supports community members that have returned from hospital following a serious operation who are in need of supervised medical care. DFN ensures a community member capable of caring for the client, is compensated for health aid care and supervised by the CHN and/or the CHR.

One-on-One Client Counselling: When requested, community members are able to speak, in confidence to the health staff, on health matters. This service can be provided at the client's residence or on a walk-in basis.

Quit Smoking Program: Once a client requests help in quitting smoking, the CHN will place a call to the Wal-Mart pharmacy in Peace River. The pharmacist works with clients to determine what nicotine withdrawal program or product best suited to the client's needs. This program is covered by Alberta Health Services.

Mental Health Program: A psychologist visits the community on a regular basis to provide for mental health care needs of the community. In crisis events, mental health services are provided for the individual and families. Community members also have access to mental services located off-reserve. However these services are being cut back by the Government of Alberta which limits options for community members.

Solvent Abuse Program: While solvent abuse has not emerged as a significant issue at the Duncan's community, information on preventative measures and the dangers of solvent abuse are available.

Brighter Futures Program: This program provides funding in activities and events which is geared towards the children and the youth. The Head Start Program is a pre-school program geared towards children from 3 years to 6 years old. The DFN has just upgraded a room in the community centre to house the program. Elders from the community come in to instruct the students in Cree, teach traditional crafts and impart cultural knowledge in other areas. This upcoming year, Head Start students will be transported each afternoon, to join the Pre-School program at the Sagitawaw Friendship Centre at Peace River. The Head Start Coordinator is a community member and is currently completing on-line post-secondary studies in Child & Youth Development.

NNADDAP Program: This is an addictions program geared towards assisting the community members who are dealing with addictions such as alcoholism, prescription pill abuse, drug abuse, gambling addiction, smoking, etc. Referral to addiction treatment centres, not available on reserve, is also available. Each fall, the NNADAP worker delivers a week of workshops and events highlighting the reality of addictions and the preventative and awareness measures which may help called "National Addictions Awareness Week", specific for Aboriginal communities. The current NNADAP worker is a DFN member who has received training in Community Addictions at the Nechi Institute in Edmonton. Three other community members have received Community Addictions certification from the Nechi Institute.

Community Health Representative: The CHR is responsible for taking water samples, liaison with the Regional Environmental Health Officer, foot care, monitoring the Baby Wellness Clinic, conducting home care visits.

Dental Hygienist: A Dental Hygienist program will be available on a weekly basis, within the next few months. The Health Centre has and is equipped with dental equipment. Dental services such as extractions, dentures, etc. are available at Grande Prairie, Alberta – an 1 ½ hour drive one way. Dental service is unavailable from the local dentist offices surrounding DFN, due to the nature of the timeframe for payment of services from AANDC.

Immunization Programs: All the children and adults immunization's files are kept updated and the CHN and CHR contacts the community members to notify them of due immunizations. It is the parent's choice to immunize their child and if there are concerns, current information is made available to the parent. Each autumn/winter, DFN provides flu shots for all community members. To ensure the flu shots are kept available and active, a generator has been installed in case of power failures.

Teddy Bear Fair: The Teddy Bear Fair is sponsored by Alberta Health and is for children aged 0 to 10 years. Motor skills are tested, height and weight measured and speech and

hearing is also tested. Where there was a concern found, the parent/guardian was given a referral for further testing and diagnosis.

Medical Transportation and Referral Services: The medical transportation service is staffed by 2 DFN employees. Community members are driven to and from health appointments.

Baby Wellness Clinics: Pre and Post Natal Care are available on a weekly basis for all mothers with newborns on-reserve. If a mother is unable to go to the Health Centre, the CHN and CHR will go to the mother's residence. Provision of pre-natal vitamins and milk coupons are given to the mothers with new born infants.

Weight Room: A room has been converted into a weight room where community members are able to use weights and other exercise equipment. At this time, volunteers are used so as the community members can use the weight room after hours. In the future, an indoor track for walking and running will be installed. Shower facilities will soon be available.

Women Wellness: Each year, the Women Wellness clinic is held at the Health Centre to provide services to meet the specific and unique needs of women within the community.

Environmental Health Home Inspection: A qualified inspector is called in when a tenant/client has a concern on mold in their home. The Health Centre can support the mold to be removed, but cannot legally mandate the work to be done.

(Source: Personal Communication - Julia Knott - DFN Health Director: 2012)

The DFN is encouraging and supporting community members to move into the health care professions through supporting post -secondary education. At this time one community member who is currently in Grade 12 is taking the courses to support her entry into a post-secondary nursing program. Another community member is currently enrolled in health Care Aid course. One community member has received a certificate as a Community Health Representative and another community member is presently enrolled in Pre-Med, 2nd year.

There is a Health Data Base called the C.B.R template (annual report) which notes statistics for population, Head Start, births and other key community health related statistics. This information is of course considered confidential and the data is protected. Through planning and community consultation, the DFN Health Department has deemed the following as priority areas:

- Young mothers
- Diabetics
- Quit smoking campaign
- Exercise awareness – weight room

- Prevention is promoted.

(Source: Julia Knott - DFN Health Director, 2012)

The DFN also hosted the following community health related workshops entitled:

- Life Line
- Quit Smoking
- HIV / AIDS
- Menopause
- Diabetic Awareness and Care
- Foot Care
- Fall Prevention
- Holistic Healing
- Grief and Loss
- Youth Workshops
- Baby Food Making
- Non – Insured Health Benefits

The DFN is also moving to establish an elders' pension or income support program from the limited amount of revenues that DFN is obtaining through its joint venture agreements. It is doing this to help elders and their families adjust to the rising cost of living and in recognition of the critical role that elders have played in maintaining and transmitting culture within the community.

Health and wellness is defined when all health needs and concerns are met, children are looked after, and everyone is accounted for. There is a clear recognition of the relationship that exists between community and family health and wellness and ecological health and cultural sustainability. In the past there have not been the resources or partnerships in place to examine and verify these links in a way that is meaningful to the DFN. However, the initial DFN TLUS and Country Food Harvest Survey provides a good baseline from which to build. These studies confirm the importance of having families being connected to the land and the direct relationship with overall health and well-being.

15.5.1 Community Health – Site C Project Interface

The relationship between community health and ecological health and sustainability is elaborated on within the Land Use section of this report. The DFN has identified a potential range of potential Project effects and the health and wellness of the community. It is understood that BC Hydro or regulators may not agree with these identified interactions given the preference of proponents and regulators to establish direct cause and effect in project specific environmental assessments. As noted, there is growing body of academic

literature and opinion that discusses the relationships and correlation between community health and well – being and a community's cultural connection with its traditional lands and the state of eco – system health within the hosting environment. With that said the practice of environment and socio – economic impact assessment has found it difficult to assess, quantify and address such less tangible effects.

The Western Sedimentary Basin, the Peace Basin and Peace River Region have experienced dramatic ecological and social change within a thirty to a forty year period. Within the lifetime or living memory of people, the DFN culture and society has transitioned. While life in the past was at times challenging and difficult, the DFN was a self – reliant, successful and stable community whose health and identity was tied to the land. Through the past forty years, this relationship and the health and well – being and culture of the community has been heavily impacted and altered through changes in the ecology, regional economy, levels of development and regulation. In spite of this, the DFN community and the health and well-being of the community are still heavily influenced by its connection with the land and the eco – systems ability to provide for and take care of the health and well-being of Duncan's People.

The DFN is of the view that construction and ongoing operation of the Project, as part of BC Hydro's intergraded hydro – electric system may carry an array of bio – physical and socio – cultural effects that will ultimately influence the community's ability to depend on the Peace River and its overall relationship with the river, as the river is converted from an unregulated free flowing state to a more heavily regulated, unnatural river system.

15.6 Emergency Services

The DFN community is covered by ambulance services based out of Grimshaw. People in need of emergency and triage services are taken by ambulance to Grimshaw or the hospital in Peace River, approximately 35 - 40 minutes away.

The DFN has a policing agreement in place with the RCMP with the local Grimshaw RCMP that resulted in the creation of store front presence in the community and a liaison role within the community. The DFN Chief and Council liaise and meet on a regular basis to discuss community safety and to develop plans and initiatives to support community wellness and overall safety. One community member has completed the pre-physical part of his application to the Edmonton Police Force.

The Brownvale Volunteer Fire Department has an agreement with the DFN. The DFN has a water truck and equipment that can be used to supplement the services in the event of fire. A recent brush fire incident within the past three years tested and confirmed the fire prevention measures in place.

The DFN has a “Community Disaster Response Plan” in place and the duty of maintaining and updating this plan falls with the DFN Health Director. Should an emergency situation arise, evacuees will be placed at the community centre. While oil and gas activity takes place in close proximity to the community, there appears to be limited sour zones in and around the community, thus no sour gas emergency plan has been developed or forwarded by any company. However the DFN does have concerns about the number of people that are out in the bush at key times of the year in areas where drilling and oilfield operations are underway in sour zones.

The DFN community is situated on and within a heavily travelled wildlife corridor that runs through the community and down to the Peace River. Many ungulates are found here which can also attract predators such as bears and cougars. Should a bear or cougar be sites, notices are posted and calls are made to each household.

15.6.1 Emergency Services – Site C Project Interface

No interaction between the area of community emergency services and the Project are deemed to exist. With this said, it is noted that BC Hydro has invested considerable time in engaging with the Town of Peace River in consultations about operational and flood impact issues and water use planning exercises. The DFN, to its knowledge, has never been approached by BC Hydro in relation to these or other operational and safety issues. Over the past decade, BC Hydro has significantly changed Peace River operations that has resulted in very high water or very low water levels (e.g. 1992, 1997 and 2003) with no known communication with the DFN. As a downstream community with numerous community members that use and rely on the Peace River Valley, the DFN is of the view that more can and should be done to involve the DFN in system operations issues and facility operations undertaken in response to extreme weather events, dam maintenance and upgrades.

One further issue arises with the operation of the Project as part of the Peace River hydro – electric system. As noted, the Crown surveyed numerous parcels and set aside six (6) blocks of reserve lands on the banks of the Peace River. These lands were purportedly surrendered to the Crown by the DFN, however this assertion is disputed by the DFN and has is subject of unresolved claims advanced by the DFN. The DFN wishes to obtain these lands back to support an array of socio – economic and cultural goals of the DFN. However the uses that these lands could be put to may be limited given the reality of flood events resulting from the ice regime that results from a combination of weather, climatic and operational factors. Loss of foreshore may also be an issue with ongoing erosion.

15.7 Childcare, Education and Training Services

15.7.1 CHILDCARE

Pre-School

The DFN has and is working to establish an interconnected array of supports and services to support the needs of families and early childhood educational needs of early learners. Some of the current programs in place include:

Head Start: The DFN has pre-school programs for its on-reserve community members. A key program is the Head Start Program. This year the Head Start Program will be re-located into the community centre from the Daycare Centre. A Head Start Coordinator has been hired and who is taking the necessary courses to enhance her ability to meet the responsibilities. Due to the move, DFN is now able to accept up to 14 children from ages of 3 to 6 years old. Children are currently being enrolled in this program. This program incorporates and involves elders and parents and provides a focus on early childhood education fundamentals and culture. Head Start programs focus on teaching social skills and preparing children for entry into the school system and the success of the program has been demonstrated throughout Canada.

Kindergarten – Grade 4: Parents/guardians are able to place their children with the "Pre-K4" services offered at the Holy Family Elementary & Junior High School at Grimshaw. At this time, the community has two (2) children attending Pre-K4. Transportation for the Pre-K4 has been a concern for Duncan's First Nation due to the lack of funding for pre-school programs. Notwithstanding, parents have taken on the financial responsibility as they feel this program is beneficial to their children.

Kindergarten – Grade 5: There are three (3) "K5" students registered this school year who will l be transported to Berwyn or Grimshaw by the DFN school bus that operates the Berwyn-Grimshaw bus route.

DFN Daycare: The DFN now has received "special certification" though the Government of Alberta and the daycare is expected to receive full certification in the upcoming September inspection. The day care will be able to accommodate up to 14 children, ages 2 to 5 years. The day care is funded by Human Resources Development Canada.

Daycare workers used to be designated as "Level I, Level II, etc." when working with children in Head Start and in Daycare, but will be receiving a new title as of September, 2012.

One community member is receiving Level I training through an on line course and another

community member is working to complete the 2nd year practicum in Child & Youth Development. Setting up the infrastructure for a day care program is doable however, finding qualified workers has been a challenge for the DFN. The DFN is working to encourage more of its community members to enroll and succeed in education so that all of its internal positions may be staffed by community members one day. This held to be especially important in the day care and early childhood education areas. The lack of day care and day care subsidies in the past has hampered community members in attending school and obtaining long term employment. **(Source: DFN Councillor Virginia Gladue, 2012)**

15.7.2 Elementary and High School Education

In respect to K – 12 education, the DFN faces challenges similar to that of other small First Nations. For example, it is logistically and financially prohibitive at this time to establish its own school system based within the community. As such, families send their children off reserve to schools in nearby communities by bus. Some children attend the Lloyd Garrison School in Berwyn. Others attend Holy Family School and Grimshaw Junior – Senior High School in Grimshaw. Others complete Grade 12 at Glen Mary High School in Peace River.

A key issue for Duncan's families is that of transportation. Many families lack adequate transportation to get their children to school, participate in important after hours school events and parent teacher interviews. The DFN has worked with industry partners to procure a new school bus to accommodate the needs of DFN families. While one of the off reserve schools has an aboriginal liaison support worker position in place, the services are not provided at all schools and cannot be expected to meet the many needs of community students. There is a need to increase mentoring, advocacy, teacher – parent liaison and support services to DFN children in the school district and at the reserve.

There are other challenges to supporting young learners through the educational system as it is. While some families are able to support the needs of children as they go through the elementary and high school system, others cannot and too many children have left the current system leaving their education incomplete. Attendance is a key issue that must be addressed, however within the last five years, the overall situation shows signs of incremental improvement.

Through the 1980's and 1990's, the DFN had an Education Committee in place to work on supporting children and families' needs in respect to education. In this time, the DFN and the school system retained a Teacher's Aide from the community and supported a lunch program in off reserve schools. Given the importance of supporting the educational needs of youth and families, the DFN is looking to hire a professional education coordinator to work the development and implementation an overall education plan with the involvement of community. **(Source: Councillor Virginia Gladue- Personal Communication: 2012).**

The former Early Intervention Program Coordinator for the DFN thinks a questionnaire should be administered and workshops held with students in the educational system to determine their challenges, issues, interests and ideas of the students themselves to see how the school experience can be improved and a higher level of success achieved. **(Source: Vanessa Testawich – DFN Staff Member, 2012)**

The DFN carefully tracks enrollment with the local school system. The following tables set out the age distribution and attendance per school and hosting community:

DFN Elementary School Student Enrollment

Age	Grade	School Name	Location
10	4	Lloyd Garrison Elementary/Junior High	Berwyn
8	3	Lloyd Garrison Elementary/Junior High	Berwyn
6	1	Lloyd Garrison Elementary/Junior High	Berwyn
10	6	Lloyd Garrison Elementary/Junior High	Berwyn
10	4	Lloyd Garrison Elementary/Junior High	Berwyn
8	3	Lloyd Garrison Elementary/Junior High	Berwyn
11	6	Holy Family Elementary/Junior High	Grimshaw
7	3	Lloyd Garrison Elementary/Junior High	Berwyn
9	3	Kennedy Elementary	Grimshaw
7	3	Kennedy Elementary	Grimshaw
8	2	Kennedy Elementary	Grimshaw
7	2	Lloyd Garrison Elementary/Junior High	Berwyn
5	1	Holy Family Elementary/Junior High	Grimshaw
8	3	Kennedy Elementary	Grimshaw
6	2	Kennedy Elementary	Grimshaw
12	6	Lloyd Garrison Elementary/Junior High	Berwyn

Data Results:
16 Elementary Students @ 12 Male & @ 4 Female

@ 9 attend the Lloyd Garrison School at Berwyn, Alberta
@ 2 attend the Holy Family Catholic School at Grimshaw, Alberta
@ 5 attend Kennedy Elementary School at Grimshaw, Alberta

DFN Jr. High Student Enrollment

Age	Grade	School Name	Location
15	9	Glenmary Junior/Senior High	Peace River
15	9	Holy Family Elementary/Junior High	Grimshaw
11	7	Lloyd Garrison Elementary/Junior High	Berwyn
13	7	Holy Family Elementary/Junior High	Grimshaw
12	7	Lloyd Garrison Elementary/Junior High	Berwyn
14	9	Glenmary Junior/Senior High	Peace River
14	9	Holy Family Elementary/Junior High	Grimshaw
12	8	Holy Family Elementary/Junior High	Grimshaw
14	8	Holy Family Elementary/Junior High	Grimshaw

Data Results:
9 Junior High Students @ 3 Male & @ 6 Female
@ 2 attending Lloyd Garrison School at Berwyn, Alberta
@ 5 attending Holy Family School at Grimshaw, Alberta
@ 2 attending Glenmary Catholic School at Peace River, Alberta

DFN Senior High and Outreach

Age	Grade	School Name	Location
14	10	Glenmary Junior/Senior High	Peace River
16	11	Fairview High School	Fairview
17	12	Fairview High School	Fairview
16	11	Glenmary Junior/Senior High	Peace River
15	10	Glenmary Junior/Senior High	Peace River
18	10	Outreach	Peace River
16	10	Glenmary Junior/Senior High	Peace River
16	11	Glenmary Junior/Senior High	Peace River

17	12	Glenmary Junior/Senior High	Peace River
17	12	Glenmary Junior/Senior High	Peace River
16	11	Glenmary Junior/Senior High	Peace River
15	10	Glenmary Junior/Senior High	Peace River
17	12	Glenmary Junior/Senior High	Peace River
16	11	Outreach	Peace River
18	10	Outreach	Peace River

Data Results:
15 Senior High Students @ 8 Males & 7 Females
@ 2 attending Fairview High School at Fairview, Alberta
@ 10 attending Glenmary Catholic School at Peace River, Alberta
@ 3 attending Outreach (Peace River High School) at Peace River, Alberta

One of the key initiatives just recently introduced is the DFN "E – Learning Centre", based on the Sunchild E – Learning Program. The program is an on line educational program hosted in the community centre to assist and support DFN community members to complete their Grade 12 education. E - Learners sign up for the courses they need to complete their Grade 12, undertake on line assignments and access tutors as required. The DFN has hired a full time moderator or coordinator to support learners within the centre. The DFN worked with interested and supportive industry partners to get the program started as of September 2011. There are 12 stations in the E-Learning room. Chief and Council have now lowered the registration age for the E-Learner Program to the age of 16 years old to enable more community learners to attend. The program could be potentially expanded to include enrollment and expand the number of workstations. There are currently 13 students enrolled in the program and 2 students on track to complete their Grade 12 this year.

Grade 12 graduation has and continues to be a key barrier to Duncan's' community members in accessing longer or meaningful employment within the regional economy and resource sector. Many resource companies operating within the region are prepared to consider Duncan's community members however, meeting educational pre – requisites (often being Grade 12 English, maths and sciences) is a must. While DFN supports this goal, from its perspective, the offer of employment or consideration in the hiring process amounts to little, given the educational challenges facing the DFN. The DFN recognizes this and is working with interested and supportive resource development companies to address the gaps, inequities and unique educational needs of the DFN through targeted programs and investments like the E – Learning Centre.

15.8 Training

There is currently no standing training body or training department with the DFN, however training is planned and held based on needs identified by the community and available funding. The DFN does support and sponsor training for community members. At this time the DFN does not maintain a data base that sets out the skills, tickets, education and qualifications of community members and it has identified a need to get such a system in place. The DFN has is currently assessing a new skills and training program that has been set up within the Western Cree Tribal Council called “360” to address this critical data management gap.

(Source: Joanna Gladue, DFN Human Development Resource Coordinator, 2012)

As part of its overall approach and goal of building community capacity, skill development and education, the DFN has entered into sector specific training with joint venture partners. DFN and its joint venture partners wish to employ as many community members as possible within long term, good paying jobs within the regional resource sector. Some examples of training that has been undertaken and is being undertaken include:

Power Engineering Training: The DFN and an oil sands company negotiated and agreed to a training program resulting in 2 community members obtaining 10 months of power engineering training.

Oil Rig Training: The DFN is a partnership with a drilling rig company and has an ownership stake in one drilling rig. The DFN may acquire and an additional interest in two service rigs. Thus far, one community member undertook the training and has now been hired full time. The company is prepared to provide on the job training and employ an interested community member. There is generally a higher rate of success in filling positions on service rigs than drilling rigs from First Nations communities given that service rigs tend to operate within the region vs drilling rigs which are highly mobile through the WCSB.

Industrial First Aid Training: The DFN and an ambulance company are providing first aid and paramedic services to the resource sector. Training was provided that has enabled one community member to become employed with the company as an industrial first aid attendant.

Lead Faller Training: New requirements in the seismic industry require that a lead faller be present to lead seismic cline cutting activities. This person must undertake a high level of training, pass and exam and have so many years of direct experience. The DFN worked with two companies to host the training resulting in community members successfully passing the training and being able to participate in high paying seismic work.

Environmental Monitor Training: The DFN recently hosted an environmental monitor training course for 15 community members to prepare community members to engage in field and bio – physical studies.

Traditional Use Mapping: As part of the Site C project, three DFN members were provided training to undertake traditional use mapping and research.

Safety Tickets: The DFN provides the money and puts community members through the requisite safety training so that they are ready to work in industrial environments and bush work.

(Source: Ken Rich - DFN Lands and Environment Director, 2012)

The DFN is building on this recent training by hosting and supporting the following training courses and opportunities in the near term:

Industrial First Aid Training: The DFN and a company have agreed to put on training for between 6 – 8 community members so that they are certified to become industrial first aid attendants.

Well Operator Training: The DFN has developed an arrangement with three oil sands companies, who will provide the training for up to 6 DFN community members.

Driver Training: The DFN will be hosting a driver's education course to enable up to 20 community members to obtain their drivers licenses, making them more employable and supporting them in accessing employment.

Camp Services Training: The DFN has reached an arrangement with a company that will result in training and jobs for up to 8 community members.

Life Skills Courses: The DFN is hosting a series of workshops to support stay in school, job skill, job search skill and life skills programs.

(Source: DFN Chief Don Testawich, 2012)

In addition to these specific courses, the DFN is taking the lead on developing a proposal for an aboriginal employment centre in Peace River that would benefit and serve DFN and other regional aboriginal communities. Based on experience, the DFN recognizes the need to work with a regional, professionally staffed organization that can access, liaise and network with all key parties that have an interest in training and employment within the region. The DFN is also working to support the work being undertaken under its E – Learning centre through providing the current 13 students enrolled with mentoring and tutoring support.

15.9 Childcare, Education and Training Services – Site C Project Interface

Project interactions with this DFN interest area are limited, however there are some interesting considerations. In respect to day care, if DFN workers took up work within the Project, day care would not likely be held to be a key issue as a worker would have to be absent from the home and community for some time. If workers were to be present in the Fort St. John area, day care within the area and within the vicinity of the Project would have to be an option for a single parent family or family that has relocated to the area to take up work on the Project.

In respect to education and training, the DFN is undertaking considerable work to support community members in obtaining the skills and educational prerequisites to help them become work force ready. With this said, DFN clearly needs more support and partners on board and a clear idea of what types of work is available, the skill and training required to take on such work. It is understood that BC Hydro is beginning this work so that communities can determine what opportunities may exist and how they may align with community members interests, aptitudes and skill levels. At this time, it is not known what specific employment and on the job training might be available for interested community members and how the DFN and BC Hydro might collaborate to create such opportunities? It is clear that given the existing trade qualifications, skills and educational levels in the community, DFN members would not likely be able to avail themselves of trades, apprenticeship opportunities in the key trades such as tunnel and rock working, pipefitting, operating, boiler making and electrical work.

If the DFN and BC Hydro were to enter into an agreement that contained provisions on the above matters, the DFN would be able to better predict the nature of the interaction and the potential for positive outcomes. In the absence of such an agreement, no such information is available. However, it is clear that there is some potential for working to accommodate such interests if the BC Hydro were provided a mandate and the resources to work with the DFN.

16.0 INTEREST AREA 3: ECONOMICS

16.1.1 Labor Market

The DFN has considered Government of Canada statistics and its own most current records to determine key figures for unemployment and employment rates for the DFN. Aboriginal Affairs and Northern Development Canada (AANDC) reported the following labor force indicators for the DFN as of 2001:

Participation Rate 62.5% (Men – 87.5% / Female - 57.1%)

Employment Rate 50.0% (Men – 62.5% / Female - 42.9%)

Unemployment Rate 30.0% (Men – 28.6% / Female – 0.0%)

Aboriginal Affairs and Northern Development Canada Workforce Statistics

Workforce Characteristics	2006			2001		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Labour Force Indicators						
Participation rate	Not available	Not available	Not available	62.5	87.5	57.1
Employment rate	Not available	Not available	Not available	50.0	62.5	42.9
Unemployment rate	Not available	Not available	Not available	30.0	28.6	0.0
Industry						
Total-Industry	Not available	Not available	Not available	75	40	35
Agriculture, resource based	Not available	Not available	Not available	15	10	0
Manufacturing, construction	Not available	Not available	Not available	0	0	0
Wholesale, retail	Not available	Not available	Not available	0	0	0
Finance, real estate	Not available	Not available	Not available	0	0	0
Health, education	Not available	Not available	Not available	0	0	0
Business services	Not available	Not available	Not available	0	0	0
Other services	Not available	Not available	Not available	25	10	15
Occupation						
Population 15 years and over	Not available	Not available	Not available	75	40	35
Management	Not available	Not available	Not available	10	0	0
Natural sciences, health	Not available	Not available	Not available	0	0	0
Social sciences, gov't	Not available	Not available	Not available	10	0	10
Sales and service	Not available	Not available	Not available	10	10	10
Trades and related	Not available	Not available	Not available	15	15	0
Primary industry	Not available	Not available	Not available	15	0	10
Other Occupations	Not available	Not available	Not available	10	0	0

(SOURCE – Aboriginal Relations and Northern Development Canada, 2001)

Further, as noted in the above table, AANDC, as of 2001 listed that 75 community members were employed either full time or part time within industry, which includes the resource sector and 25 employed under “Other Services”. No recent updates from government web sites could be located that provided an update further to the 2001 statistics.

Based on AAND's 2001 figures, the labour market participation rate for DFN members is significantly lower than their neighbours in the region and also lower than the 67% participation rate for working age Aboriginal people in Canada. Similarly, the employment rate for DFN members lags almost 20% behind the regional employment rates.

The unemployment rate for DFN members is five times that of their neighbours (as well as five times the rate of Aboriginal people nationally - source - INAC Fact Sheet-2006 Census). This results in both a high percentage of people dependent on government transfers as well as lower incomes:

Table – Comparative Economic Participation Rate 2001[1]			
	Participation Rate	**Employment Rate**	**Unemployment Rate**
Peace River Region	74.5%	69.8%	6.3%
DFN	62.5%	50%	30%

Attention needs be paid to the last two statistics and the comparison set for DFN and that of the general Alberta population. The Employment Rate for DFN and Alberta is 30% and 65% respectively. The unemployment Rate for DFN is set at 30 % and at 11% for the general Alberta population based on 2001 figures.

At this time, the DFN has no systematic way of tracking unemployment / employment statistics for band membership and the community as a whole. Nor does the ability reside or exist within the Western Cree Tribal Council, of which the DFN is part. Given this limitation, the community researcher working on gathering baseline community data was able to work with the DFN manager responsible for employment assistance and income support. Their review resulted in the following estimates based on reported employment and income source figures within the past year along with general knowledge of the employment circumstances of numerous community members:

DFN: Estimate of Occupation Areas / Employment Held by Some DFN Community Members

Occupation Area	Male	Female
Household / Domestic Work	0	12
Equipment Operator	6	0
Oilfield Operations	0	0
Residential / Commercial Construction	2	0
Transportation	2	1
Post Secondary Education / E Learning	2	5
Income Support / AISH	5	13
Pension	6	6
Office / Administrative / Professional	6	8
Laborer	6	2
Cooking / Catering	1	1
Undetermined	13	1
TOTAL	**49**	**49**

(Source: Audrey Lawrence – DFN Community Researcher, 2012)

There are some significant limitations with the above figures. The figures provided are considered incomplete for the community as a whole, inaccurate as income for many community members is unknown or is undetermined and lastly, that the distinction between full time and part time work is not made. With the above caveats and limitations in mind, the DFN can report that up to 98 community members are reported to be working in part time or full time occupations in a variety of areas.

Some community members work for the DFN administration, whereas others report employment within local communities. Others are employed as largely temporary or seasonal employees with the resource sector such as seismic labourers, packers and lead

cutters and equipment operators. As of 2010, the DFN administration estimated that following numbers of community members were ticketed and worked intermittently in the following resource sector areas:

- 14 labourers / seismic packers
- 8 chain saw operators
- 5 ticketed lead fallers
- 9 heavy equipment operators
- 8 truck drivers with a class 1 license

(Source: Ken Rich–DFN Lands and Environment Director, 2010)

The DFN reports that as of July 2012, it had 21 full time and 6 part time positions on its staff or pay roll.

(Source: DFN Community Researcher Audrey Lawrence, 2012)

There are many factors and changes driving the DFN Council to give top priority to addressing the employment, training, skills and educational needs of the DFN community. The DFN, like many other First Nations in the Peace Region, have struggled for the past thirty years to address the socio – economic and cultural changes that the community has to contend with.

As noted with the Land Use section of this report, the rising scope and pace of industrial development and ecological change has placed constraints on DFN community's members' ability to access, utilize and rely on their traditional lands as they once did. A growing population within the DFN, other First Nations in the region, and a growing overall population has and will continue to placed new stresses on fish and wildlife populations (e.g. through access and over – harvesting). Simply put, it is harder now than it was 20 – 30 years ago to feed a family based on country foods and bush commodities. Thus participation in the regional economy and regional resource economy is now a must for the DFN if the community is to remain economically viable.

In addition to this key matter, there are other factors driving the DFN (as well as other First Nations) to engage the resource sector with goal of creating training, education, employment and contract opportunities. These include:

- The need to build a self – reliant economy to support DFN's goals and objectives self – determination and self-government
- The desire of community members to obtain meaningful long term employment to support themselves and their families
- The overall decline in government programming and government funding

- The introduction of new federal guidelines and policies placing emphasis on economic development, performance and results over continued support to social assistance and other forms of assistance to First Nations communities
- The reality of demographic change where more community members are residing off reserve than on reserve or where the shift to off reserve living, and
- The growth in population and a very young population who desires and needs access to new education, training, skills development and employment opportunities

There are some considerable barriers in place that have existed that have inhibited community members in accessing employment and that have resulted in chronically low employment levels within the DFN (and other First Nations). While positive outcomes are evident in the community in recent years, there are still key factors that the DFN must contend with:

- Inconsistent programs and changing program criteria that supports the DFN in laddering community members from social assistance to full and meaningful employment
- Lack of funding to support a sustained effort to train community members over the long term and support them by connecting them with potential employers
- The lack of capacity and skills within the community to design and implement a coordinated training and employment strategy
- The lack of employment provided by companies for First Nations
- Educational pre – requisites that bar community members from accessing entry level positions
- Trades and apprenticeship qualifications that bar community members for accessing entry level positions
- Regional resource company preferences for candidates that meet corporate “musts” and “wants”
- Corporate resistance and lack of budgets within corporations to creating training positions allocated to First Nations candidates
- Community resistance to travelling greater distances in the north to secure employment

- The lack of supports and resources in the community such as adequate day care
- Income to afford and maintain a vehicle and reliable transportation
- Social challenges within the community such as addiction
- General belief in the community that despite corporate communications, a lack of political and corporate will exists to work with the DFN and community members to create viable training, employment and contracting opportunities

(Source: DFN Councillor Donna Testawich, 2012)

Notwithstanding these and other challenges, the DFN has and continues to focus on immediately doable strategies and projects to address these emergent realities and to help connect community members to longer term and more meaningful employment. Examples of this include:

- Negotiating agreements with willing and interested companies and proponents that contain employment, training and contract provisions
- Developing partnerships and joint venture arrangements with service sector companies that provide the DFN the capacity and ability to access a greater level of contract work in the resource economy. Through such arrangements, the DFN seeks to maximize employment and training for community members and revenues to re-invest in community training, educational and economic diversification initiatives
- Working with interested and proactive industry partners to establish the Adult Education Upgrading program in the community centre
- Hosting and facilitating a life skills course
- Development of an educational trust fund to support community members who wish to attend and are succeeding in post – secondary education
- Retaining a training, skills development consultant to develop an overall training and employment strategy for the community and seeking resources from government and industry sources to sustain the initiative

(Source: DFN Councillor Donna Testawich, 2012)

16.1.2 Labor Market – Site C Project Interface

As noted within other sections, there are potential Project interactions with this interest area. These interactions could be potentially positive, however that is dependent on what measures that BC Hydro might agree to with the DFN in respect to Project related training, skill development and training, should the Project being approved. The sheer workforce needs of the Project potentially creates some avenues for the DFN and DFN members to pursue in respect to labor and semi – skilled labor and possibly other areas. However, experience has shown with hydro project development that a long lead time is needed with supportive agreements and arrangements to create such opportunities.

Further, the parties also need to consider such opportunities within the context of community training goals and objectives. For example, community members could be trained to be engaged in turbine winding, with training being provided and the job last several months. However such a skill set and the job prospects associated with turbine winding are limited. What would a community member do with such a skill set going forward? Would investments and efforts in other areas aligned with regional employment trends yield longer term lasting results? These are the types of questions that can be addressed through a Human Resources Development Plan or within provisions within an agreement.

A Project specific human resource development and training plan would be needed to act as the interface and link between:

- Available employment / positions
- The skills and qualifications required to perform that required job
- The labor pool available within the DFN
- Those with aptitudes, skills and interests that would be able to take on such jobs, and
- An individualized training plan that would chart out the required training plan and path to connect the individual with the opportunity

Thus the questions that would need to be worked out between BC Hydro, as the proponent and the DFN is whether an agreement is needed to create mutually positive results or whether such results could be delivered via another mechanism? At this time, it is not known what specific employment and on the job training might be available for interested community members and how the DFN and BC Hydro might collaborate to create such opportunities. It is clear that given the existing trades and educational levels in the community, DFN members would not likely be able to avail themselves of trades, apprenticeship opportunities in core hydro project related trades such as tunnel and rock working, pipefitting, boiler making and electrical work. However, there are numerous areas

that could be populated by interested community members with interest, aptitude and some level of industrial experience.

If the DFN and BC Hydro were to enter into an agreement that contained provisions on the above matters, the DFN would be able to better predict the nature of the interaction and the potential for positive outcomes. In the absence of such an agreement, no such information is available. However, it is clear that there is some potential for working to accommodate such interests if the BC Hydro were provided a mandate and the resources to work with the DFN.

16.3 Community Capacity – Education and Skills

Based on 2001 statistics, Aboriginal Affairs and Northern Development Canada (AANDC) estimates hold that 30% of the DFN population (15 years and older) had completed high school and graduated. If these figures were deemed to be accurate, this meant that as 2001, the DFN had a significantly lower completion rate than the 70% completion rate listed the population for the Peace River School District. These numbers appear to be consistent with the national Aboriginal statistics as reported in the 2001 Census of Canada:

- on-reserve Registered Indians rate lower than the general Canadian population on all educational attainment indicators, including secondary school completion rates, Postsecondary education admissions and completion of university degrees

- 50% of the Aboriginal population on-reserve aged 25-64 have less than high school (15% for non-Aboriginals), and

- the gap between Aboriginal and non-Aboriginal population with University degrees has widened from 2001-2008 (despite the number of Aboriginal graduates increasing).

Table 3 – DFN Education Completion Rates[2] **People over age 15**		
	2001	**1996**
Persons with less than a high school graduation certificate	30%	38%
Persons with a high school graduation	0	0

certificate		
Persons with some post-secondary education	7.5%	54%
Persons with a trades, college or university certificate or diploma (below bachelor's degree)	40%	23%

(Source - Aboriginal Affairs and Northern Development Canada: 2001)

Education characteristics	**2001**			**1996**		
	Total	**Male**	**Female**	**Total**	**Male**	**Female**
Highest level of Schooling						
Population 15 years and over	75	40	35	65	35	30
Persons with less than a high school graduation certificate	25	20	15	25	20	0
Persons with a high school graduation certificate	20	10	0	0	0	10
Persons with some post-secondary education	10	10	10	35	20	15
Persons with a trades, college or university certificate or diploma (below bachelor's degree)	30	10	10	15	10	10
Persons with a university degree at BA level or higher	0	0	0	0	0	0

(Source - Aboriginal Affairs and Northern Development Canada: 2001)

The DFN maintains good records on education and the status of community members within the educational system. For this baseline report, the community researcher sat down with the DFN Manager of education to obtain an updated profile of educational status and attainment.

In respect to educational attainment, a total of 27 community members have graduated with a Grade 12 Diploma. 21 of these people are band member with nine of the graduates being male and 12 of the graduates being female. In respect to timing the following statistics are informative. Within the past times frames listed in five year increments:

- 5 years, 12 community members graduated with Grade 12
- 10 years, 4 community members graduated with Grade 12
- 15 years, 3 community members graduated with Grade 12
- 20 years, 5 community members graduated with Grade 12
- 25 years (plus), 3 community members graduated with Grade 12

At this time the following numbers of community members are recorded as being enrolled in differing levels of the school system:

- 16 students are enrolled as Elementary Students between the Grades of 1 and 6 (12 male/4 female)
- 9 students are enrolled as Junior High Students between the Grades of 7 – 9 (3 male / 6 female)
- 15 students are enrolled as Senior High / Outreach Students between Grades of 10 and 12(8 male / 7 female)

(Source: Vanessa Testawich – DFN Education Manager, 2012)

The concept of capacity and capacity development is a key one for First Nations, as it is for the DFN. There are many and varying definitions for capacity and rationales for capacity development. From DFN's perspective it wishes to enhance and develop the capacity of the community to address the following realities:

- Political autonomy and self – government will only be realized through economic independence and a high level of self- reliance
- The need to become increasingly self-reliant and less dependent on inadequate and unstable government funding and supports
- Personal wellbeing and community health will be enhanced with increased incomes and economic opportunities
- It simply makes sense for the DFN government and administration to be managed and staffed by its own community members, and
- Increased legal responsibilities stemming from developments in the constitutional law requires that DFN build and strengthen its capacity to attend to its responsibilities

As noted, the DFN is moving to build its capacity through specific education, training and economic development initiatives, measures and pilot projects. Some forward momentum has been achieved especially over the past three – four years. With this said, there are some challenges to overcome which include the:

- Lack of a baseline data and a data-base that allows the DFN to be able to clearly understand the current training, skill and educational levels of community members as it stands today
- Lack of an integrated Human Resources Development Plan for the community that would strengthen the DFN's ability to match community members with regional economic trends and emerging opportunities
- Lack of sustained government funding to sustain a comprehensive approach to capacity development
- An inconsistent approach by corporations in its dealings with DFN where no concrete measures, plans and agreements are reached which would support training, education and economic development advancement and overall capacity development within the community

At this time there is a need for the DFN to undertake a review of emerging employment and economic development trends within north – eastern BC and north – western Alberta. Such a review would assist the DFN in aligning its capacity building plans, strategies and investments with projected trends in region. Clearly any strategy would need to be cognizant of the:

- Rising opportunities in construction and operations within the Peace River oil sands area
- Rising opportunities in construction and operations in the emerging shale gas industry
- The longer term opportunities associated with maintenance and operations in conventions and unconventional oil and gas operations
- A potential niche market that may arise in relation to the monitoring and maintenance of pipeline infrastructure
- The ongoing opportunities associated with environmental site assessment, planning, monitoring and reclamation
- Rising opportunities in construction and operations in the coal mining sector

- Near and medium term opportunities associated with the potential construction of the Site C and Dunvegan projects
- The provision of services to meet the needs of the primary / extractive sectors of the regional economy
- Increased need for retail and services for an increasing and demographically young and employed population
- An ongoing need in relation to the health sector to meet the needs of a growing population

For example an examination of employment by industry in north – east BC clearly supports the above projections with increased opportunities emerging in construction and manufacturing opportunities associated with the energy and mining sectors. Thus a DFN strategy needs to consider the direct employment arising from new projects and construction but also of the indirect employment and business opportunities that are generated as a result of new natural resource development infrastructure. Within environmental assessments with projects such as the Site C Clean Energy Project, a multiplier is often used to predict and project the net economic expansion that arises as a result of the project. Generally it is assumed that for every direct job that is created by a project, two additional jobs are indirectly created in the hosting region.

The following table is just one of the sources of information and data that will be needed to inform the DFN's overall approach to capacity development:

Employment by Industry, Northeast

	Northeast			**BC**
	Employment ('000)	Distribution of employment (%)	Percent of BC total	Distribution of employment (%)
All industries	**38.0**	**100.0**	**1.6**	**100.0**

Goods	**15.0**	**39.5**	**3.0**	**21.7**
Forestry, fishing & mining	7.7	20.3	17.0	2.0
Construction	4.3	11.3	1.9	9.5
Manufacturing	1.3	3.4	0.7	8.1
Agriculture	X	X	x	1.5
Utilities	X	X	x	0.6
Services	**23.0**	**60.5**	**1.3**	**78.3**
Wholesale & retail trade	4.9	12.9	1.4	15.3
Health & social assistance	3.3	8.7	1.3	10.6
Education	2.4	6.3	1.5	7.0
Accommodation & food	2.3	6.1	1.3	7.7
Other services	2.1	5.5	2.1	4.4
Transportation & warehousing	2.1	5.5	1.6	5.5
Professional, scientific & technical	1.8	4.7	1.0	7.5
Finance, insurance & real estate	1.3	3.4	0.9	6.4
Public administration	1.0	2.6	1.0	4.0
Information, culture & recreation	x	X	x	5.1
Business, building & support	x	X	x	4.4

Data Source: Statistics Canada

16.4 Community Capacity – Local Business / Regional Economic Development

At this time the DFN only has numbered company or holding company that it utilizes from time to time to pursue and organize economic ventures. This corporation is called the "William Mackenzie Corporation" and is a wholly owned company by the Duncan's First Nation, with the elected council being the directors of the corporation. In the last two years, the William Mackenzie Corporation was utilized to receive funds from a resource company.

The corporation provides repayable loans to band members to expand existing businesses or establish new business ventures. The corporation provides the flexibility and ability to undertake business and enter into business arrangements, the DFN could not given the limitations placed on “Indian Bands” under the *Indian Act.* Such a structure also responsibly shelters the community from risk.

(Source: DFN Chief Don Testawich, 2012)

The DFN acknowledges that many First Nations within north – western Alberta and north – eastern BC have a common cultural and historical past and shared interest in the Peace Region. The notion of overlapping interests and traditional territories is a reality where Beaver, Cree and Iroquois families are intermarried and related by blood, although they may have been administratively assigned to different Indian Bands. Treaty#8 in of itself does not set out or acknowledge the existence of traditional territories, but rather confirms the rights of signatories throughout the identified tract or entirety of the Treaty #8 area. Given this, the DFN respect this reality and works to recognize and respect the reality of overlapping and mixed interests in the land base. With this said, the DFN, at this time, does not actively pursue economic opportunities jointly with other regional First Nations or organize joint venture arrangements on a tri – lateral basis with other First Nations. Notwithstanding, cooperation with other First Nations is not to be ruled out on a project by project basis or a more long term basis.

As noted in the educational, skills and training sections of this report, there have been numerous barriers that have acted to slow and prevent the growth of business within the DFN. Well recognized barriers include, the lack of capital, the inability to access financing, inexperience in building and operating businesses and the historic lack of willing partners to do business with. Changes within the constitutional and common law are driving the Crown and industry to recognize and address DFN concerns and socio – economic and socio – cultural interests through consultation and accommodation measures. The level of opportunities now being afforded to the DFN (as other First Nations) tracks the changes emergent changes in the law. These changes have begun to result in some slight forward movement and has forced change on all three parties (government, industry and First Nations), resulting in some positive new developments for all parties.

With this said, the change being witnessed at the community level is slow and clearly incremental. Positive business and procurement opportunities have arisen where an interested and committed proponent has opted to enter into an agreement with the DFN. The pace of change is clearly frustrating and not sufficient for a community that has largely been left on the sidelines as successive resource development waves have come through the region through the past fifty years. Considerable frustration also exists with the ongoing impact to the eco-system from development and the declining opportunity to provide for

families from the forests. Thus the DFN (like other First Nations) are faced on the one hand with a declining ability to meet the needs of their families from the bush and forest, while on the other hand, only being very slowly being somewhat engaged in the resource economy in full swing about them.

(Source: Councilor Donna Testawich, 2012)

First and foremost, the DFN asserts that its predominate interests and concerns relate to the health of the eco-system, the need for sustainable development, the need to maintain their rights in the face of development, the need to maintain their culture and way of life and the need to address the socio – cultural needs of DFN families. The DFN is extremely concerned about the pace and scope of development within its traditional territory and the Peace Region and has repeatedly placed Crown agencies on notice about the cumulative impact of development on the regional eco – system and the ability of the DFN members to exercise their rights into the future. Secondly comes the DFN's interest and need to build its capacity and by necessity, to engage in the modern resource economy.

(Source: DFN Chief Don Testawich, 2012)

At this time, contract procurement and business opportunities are pursued by the DFN through privately held businesses in the community and via Joint Venture partnerships with well-established resource sector service companies. The following table sets out those businesses that are owned and operated by DFN band members:

Business Name	Owner	Status	Business Type	Years in business
Riggs Water/Vac Services	Don Testawich	DFN Member	Water truck & vac services	6 years
Eagle Eye Watch Ltd.	Don Lawrence	DFN Member	Security	1 year
Quadra Light Towers	Jordon Hall	DFN Member	Light Towers	2 years
Mooswah Environmental Services	Darcy Mooswah	DFN Member	Enviro. Monitoring	4 years
Other				

(Source: DFN Band Council, 2012)

In the last two years, the DFN has taken active steps to support the expansion of an existing business and the start-up of two new community businesses. This was done through the creation of a small business loan program set up under DFN's William Mackenzie Corporation. The idea of the loan program is to provide some equity to assist

bands members in leveraging other financing. The above noted community owned enterprises are accessing new contract and procurement opportunities.

The DFN has also determined the need for joint venture partners and to create a joint venture alliance with numerous businesses that have an established track record in providing business services to the energy and natural resources sector. As noted, numerous barriers have prevented First Nations from pursuing and securing larger procurement and contract opportunities with these sectors. Some of these barriers include, having the financial and management capacity to bid on and undertake large contracts and having the in house experience and track record of taking on and managing contracts. While numerous First Nations articulate the goal of becoming major contract and project managers, this view runs contrary to the current reality that most communities find themselves in. Clearly, a First Nation could build, for example, a construction business that could undertake large civil contracts, however building such a company doesn't happen overnight and it occurs through growth, re-investment and building a portfolio of successfully executed projects and contracts.

Joint Venture relationships and agreements recognize these realities and can be put into place to allow a First Nation to build expertise, experience and equity over time. DFN has negotiated several agreements and several JV partnerships in place that limit / eliminate the financial risk and exposure to the community and the First Nation. The objectives of JV arrangements are to:

- Secure an increasing level of contract and procurement opportunities that would not otherwise be available to the First Nation without a partner

- Build the community's capacity and experience in the business and put forward community members into management positions so that they can learn all key facets of the business

- Create employment positions with the company for community members and undertake training where required

- Secure a portion of revenues for reinvestment to provide an equity stake in the company for the DFN, or to re-invest those profits into other priority areas identified by the community (e.g. education, training, economic diversification, community infrastructure

- Position the DFN to either buy out the business from the JV partner or to launch its own company to compete with that business

At this time, the DFN has created and negotiated Joint Venture agreements and arrangements with the following companies:

- ESS Camp Services: Provides camp services to the resource sector

- Savanna Drilling: Provides drilling and service rigs to the oil and gas sector
- Cordy Construction: Undertakes pipeline const. and provides tank production services
- MSS Trucking: Undertake rig moves and transports equipment in the oilfield
- MacMillan Construction: Constructs leases and access roads
- Cardinal Construction: Constructs leases, access roads and leases equipment

16.4.1 Community Capacity / Local Business Project Interface

As noted in all other sections, there are potential interactions that could arise that would be positive in nature, if BC Hydro were provided a mandate to negotiate and reach formal agreements and / or arrangement with the DFN in relation to project procurement. At this time, no such formal mandate exist and has not been issued by the Government of BC, however it does exist for Treaty#8 First Nations located within north – east British Columbia.

One potential negative effect that if DFN workers were specifically recruited to work on the project for a number of years, DFN owned businesses and joint venture partners might witness a migration of workers to the Site C project, requiring them to fill vacant positions with non – community members.

17.0 CLOSURE

The Duncan's First Nation has prepared this report for the sole benefit of BC Hydro and the DFN for the purpose of conducting a First Nations Community Assessment as part of the Socio-economic Assessment for the Environmental Impact Statement for the Site C Clean Energy Project. The report may not be relied upon by any other person or entity, other than for its intended purposes, without the express written consent of the DFN and BC Hydro.

The Duncan's First Chief and Council wishes to thank and acknowledge those community members who contributed their time and knowledge to assist in making this community profile reflect the priorities and values of our community.

The DFN Chief and Council also wish to thank all DFN staff members who participated in the research and who helped in providing and excellent overview of the work and initiatives of their department and responsibility areas.

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Finally the DFN wishes to thank and acknowledge the BC Hydro Site C Team and Golder Associates for supporting this research initiative and working with the DFN to produce a document that will help contribute to a more informed view of the Site C Clean Energy Project and the interests of the DFN in relation to the Project.

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19.0 Appendices

- Appendix 1: Potential Site C Effect – Duncan's First Nation Interest Interactions

- Appendix 2 Treaty 8 Area Map

  (Source: DFN Ethno-Historical Review)

- Appendix 3: DFN Traditional Territory Map

  (Source: Duncan's First Nation)

- Appendix 4: DFN Reserves on Peace River

  (Source: DFN Ethno-Historical Review)

- Appendix 5: Trading Post Locations: Northern River Basins Study

  (Source: Northern River Basins Study)

- Appendix 6: DFN 2012 Country Food Harvest Survey

- Appendix 7: Site C Project Components

  (Source: BC Hydro Site C Project Description)

Appendix 1: Potential Site C Effect – Duncan's First Nation Interest Interactions

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE	
DFN Interest >	**Hunting**
Potential Project Effect	
Terrestrial and Vegetation	
Loss of old growth forest and high conservation value forest on Peace River Valley Floor	Moose hunting along Peace River N/E of Hudson's Hope. Loss of forage / old growth forest attributes supporting moose. 2
Loss of old growth forest and high conservation value forest on slopes of Peace River valley	Moose hunting along Peace River N/E of Hudson's Hope. Loss of forage / old growth forest attributes supporting moose.2
Loss of riparian vegetation and wetland areas	Moose hunting along Peace River N/E of Hudson's Hope. Loss of forage and watering areas prefferred areas by moose.2
Methyl Mercury / Bio-Accumulation and Bio Magnification	
Wildlife and Widlife Habitat	
Loss of unique and high value ungulate habitat / habitat attributes in Peace Valley and Peace Region	Moose hunting along Peace River N/E of Hudson's Hope. Loss of forage / old growth forest attributes supporting moose. 2
Loss of islands, back channels, side channels, flood plain habitat for ungulates	Moose hunting along Peace River N/E of Hudson's Hope. Heavy ungulate reliance on islands, back channels, side channels, fllod plain.2
Change in wildlife dynamics in Peace Valley and adajacent landscape area (movement, dynamics,distribution, density, breeding, birthing)	Moose and elk hunting in arc from upper Halfway to Hudson's Hope to Moberly Lake to Upper and Lower Pine watershed. Moose and Elk range through area and resevoir will impact broader landscape area.2.
Loss of thermal cover / critical winter habitat on Peace Valley slopes	Moose hunting along Peace River N/E of Hudson's Hope. Loss of forest stands that provide critical thermal cover in winter.2
Localized climate change effect in Peace Valley and remaining non - innundated/ undermined slopes)	Moose hunting along Peace River N/E of Hudson's Hope. Potential for weather change impacting moose habitat utilization.2
Loss of connectivity / impact to wildife corridor from creation of reservoir in summer / winter	Moose hunting along Peace River N/E of Hudson's Hope. Potential for weather change impacting moose habitat utilization.2
Limited fluctuation in resevoir levels impact on fur bearers and fur bearer habitat	
Increased hunting levels in Peace Valley, adjacent area and hosting landscape area due to influx of construction workfore	Moose and elk hunting in arc from upper Halfway to Hudson's Hope to Moberly Lake to Upper and Lower Pine watershed. Moose and Elk range through area and resevoir will impact broader landscape area.2.
Increased mortaility for ungulates due to influx of traffic from construction workforce expansion	Moose and elk hunting in arc from upper Halfway to Hudson's Hope to Moberly Lake to Upper and Lower Pine watershed. Moose and Elk range through area and resevoir will impact broader landscape area.2.
Shift of wildlife populations away from construction zone due to auditory disturbance / increase human activity	
Aquatics, Fish and Fish Habitat	
Change from natural river system to reservoir (Lotic / Lentic shift)	

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Fishing**	**Trapping**
Potential Project Effect		
Terrestrial and Vegetation		
Loss of old growth forest and high conservation value forest on Peace River Valley Floor		
Loss of old growth forest and high conservation value forest on slopes of Peace River valley		
Loss of riparian vegetation and wetland areas		
Methyl Mercury / Bio-Accumulation and Bio Magnification	Fishing downstream of Hudson's Hope. Release of meth. Mercury and potential for increased levels in fish in reservoir.2.	
Wildlife and Widlife Habitat		
Loss of unique and high value ungulate habitat / habitat attributes in Peace Valley and Peace Region		
Loss of islands, back channels, side channels, flood plain habitat for ungulates		
Change in wildlife dynamics in Peace Valley and adajacent landscape area (movement, dynamics,distribution, density, breeding, birthing)		
Loss of thermal cover / critical winter habitat on Peace Valley slopes		
Localized climate change effect in Peace Valley and remaining non - innundated/ undermined slopes)		
Loss of connectivity / impact to wildife corridor from creation of reservoir in summer / winter		
Limited fluctuation in resevoir levels impact on fur bearers and fur bearer habitat		
Increased hunting levels in Peace Valley, adjacent area and hosting landscape area due to influx of construction workfore		
Increased mortaility for ungulates due to influx of traffic from construction workforce expansion		
Shift of wildlife populations away from construction zone due to auditory disturbance / increase human activity		
Aquatics, Fish and Fish Habitat		
Change from natural river system to reservoir (Lotic / Lentic shift)	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Gathering**	**Overnight Site and Culturally Significant Areas**
Potential Project Effect		
Terrestrial and Vegetation		
Loss of old growth forest and high conservation value forest on Peace River Valley Floor	Plant gathering site on Peace River north of Peace/Halfway confluence. Alteration of ground vegetation through loss of forest.2.	Node of traditional land use activity at Peace / Boucher Creek confluence.2.
Loss of old growth forest and high conservation value forest on slopes of Peace River valley	Plant gathering site on Peace River north of Peace/Halfway confluence. Alteration of ground vegetation through loss of forest.2.	Node of traditional land use activity at Peace / Boucher Creek confluence.2.
Loss of riparian vegetation and wetland areas		
Methyl Mercury / Bio-Accumulation and Bio Magnification		
Wildlife and Widlife Habitat		
Loss of unique and high value ungulate habitat / habitat attributes in Peace Valley and Peace Region		
Loss of islands, back channels, side channels, flood plain habitat for ungulates		
Change in wildlife dynamics in Peace Valley and adajacent landscape area (movement, dynamics,distribution, density, breeding, birthing)		
Loss of thermal cover / critical winter habitat on Peace Valley slopes		
Localized climate change effect in Peace Valley and remaining non - innundated/ undermined slopes)		
Loss of connectivity / impact to wildife corridor from creation of reservoir in summer / winter		
Limited fluctuation in resevoir levels impact on fur bearers and fur bearer habitat		
Increased hunting levels in Peace Valley, adjacent area and hosting landscape area due to influx of construction workfore		
Increased mortaility for ungulates due to influx of traffic from construction workforce expansion		
Shift of wildlife populations away from construction zone due to auditory disturbance / increase human activity		
Aquatics, Fish and Fish Habitat		
Change from natural river system to reservoir (Lotic / Lentic shift)		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Socio - Cultural**	**Community Health and Well Being**
Potential Project Effect	Y	Y
Terrestrial and Vegetation		
Loss of old growth forest and high conservation value forest on Peace River Valley Floor	Y	Y
Loss of old growth forest and high conservation value forest on slopes of Peace River valley	Y	Y
Loss of riparian vegetation and wetland areas	Y	Y
Methyl Mercury / Bio-Accumulation and Bio Magnification	Y	Y
Wildlife and Widlife Habitat		
Loss of unique and high value ungulate habitat / habitat attributes in Peace Valley and Peace Region		
Loss of islands, back channels, side channels, flood plain habitat for ungulates	Y	Y
Change in wildlife dynamics in Peace Valley and adajacent landscape area (movement, dynamics,distribution, density, breeding, birthing)	Y	Y
Loss of thermal cover / critical winter habitat on Peace Valley slopes	Y	Y
Localized climate change effect in Peace Valley and remaining non - innundated/ undermined slopes)	Y	y
Loss of connectivity / impact to wildife corridor from creation of reservoir in summer / winter	Y	Y
Limited fluctuation in resevoir levels impact on fur bearers and fur bearer habitat		
Increased hunting levels in Peace Valley, adjacent area and hosting landscape area due to influx of construction workfore	Y	Y
Increased mortaility for ungulates due to influx of traffic from construction workforce expansion	Y	Y
Shift of wildlife populations away from construction zone due to auditory disturbance / increase human activity		
Aquatics, Fish and Fish Habitat		
Change from natural river system to reservoir (Lotic / Lentic shift)	Y	y

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Ecological and Treaty Interest**	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	Y	
Terrestrial and Vegetation		
Loss of old growth forest and high conservation value forest on Peace River Valley Floor	Y	
Loss of old growth forest and high conservation value forest on slopes of Peace River valley	Y	
Loss of riparian vegetation and wetland areas	Y	
Methyl Mercury / Bio-Accumulation and Bio Magnification	Y	
Wildlife and Widlife Habitat		
Loss of unique and high value ungulate habitat / habitat attributes in Peace Valley and Peace Region		
Loss of islands, back channels, side channels, flood plain habitat for ungulates	Y	
Change in wildlife dynamics in Peace Valley and adajacent landscape area (movement, dynamics,distribution, density, breeding, birthing)	Y	
Loss of thermal cover / critical winter habitat on Peace Valley slopes	Y	
Localized climate change effect in Peace Valley and remaining non - innundated/ undermined slopes)	Y	
Loss of connectivity / impact to wildife corridor from creation of reservoir in summer / winter	Y	
Limited fluctuation in resevoir levels impact on fur bearers and fur bearer habitat		
Increased hunting levels in Peace Valley, adjacent area and hosting landscape area due to influx of construction workfore	Y	
Increased mortaility for ungulates due to influx of traffic from construction workforce expansion	Y	
Shift of wildlife populations away from construction zone due to auditory disturbance / increase human activity		
Aquatics, Fish and Fish Habitat		
Change from natural river system to reservoir (Lotic / Lentic shift)	Y	

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE	
DFN Interest >	**Hunting**
Potential Project Effect	
Loss of fish and fish habitat from Peace River mainstem anf tributaries	
Alteration of fish population dynamics in fish that utilize mainstem of Peace and that move in and out of tributaries	
Barrier to upstream/downstream fish movement and migration	
Shift in fish species composition, abudance and distribution	
Entraiment / mortality of fish via turbines	
Entraiment / mortality of fish via spillway when in operation	
Limited reservoir fluctuations impact to littoral zone fish habitat / feeding	
Frazil ice formation impacting near shore fish habitat / feeding	
Upstream ice front effects on / reduction of overwintering habitat for fish	

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Fishing**	**Trapping**
Potential Project Effect		
Loss of fish and fish habitat from Peace River mainstem anf tributaries	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Alteration of fish population dynamics in fish that utilize mainstem of Peace and that move in and out of tributaries	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Barrier to upstream/downstream fish movement and migration	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Shift in fish species composition, abudance and distribution	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Entraiment / mortality of fish via turbines	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Entraiment / mortality of fish via spillway when in operation	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Limited reservoir fluctuations impact to littoral zone fish habitat / feeding	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Frazil ice formation impacting near shore fish habitat / feeding	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Upstream ice front effects on / reduction of overwintering habitat for fish	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Gathering**	**Overnight Site and Culturally Significant Areas**
Potential Project Effect		
Loss of fish and fish habitat from Peace River mainstem anf tributaries		
Alteration of fish population dynamics in fish that utilize mainstem of Peace and that move in and out of tributaries		
Barrier to upstream/downstream fish movement and migration		
Shift in fish species composition, abudance and distribution		
Entraiment / mortality of fish via turbines		
Entraiment / mortality of fish via spillway when in operation		
Limited reservoir fluctuations impact to littoral zone fish habitat / feeding		
Frazil ice formation impacting near shore fish habitat / feeding		
Upstream ice front effects on / reduction of overwintering habitat for fish		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Socio - Cultural**	**Community Health and Well Being**
Potential Project Effect	Y	Y
Loss of fish and fish habitat from Peace River mainstem anf tributaries	Y	Y
Alteration of fish population dynamics in fish that utilize mainstem of Peace and that move in and out of tributaries	Y	Y
Barrier to upstream/downstream fish movement and migration	Y	Y
Shift in fish species composition, abudance and distribution	Y	Y
Entraiment / mortality of fish via turbines	Y	Y
Entraiment / mortality of fish via spillway when in operation	Y	Y
Limited reservoir fluctuations impact to littoral zone fish habitat / feeding	Y	Y
Frazil ice formation impacting near shore fish habitat / feeding	Y	Y
Upstream ice front effects on / reduction of overwintering habitat for fish	Y	Y

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Ecological and Treaty Interest**	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	Y	
Loss of fish and fish habitat from Peace River mainstem anf tributaries	Y	
Alteration of fish population dynamics in fish that utilize mainstem of Peace and that move in and out of tributaries	Y	
Barrier to upstream/downstream fish movement and migration	Y	
Shift in fish species composition, abudance and distribution	Y	
Entraiment / mortality of fish via turbines	Y	
Entraiment / mortality of fish via spillway when in operation	Y	
Limited reservoir fluctuations impact to littoral zone fish habitat / feeding	Y	
Frazil ice formation impacting near shore fish habitat / feeding	Y	
Upstream ice front effects on / reduction of overwintering habitat for fish	Y	

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE	
DFN Interest >	**Hunting**
Potential Project Effect	
Increased fishing levelson Peace River, tributary fishery and regional water bodies by increased workforce population	
Oxygen depletion in deeper portions of reservoir / stratification and impact to fish	
Heritage and Archeological Resources	
Loss or arch sites (known and unknown)	
Socio - Cultural Resources / Values	
Loss of significant span of Peace River - River of historical and ethno - historical significance	
Loss of overnight sites/habitatation sites and preffered areas to utilize and occupy	
Loss of free flowing segment of the Peace River	
Visual impact of altered river / natural flow and creation of bank to bank dam	
Human Health and Safety	
Methyl Mercury / Bio-Accumulation and Bio Magnification	
Sudden flow releases from Peace Canyon could endanger fishers in downstream area	
Debris in reservoir could pose hazard to boating fishers/ hunters	

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Fishing**	**Trapping**
Potential Project Effect		
Increased fishing levelson Peace River, tributary fishery and regional water bodies by increased workforce population	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Oxygen depletion in deeper portions of reservoir / stratification and impact to fish	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Heritage and Archeological Resources		
Loss or arch sites (known and unknown)		
Socio - Cultural Resources / Values		
Loss of significant span of Peace River - River of historical and ethno - historical significance		
Loss of overnight sites/habitatation sites and preffered areas to utilize and occupy		
Loss of free flowing segment of the Peace River		
Visual impact of altered river / natural flow and creation of bank to bank dam		
Human Health and Safety		
Methyl Mercury / Bio-Accumulation and Bio Magnification	Walleye fishing on Peace River downstream of Farrell Crk/ Bull Trout fishing downstream of Hudson's Hope / Fishing in Peace River above dam.2.	
Sudden flow releases from Peace Canyon could endanger fishers in downstream area		
Debris in reservoir could pose hazard to boating fishers/ hunters		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Gathering**	**Overnight Site and Culturally Significant Areas**
Potential Project Effect		
Increased fishing levelson Peace River, tributary fishery and regional water bodies by increased workforce population		
Oxygen depletion in deeper portions of reservoir / stratification and impact to fish		
Heritage and Archeological Resources		
Loss or arch sites (known and unknown)		
Socio - Cultural Resources / Values		
Loss of significant span of Peace River - River of historical and ethno - historical significance		
Loss of overnight sites/habitatation sites and preffered areas to utilize and occupy		Node of cultural use activity near Hudson's Hope on Peace River of which Peace River plays important role / Overnight site on southside of Peace River downstream of Boucher / Peace River confluence.2.
Loss of free flowing segment of the Peace River		
Visual impact of altered river / natural flow and creation of bank to bank dam		
Human Health and Safety		
Methyl Mercury / Bio-Accumulation and Bio Magnification		
Sudden flow releases from Peace Canyon could endanger fishers in downstream area		
Debris in reservoir could pose hazard to boating fishers/ hunters		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Socio - Cultural**	**Community Health and Well Being**
Potential Project Effect	Y	Y
Increased fishing levelson Peace River, tributary fishery and regional water bodies by increased workforce population	Y	Y
Oxygen depletion in deeper portions of reservoir / stratification and impact to fish	Y	Y
Heritage and Archeological Resources		
Loss or arch sites (known and unknown)	Y - Loss of Rocky Mtn Ft. Site at confluence of Peace / Moberly Rivers (?) / Loss of Cree, Beaver and Iroquois arch / heritage sites. Stong connection of DFN to fur trading system on Upper / Mid Peace 2.	Y
Socio - Cultural Resources / Values		Y
Loss of significant span of Peace River - River of historical and ethno - historical significance	Y - Impact to / permanent loss of significant portion Peace - core to DFN cultural landscape .2.	Y
Loss of overnight sites/habitatation sites and preffered areas to utilize and occupy	Y	Y
Loss of free flowing segment of the Peace River	Y - Permanent loss of free flowing segement of Peace River that is core of DFN's territory.2	Y
Visual impact of altered river / natural flow and creation of bank to bank dam	Y - General use and experience of upper Peace forever altered and change.2.	Y
Human Health and Safety		
Methyl Mercury / Bio-Accumulation and Bio Magnification	Y	Y
Sudden flow releases from Peace Canyon could endanger fishers in downstream area		
Debris in reservoir could pose hazard to boating fishers/ hunters		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Ecological and Treaty Interest**	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	Y	
Increased fishing levelson Peace River, tributary fishery and regional water bodies by increased workforce population	Y	
Oxygen depletion in deeper portions of reservoir / stratification and impact to fish	Y	
Heritage and Archeological Resources		
Loss or arch sites (known and unknown)	Y	
Socio - Cultural Resources / Values	Y	
Loss of significant span of Peace River - River of historical and ethno - historical significance	Y	
Loss of overnight sites/habitatation sites and preffered areas to utilize and occupy	Y	
Loss of free flowing segment of the Peace River	Y	
Visual impact of altered river / natural flow and creation of bank to bank dam	Y	
Human Health and Safety		
Methyl Mercury / Bio-Accumulation and Bio Magnification	Y	
Sudden flow releases from Peace Canyon could endanger fishers in downstream area		
Debris in reservoir could pose hazard to boating fishers/ hunters		

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Potential Project Effects

Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE	
DFN Interest >	**Hunting**
Potential Project Effect	
Change in ice conditions and freeze up could impact flows for ice fishers	
END OF SECTION	

Potential Project Effects

Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Fishing**	**Trapping**
Potential Project Effect		
Change in ice conditions and freeze up could impact flows for ice fishers		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Gathering**	**Overnight Site and Culturally Significant Areas**
Potential Project Effect		
Change in ice conditions and freeze up could impact flows for ice fishers		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Socio - Cultural**	**Community Health and Well Being**
Potential Project Effect	Y	Y
Change in ice conditions and freeze up could impact flows for ice fishers		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL UPSTREAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Ecological and Treaty Interest**	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	Y	
Change in ice conditions and freeze up could impact flows for ice fishers		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Hunting**	**Fishing**
Potential Project Effect		
Terrestrial and Vegetation		
Erosion and River Channel Below Dam		
Wildlife and Widlife Habitat		
Disturbance to/ displacement of wildlife from main constuction area	Moose hunting at Pine / Peace River confluence.2	
Aquatics, Fish and Fish Habitat		
Dam creates barrier to upstream/downstream fish passage		Fishing on north bank Peace upstream of Talyor bridge / in lower reaches of Pine River / at Beatton/ Peace confluence up to Charlie Lake and upper Beatton River / on Peace River at BC / ALTA border.2
Loss and change to fish habitat below dam		Fishing at Pine / Peace confluence
Seasonal temperature and flow changes alter downstream ice formation and affect over wintering habitat availability and near shore habitat		Fishing on north bank Peace upstream of Talyor bridge / in lower reaches of Pine River / at Beatton/ Peace confluence up to Charlie Lake and upper Beatton River / on Peace River at BC / ALTA border.2
Reduced natural variability in river affect in fish and fish populations		Fishing on north bank Peace upstream of Talyor bridge / in lower reaches of Pine River / at Beatton/ Peace confluence up to Charlie Lake and upper Beatton River / on Peace River at BC / ALTA border.2
Increase in methyl mercury / bio-accumulation and magnification issues in larger fish below dam		Fishing on north bank Peace upstream of Talyor bridge / in lower reaches of Pine River / at Beatton/ Peace confluence up to Charlie Lake and upper Beatton River / on Peace River at BC / ALTA border.2
Fish mortaility from total gas pressure during spill events		Fishing on north bank of Peace upstream of Talyor bridge / at Beatton - Peace confluence and to BC / ALTA border.2
Change in downstream water quality and temperature and impact to fish and fish habitat		Fishing on north bank Peace upstream of Talyor bridge / in lower reaches of Pine River / at Beatton/ Peace confluence up to Charlie Lake and upper Beatton River / on Peace River at BC / ALTA border / at Clear -Peace confluence and at Many Islands and at Fourth Creek / Peace Confluence.2

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Trapping**	**Gathering**
Potential Project Effect		
Terrestrial and Vegetation		
Erosion and River Channel Below Dam		
Wildlife and Widlife Habitat		
Disturbance to/ displacement of wildlife from main constuction area		
Aquatics, Fish and Fish Habitat		
Dam creates barrier to upstream/downstream fish passage		
Loss and change to fish habitat below dam		
Seasonal temperature and flow changes alter downstream ice formation and affect over wintering habitat availability and near shore habitat		
Reduced natural variability in river affect in fish and fish populations		
Increase in methyl mercury / bio-accumulation and magnification issues in larger fish below dam		
Fish mortaility from total gas pressure during spill events		
Change in downstream water quality and temperature and impact to fish and fish habitat		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Overnight Site and Culturally Significant Areas**	**Socio - Cultural**
Potential Project Effect		Y
Terrestrial and Vegetation		
Erosion and River Channel Below Dam	Node of traditional land use activity at Peace / Pine River confluence.2	Y
Wildlife and Widlife Habitat		
Disturbance to/ displacement of wildlife from main constuction area		Y
Aquatics, Fish and Fish Habitat		
Dam creates barrier to upstream/downstream fish passage		Y
Loss and change to fish habitat below dam		Y
Seasonal temperature and flow changes alter downstream ice formation and affect over wintering habitat availability and near shore habitat		Y
Reduced natural variability in river affect in fish and fish populations		Y
Increase in methyl mercury / bio-accumulation and magnification issues in larger fish below dam		Y
Fish mortaility from total gas pressure during spill events		Y
Change in downstream water quality and temperature and impact to fish and fish habitat		Y

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Community Health and Well Being**	**Ecological and Treaty Interest**
Potential Project Effect	Y	Y
Terrestrial and Vegetation		
Erosion and River Channel Below Dam		
Wildlife and Widlife Habitat		
Disturbance to/ displacement of wildlife from main constuction area	Y	Y
Aquatics, Fish and Fish Habitat		
Dam creates barrier to upstream/downstream fish passage	Y	Y
Loss and change to fish habitat below dam	Y	Y
Seasonal temperature and flow changes alter downstream ice formation and affect over wintering habitat availability and near shore habitat	Y	Y
Reduced natural variability in river affect in fish and fish populations	Y	Y
Increase in methyl mercury / bio-accumulation and magnification issues in larger fish below dam	Y	Y
Fish mortaility from total gas pressure during spill events	Y	Y
Change in downstream water quality and temperature and impact to fish and fish habitat	Y	Y

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE	
DFN Interest >	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	
Terrestrial and Vegetation	
Erosion and River Channel Below Dam	
Wildlife and Widlife Habitat	
Disturbance to/ displacement of wildlife from main constuction area	
Aquatics, Fish and Fish Habitat	
Dam creates barrier to upstream/downstream fish passage	
Loss and change to fish habitat below dam	
Seasonal temperature and flow changes alter downstream ice formation and affect over wintering habitat availability and near shore habitat	
Reduced natural variability in river affect in fish and fish populations	
Increase in methyl mercury / bio-accumulation and magnification issues in larger fish below dam	
Fish mortaility from total gas pressure during spill events	
Change in downstream water quality and temperature and impact to fish and fish habitat	Potential Site C - Dunvegan effects/ impact conflation on DFN interests

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Hunting**	**Fishing**
Potential Project Effect		
Change in flows and timing and impact to fish and fish habitat		Fishing on north bank Peace upstream of Talyor bridge / in lower reaches of Pine River / at Beatton/ Peace confluence up to Charlie Lake and upper Beatton River / on Peace River at BC / ALTA border / at Clear -Peace confluence and at Many Islands and at Fourth Creek / Peace Confluence 2
Change in downsteam sediment load and river bed mobilization		Fishing on north bank Peace upstream of Talyor bridge / in lower reaches of Pine River / at Beatton/ Peace confluence up to Charlie Lake and upper Beatton River / on Peace River at BC / ALTA border / at Clear -Peace confluence and at Many Islands and at Fourth Creek / Peace Confluence
Creation of two ice fronts (four with Dunvegan) and altering ice regime down Peace to Peace River and impact and alteration of over wintering habitat and near shore habitat with frazil ice		Fishing on north bank Peace upstream of Talyor bridge / in lower reaches of Pine River / at Beatton/ Peace confluence up to Charlie Lake and upper Beatton River / on Peace River at BC / ALTA border / at Clear -Peace confluence and at Many Islands and at Fourth Creek / Peace Confluence / .2
Heritage and Archeological Resources		
High Water Discharge Events		
Socio - Cultural Resources / Values		
Loss of free flowing segment of the Peace River		
Altered cultural landscape		
Asthetic / visual impact of altered river regime and new dam in river valley		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Trapping**	**Gathering**
Potential Project Effect		
Change in flows and timing and impact to fish and fish habitat		
Change in downsteam sediment load and river bed mobilization		
Creation of two ice fronts (four with Dunvegan) and altering ice regime down Peace to Peace River and impact and alteration of over wintering habitat and near shore habitat with frazil ice		
Heritage and Archeological Resources		
High Water Discharge Events		
Socio - Cultural Resources / Values		
Loss of free flowing segment of the Peace River		
Altered cultural landscape		
Asthetic / visual impact of altered river regime and new dam in river valley		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Overnight Site and Culturally Significant Areas**	**Socio - Cultural**
Potential Project Effect		Y
Change in flows and timing and impact to fish and fish habitat		Y
Change in downsteam sediment load and river bed mobilization		Y
Creation of two ice fronts (four with Dunvegan) and altering ice regime down Peace to Peace River and impact and alteration of over wintering habitat and near shore habitat with frazil ice		
Heritage and Archeological Resources		
High Water Discharge Events	Potential for uncovering of downstream and impact to river bank arch. Sites in high water discharge events	
Socio - Cultural Resources / Values		
Loss of free flowing segment of the Peace River	Nodes of TLU sites between Peace / Pine confluence and Peace / Beatton confluence - alteration of river system and change in relationship between DFN land and resoure users and river	Nodes of TLU sites between Peace / Pine confluence and Peace / Beatton confluence - alteration of river system and change in relationship between DFN land and resoure users and river
Altered cultural landscape	Nodes of TLU sites between Peace / Pine confluence and Peace / Beatton confluence - alteration of river system and change in relationship between DFN land and resoure users and river	Nodes of TLU sites between Peace / Pine confluence and Peace / Beatton confluence - alteration of river system and change in relationship between DFN land and resoure users and river
Asthetic / visual impact of altered river regime and new dam in river valley	Nodes of TLU sites between Peace / Pine confluence and Peace / Beatton confluence - alteration of river system and change in relationship between DFN land and resoure users and river	Nodes of TLU sites between Peace / Pine confluence and Peace / Beatton confluence - alteration of river system and change in relationship between DFN land and resoure users and river

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Community Health and Well Being**	**Ecological and Treaty Interest**
Potential Project Effect	Y	Y
Change in flows and timing and impact to fish and fish habitat	Y	Y
Change in downsteam sediment load and river bed mobilization	Y	Y
Creation of two ice fronts (four with Dunvegan) and altering ice regime down Peace to Peace River and impact and alteration of over wintering habitat and near shore habitat with frazil ice		
Heritage and Archeological Resources		
High Water Discharge Events	Y	
Socio - Cultural Resources / Values		
Loss of free flowing segment of the Peace River	Y	Y
Altered cultural landscape	Y	Y
Asthetic / visual impact of altered river regime and new dam in river valley	Y	Y

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE	
DFN Interest >	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	
Change in flows and timing and impact to fish and fish habitat	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Change in downsteam sediment load and river bed mobilization	Potential Site C - Dunvegan effects/ imp
Creation of two ice fronts (four with Dunvegan) and altering ice regime down Peace to Peace River and impact and alteration of over wintering habitat and near shore habitat with frazil ice	
Heritage and Archeological Resources	
High Water Discharge Events	
Socio - Cultural Resources / Values	
Loss of free flowing segment of the Peace River	Potential Site C - Dunvegan effects / impact conflation on DFN interests - Peace River becomes articifially bound and regulated between Site C and Dunvegan projects
Altered cultural landscape	Potential Site C - Dunvegan effects / impact conflation on DFN interests - Peace River becomes articifially bound and regulated between Site C and Dunvegan projects
Asthetic / visual impact of altered river regime and new dam in river valley	Potential Site C - Dunvegan effects / impact conflation on DFN interests - Peace River becomes articifially bound and regulated between Site C and Dunvegan projects

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Hunting**	**Fishing**
Potential Project Effect		
Human Health and Safety		
Methyl Mercury / Bio-Accumulation and Bio Magnification		Fishing below Site C dam to Pine/Peace confluence - concern re: larger species such as Bull Trout feeding on fish below Site C.2
Sudden flow releases from Peace Canyon could endanger fishers in downstream area		Potential hazard for shore / boat fishers fishing downstream of Site C dam.2
Change in ice conditions and freeze up could impact flows for ice fishers		
Change in freeze up timing and extent on Shaftsbury River Crossing	DFN hunters use ferry in winter months to cross over to hunt south side of Peace River north of Tangent and Watino and also community members that travel south in winter months to Highways 740/49 to Slave Lake.2	
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Trapping**	**Gathering**
Potential Project Effect		
Human Health and Safety		
Methyl Mercury / Bio-Accumulation and Bio Magnification		
Sudden flow releases from Peace Canyon could endanger fishers in downstream area		
Change in ice conditions and freeze up could impact flows for ice fishers		
Change in freeze up timing and extent on Shaftsbury River Crossing		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Overnight Site and Culturally Significant Areas**	**Socio - Cultural**
Potential Project Effect		Y
Human Health and Safety		
Methyl Mercury / Bio-Accumulation and Bio Magnification		
Sudden flow releases from Peace Canyon could endanger fishers in downstream area		
Change in ice conditions and freeze up could impact flows for ice fishers		
Change in freeze up timing and extent on Shaftsbury River Crossing		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE		
DFN Interest >	**Community Health and Well Being**	**Ecological and Treaty Interest**
Potential Project Effect	Y	Y
Human Health and Safety		
Methyl Mercury / Bio-Accumulation and Bio Magnification	Y	Y
Sudden flow releases from Peace Canyon could endanger fishers in downstream area		
Change in ice conditions and freeze up could impact flows for ice fishers		
Change in freeze up timing and extent on Shaftsbury River Crossing	Y	
END OF SECTION		

Potential Project Effects

Duncan's First Nation Interest Interaction Matrix

POTENTIAL INCREMENTAL DOWNSTEAM IMPACTS: INITIAL FOOT PRINT IMPACT AND INITIAL ECOLOGICAL CHANGE	
DFN Interest >	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	
Human Health and Safety	
Methyl Mercury / Bio-Accumulation and Bio Magnification	
Sudden flow releases from Peace Canyon could endanger fishers in downstream area	
Change in ice conditions and freeze up could impact flows for ice fishers	
Change in freeze up timing and extent on Shaftsbury River Crossing	Potential Site C - Dunvegan effects / impact conflation on DFN interests - Peace River becomes articifially bound and regulated between Site C and Dunvegan projects
END OF SECTION	

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Hunting**	**Fishing**
Potential Project Effect		
Terrestrial and Vegetation		
Change / shift in vegetation in flood plain, riparian area	Pontential shift in species may alter forage for ungulates in flood plain / riparian areas in turn impactin DFN's hunting of ungulates in these areas - moose hunting from BC / ALTA border to Smoky / Peace River confluence to Cadotte/Peace River conflunce to Notikewen /Peace River confluence.2	
Lack of recharge in flood plain, back channels, side channels and synes altering / shifting vegetation patterns	Pontential shift in species may alter forage for ungulates in flood plain / riparian areas in turn impactin DFN's hunting of ungulates in these areas - moose hunting from BC / ALTA border to Smoky / Peace River confluence to Cadotte/Peace River conflunce to Notikewen /Peace River confluence.2	
Narrowing of main stem of Peace River and expansion of grassland environment in riparian areas		Narrowing of river channel reduces fish habitat in downstream areas impacting DFN fishing from Beatton / Peace River confluence to Many Islands and Many Islands to Dunvegan and Dunvegan to Notikewin/ Peace
Wildlife and Widlife Habitat		
Loss of wildlife habitat in downstream areas with reduced and dissappearing back channels, side channels and synes	Pontential shift in species may alter forage for ungulates in flood plain / riparian areas in turn impactin DFN's hunting of ungulates in these areas - moose hunting from BC / ALTA border to Smoky / Peace River confluence to Cadotte/Peace River conflunce to Notikewen /Peace River confluence.2	
Reduced waterfowl nest production and nesting habitat	DFN waterfowl hunting occuring upstream of Clear / Peace River confluence and area between Leith River and Smoky/Peace River	
Impact to fur bearer population and potential losses to fur bearer population		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Trapping**	**Gathering**
Potential Project Effect		
Terrestrial and Vegetation		
Change / shift in vegetation in flood plain, riparian area		
Lack of recharge in flood plain, back channels, side channels and synes altering / shifting vegetation patterns		Alteration of /shift in vegetation communities found in flood plain areas impacting DFN plant and earth material gathering at Clear River/Peace River confluence and at Many Islands on Peace River, Peace River/Hines Creek confluence and from Lieth Creek / Peace River confluence to Cadotte River / Peace
Narrowing of main stem of Peace River and expansion of grassland environment in riparian areas		
Wildlife and Widlife Habitat		
Loss of wildlife habitat in downstream areas with reduced and dissappearing back channels, side channels and synes		
Reduced waterfowl nest production and nesting habitat		
Impact to fur bearer population and potential losses to fur bearer population	Potential impact to fur - bearers and impact on vocation and right to trap. Actual trapping activity on Peace by DFN not documented in current TLU survey. Activity took place historically	

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Overnight Site and Culturally Significant Areas**	**Socio - Cultural**
Potential Project Effect		Y
Terrestrial and Vegetation		
Change / shift in vegetation in flood plain, riparian area		Y
Lack of recharge in flood plain, back channels, side channels and synes altering / shifting vegetation patterns		Y
Narrowing of main stem of Peace River and expansion of grassland environment in riparian areas		Y
Wildlife and Widlife Habitat		
Loss of wildlife habitat in downstream areas with reduced and dissappearing back channels, side channels and synes		Y
Reduced waterfowl nest production and nesting habitat		Y
Impact to fur bearer population and potential losses to fur bearer population		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Community Health and Well Being**	**Ecological and Treaty Interest**
Potential Project Effect	Y	Y
Terrestrial and Vegetation		
Change / shift in vegetation in flood plain, riparian area	Y	Y
Lack of recharge in flood plain, back channels, side channels and synes altering / shifting vegetation patterns	Y	Y
Narrowing of main stem of Peace River and expansion of grassland environment in riparian areas	Y	Y
Wildlife and Widlife Habitat		
Loss of wildlife habitat in downstream areas with reduced and dissappearing back channels, side channels and synes	Y	Y
Reduced waterfowl nest production and nesting habitat	Y	Y
Impact to fur bearer population and potential losses to fur bearer population		Y

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE	
DFN Interest >	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	
Terrestrial and Vegetation	
Change / shift in vegetation in flood plain, riparian area	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Lack of recharge in flood plain, back channels, side channels and synes altering / shifting vegetation patterns	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Narrowing of main stem of Peace River and expansion of grassland environment in riparian areas	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Wildlife and Widlife Habitat	
Loss of wildlife habitat in downstream areas with reduced and dissappearing back channels, side channels and synes	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Reduced waterfowl nest production and nesting habitat	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Impact to fur bearer population and potential losses to fur bearer population	Potential Site C - Dunvegan effects/ impact conflation on DFN interests

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Hunting**	**Fishing**
Potential Project Effect		
Changed flows and fluctuations may impact beaver lodges along Peace River and in lower reaches of tributaries		
Drowning of wildlife due to high winter / spring flows and more open water in winter	Moose use of islands as important birthing habitat in spring / summer and moose crossing of Peace River iced sections. DFN hunters follow these patterns. DFN moose hunting from BC - ALTA border to Smoky / Peace River	
Low summer flows can expose ungulate birthing areas and moose cows and calves on Peace River islands to increased predatation	Moose use of islands as important birthing habitat in spring / summer and moose crossing of Peace River iced section. DFN hunters follow these patterns. DFN moose hunting from BC - ALTA border to Smoky / Peace River	
Aquatics, Fish and Fish Habitat		
Decrease in annual variation in river levels		Impacts to fish and fish habitat. DFN fishing at BC/ALTA border to Many Islands, Many Islands to Dunvegan, Dunvegan to Peace/Smoky River confluence and norhth to Notikewin Provinical Park on Peace River 2
Hydrologic regime change due to ice jams at Peace River / Shift from one front ice formation to four with Site and Dunvegan		Effects to overwintering habitat and near shore fish habitat during winter months. Added stressors to fish populations. DFN fishing from Saddle Creek/ Peace confluence to upstream of Peace River bridge 2
Drying and dewatering of back channels, side channels and synes		Impacts to fish and fish habitat. These were / are key areas to find fish along mainstem of Peace RIver. Limited and valuable habitat. DFN fishing at BC/ALTA border to Many Islands, Many Islands to Dunvegan, Dunvegan to Peace/Smoky River confluence and norhth to Notikewin Provinical Park on

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Trapping**	**Gathering**
Potential Project Effect		
Changed flows and fluctuations may impact beaver lodges along Peace River and in lower reaches of tributaries	Potential impact to fur - bearers and impact on vocation and right to trap. Actual trapping activity on Peace by DFN not documented in current TLU survey. Activity took place historically	
Drowning of wildlife due to high winter / spring flows and more open water in winter		
Low summer flows can expose ungulate birthing areas and moose cows and calves on Peace River islands to increased predatation		
Aquatics, Fish and Fish Habitat		
Decrease in annual variation in river levels		
Hydrologic regime change due to ice jams at Peace River / Shift from one front ice formation to four with Site and Dunvegan		
Drying and dewatering of back channels, side channels and synes		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Overnight Site and Culturally Significant Areas**	**Socio - Cultural**
Potential Project Effect		Y
Changed flows and fluctuations may impact beaver lodges along Peace River and in lower reaches of tributaries		Y
Drowning of wildlife due to high winter / spring flows and more open water in winter		Y
Low summer flows can expose ungulate birthing areas and moose cows and calves on Peace River islands to increased predatation		
Aquatics, Fish and Fish Habitat		
Decrease in annual variation in river levels		
Hydrologic regime change due to ice jams at Peace River / Shift from one front ice formation to four with Site and Dunvegan		Y
Drying and dewatering of back channels, side channels and synes		Y

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Community Health and Well Being**	**Ecological and Treaty Interest**
Potential Project Effect	Y	Y
Changed flows and fluctuations may impact beaver lodges along Peace River and in lower reaches of tributaries		Y
Drowning of wildlife due to high winter / spring flows and more open water in winter	Y	Y
Low summer flows can expose ungulate birthing areas and moose cows and calves on Peace River islands to increased predatation		
Aquatics, Fish and Fish Habitat		
Decrease in annual variation in river levels	Y	Y
Hydrologic regime change due to ice jams at Peace River / Shift from one front ice formation to four with Site and Dunvegan	Y	Y
Drying and dewatering of back channels, side channels and synes	Y	Y

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE	
DFN Interest >	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	
Changed flows and fluctuations may impact beaver lodges along Peace River and in lower reaches of tributaries	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Drowning of wildlife due to high winter / spring flows and more open water in winter	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Low summer flows can expose ungulate birthing areas and moose cows and calves on Peace River islands to increased predatation	
Aquatics, Fish and Fish Habitat	
Decrease in annual variation in river levels	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Hydrologic regime change due to ice jams at Peace River / Shift from one front ice formation to four with Site and Dunvegan	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Drying and dewatering of back channels, side channels and synes	Potential Site C - Dunvegan effects/ impact conflation on DFN interests

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Hunting**	**Fishing**
Potential Project Effect		
Infilling of Peace River / tributary confluences with sediments due to elimination / reduction of flushing flows that historically mobilized sediments		Key remaining fish habitat along Peace River relied upon by DFN fishers being reduced an filled in. Vast majority of fishing occurs at such river confluences and waters mix. Impacts to fish and fish habitat. These were / are key areas to find fish along mainstem of Peace RIver. Limited and valuable habitat. DFN fishing at BC/ALTA border to Many Islands, Many Islands to Dunvegan, Dunvegan to Peace/Smoky River confluence and norhth to
Fish stranding due to to low instream flows and high water events in side and back channels		Stressing of fish in isolated stretches of river and pools and fish kills. Impacts to fish and fish habitat. DFN fishing at BC/ALTA border to Many Islands, Many Islands to Dunvegan, Dunvegan to Peace/Smoky River confluence and norhth to Notikewin Provinical Park on Peace River ?
Reduced access for fish to tributaries during summer low flow conditions in Peace River.		Net reduction in available fish habitat along Peace River for certain populations. Impacts to fish and fish habitat. DFN fishing at BC/ALTA border to Many Islands, Many Islands to Dunvegan, Dunvegan to Peace/Smoky River confluence and norhth to Notikewin Provinical Park on Peace
Reversal of normal thermal conditions in Peace River.		Net reduction in available fish habitat along Peace River for certain populations. Impacts to fish and fish habitat. DFN fishing at BC/ALTA border to Many Islands, Many Islands to Dunvegan, Dunvegan to Peace/Smoky River confluence and norhth to Notikewin Provinical Park on Peace
Reduced dillution of pollution/organic effluent downstream of pulp and sewage treatement outfalls		Potential impact to fish and fish habitat during low flow periods in summer months. Note: That DFN fishers have generally stopped fishing downstream of pulp mills due to pollutant and contamination concerns and the fact that fish aren't generally

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Trapping**	**Gathering**
Potential Project Effect		
Infilling of Peace River / tributary confluences with sediments due to elimination / reduction of flushing flows that historically mobilized sediments		
Fish stranding due to to low instream flows and high water events in side and back channels		
Reduced access for fish to tributaries during summer low flow conditions in Peace River.		
Reversal of normal thermal conditions in Peace River.		
Reduced dillution of pollution/organic effluent downstream of pulp and sewage treatement outfalls		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Overnight Site and Culturally Significant Areas**	**Socio - Cultural**
Potential Project Effect		Y
Infilling of Peace River / tributary confluences with sediments due to elimination / reduction of flushing flows that historically mobilized sediments		Y
Fish stranding due to to low instream flows and high water events in side and back channels		Y
Reduced access for fish to tributaries during summer low flow conditions in Peace River.		Y
Reversal of normal thermal conditions in Peace River.		Y
Reduced dillution of pollution/organic effluent downstream of pulp and sewage treatement outfalls		Y

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Community Health and Well Being**	**Ecological and Treaty Interest**
Potential Project Effect	Y	Y
Infilling of Peace River / tributary confluences with sediments due to elimination / reduction of flushing flows that historically mobilized sediments	Y	Y
Fish stranding due to to low instream flows and high water events in side and back channels	Y	Y
Reduced access for fish to tributaries during summer low flow conditions in Peace River.	Y	Y
Reversal of normal thermal conditions in Peace River.	Y	Y
Reduced dillution of pollution/organic effluent downstream of pulp and sewage treatement outfalls	Y	Y

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE	
DFN Interest >	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	
Infilling of Peace River / tributary confluences with sediments due to elimination / reduction of flushing flows that historically mobilized sediments	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Fish stranding due to to low instream flows and high water events in side and back channels	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Reduced access for fish to tributaries during summer low flow conditions in Peace River.	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Reversal of normal thermal conditions in Peace River.	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Reduced dillution of pollution/organic effluent downstream of pulp and sewage treatement outfalls	Potential Site C - Dunvegan effects/ impact conflation on DFN interests

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Hunting**	**Fishing**
Potential Project Effect		
Near shore fisheries winter habitat impacted through frazil ice formation		Reduction of available fish habitat. DFN fishing from Saddle Creek / Peace River confluence to Peace River
Higher winter flows on Peace River can result in thicker ice cover diminishing open water areas that provides overwintering habitat areas for fish		Reduction of available fish habitat. DFN fishing from Saddle Creek / Peace River confluence to Peace River
Daily flow fluctuations and inflows can quickly alter fish feeding behaviour / beneficial conditions		Changes over several hours can eliminate and reduce fishing period for DFN fishers.Net reduction in available fish habitat along Peace River for certain populations. Impacts to fish and fish habitat. DFN fishing at BC/ALTA border to Many Islands, Many Islands to Dunvegan, Dunvegan to Peace/Smoky River confluence and
Socio - Cultural Resources / Values		
Difficulty in launching boats used for hunting and fishing in lower summer / fall flow periods	DFN's hunting of ungulates in these areas - moose hunting from BC / ALTA border to Smoky / Peace River confluence to Cadotte/Peace River conflunce to Notikewen /Peace River confluence.2 DFN hunters/ fishers launch boats at Peace River Corridor	DFN fishing at BC/ALTA border to Many Islands, Many Islands to Dunvegan, Dunvegan to Peace/Smoky River confluence and norhth to Notikewin Provinical Park on Peace River. DFN hunters / fishers launch boats at Peace River Corridor Park,
Human Health and Safety		
END OF SECTION		

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Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Trapping**	**Gathering**
Potential Project Effect		
Near shore fisheries winter habitat impacted through frazil ice formation		
Higher winter flows on Peace River can result in thicker ice cover diminishing open water areas that provides overwintering habitat areas for fish		
Daily flow fluctuations and inflows can quickly alter fish feeding behaviour / beneficial conditions		
Socio - Cultural Resources / Values		
Difficulty in launching boats used for hunting and fishing in lower summer / fall flow periods		
Human Health and Safety		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Overnight Site and Culturally Significant Areas**	**Socio - Cultural**
Potential Project Effect		Y
Near shore fisheries winter habitat impacted through frazil ice formation		Y
Higher winter flows on Peace River can result in thicker ice cover diminishing open water areas that provides overwintering habitat areas for fish		Y
Daily flow fluctuations and inflows can quickly alter fish feeding behaviour / beneficial conditions		
Socio - Cultural Resources / Values		
Difficulty in launching boats used for hunting and fishing in lower summer / fall flow periods		Y
Human Health and Safety		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE		
DFN Interest >	**Community Health and Well Being**	**Ecological and Treaty Interest**
Potential Project Effect	Y	Y
Near shore fisheries winter habitat impacted through frazil ice formation	Y	Y
Higher winter flows on Peace River can result in thicker ice cover diminishing open water areas that provides overwintering habitat areas for fish	Y	Y
Daily flow fluctuations and inflows can quickly alter fish feeding behaviour / beneficial conditions		
Socio - Cultural Resources / Values		
Difficulty in launching boats used for hunting and fishing in lower summer / fall flow periods	Y	Y
Human Health and Safety		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

POTENTIAL DOWNSTEAM EFFECTS: ONGOING OPERATIONAL EFFECTS/IMPACTS AND ECOLOGICAL CHANGE	
DFN Interest >	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	
Near shore fisheries winter habitat impacted through frazil ice formation	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Higher winter flows on Peace River can result in thicker ice cover diminishing open water areas that provides overwintering habitat areas for fish	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Daily flow fluctuations and inflows can quickly alter fish feeding behaviour / beneficial conditions	
Socio - Cultural Resources / Values	
Difficulty in launching boats used for hunting and fishing in lower summer / fall flow periods	Potential Site C - Dunvegan effects/ impact conflation on DFN interests
Human Health and Safety	
END OF SECTION	

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

IMPACTS ASSOCIATED WITH TRANSMISSION LINE, HIGHWAY 29 ALTERATIONS AND BORROW PITS		
DFN Interest >	**Hunting**	**Fishing**
Potential Project Effect		
Transmission Line		
Direct loss of forest and vegetation to clearing and widening of existing ROW Corridor	Loss of habitat. Impact to DFN hunting in Boucher Lake / Peace Moberly Tract Area. Moose and Elk hunting between Moberly Lake and Peace River.2.	
Disturbance to/ displacement of wildlife from clearing and construction activities	Loss of habitat. Impact to DFN moose and elk hunting in Boucher Lake / Peace Moberly Tract Area.2.	
Increased access effect on wildlife populations through increased predation by humans and predators	Loss of habitat. Impact to DFN moose and elk hunting in Boucher Lake / Peace Moberly Tract Area.2.	
Increased fragmentation and increase of anthropogenic edge within Peace Moberly Tract - area containing critical ungulate habitat and values	Loss of habitat. Impact to DFN moose and elk hunting in Boucher Lake / Peace Moberly Tract Area.2.	
Increased potential for creation of energy corridor with other proponents and operators seeking access to area and twinning existing corridor	Loss of habitat. Impact to DFN moose and elk hunting in Boucher Lake / Peace Moberly Tract Area.2.	
Highway 29 Alterations		
Disturbance to wildlife during construction combined with clearing in adjacent reserovir area and dam site		
Direct loss of forest resources and vegetation in area that has been impacted by farming and recent wave of Pine Beetle infestation		
Straightened highway may lead to increased highway speeds on completed highway leading to increased ungulate mortality	DFN hunting N/W of Hudson's Hope.2.	
Borrow Pits (Peace Reach/Del Rio Pits)		
Disturbance to wildlife during gravel extraction operations		
Increased mortality of ungulates due to #'s of trips to and from pits along key access routes and approaches.	Peace Reach Pit - DFN Hunting N/W of Hudson's Hope.	
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

IMPACTS ASSOCIATED WITH TRANSMISSION LINE, HIGHWAY 29 ALTERATIONS AND BORROW PITS		
DFN Interest >	**Trapping**	**Gathering**
Potential Project Effect		
Transmission Line		
Direct loss of forest and vegetation to clearing and widening of existing ROW Corridor		
Disturbance to/ displacement of wildlife from clearing and construction activities		
Increased access effect on wildlife populations through increased predation by humans and predators		
Increased fragmentation and increase of anthropogenic edge within Peace Moberly Tract - area containing critical ungulate habitat and values		
Increased potential for creation of energy corridor with other proponents and operators seeking access to area and twinning existing corridor		
Highway 29 Alterations		
Disturbance to wildlife during construction combined with clearing in adjacent reserovir area and dam site		
Direct loss of forest resources and vegetation in area that has been impacted by farming and recent wave of Pine Beetle infestation		
Straightened highway may lead to increased highway speeds on completed highway leading to increased ungulate mortality		
Borrow Pits (Peace Reach/Del Rio Pits)		
Disturbance to wildlife during gravel extraction operations		
Increased mortality of ungulates due to #'s of trips to and from pits along key access routes and approaches.		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

IMPACTS ASSOCIATED WITH TRANSMISSION LINE, HIGHWAY 29 ALTERATIONS AND BORROW PITS		
DFN Interest >	**Overnight Site and Culturally Significant Areas**	**Socio - Cultural**
Potential Project Effect		Y
Transmission Line		
Direct loss of forest and vegetation to clearing and widening of existing ROW Corridor		Y
Disturbance to/ displacement of wildlife from clearing and construction activities		Y
Increased access effect on wildlife populations through increased predation by humans and predators		Y
Increased fragmentation and increase of anthropogenic edge within Peace Moberly Tract - area containing critical ungulate habitat and values		
Increased potential for creation of energy corridor with other proponents and operators seeking access to area and twinning existing corridor		Y
Highway 29 Alterations		
Disturbance to wildlife during construction combined with clearing in adjacent reserovir area and dam site		
Direct loss of forest resources and vegetation in area that has been impacted by farming and recent wave of Pine Beetle infestation		
Straightened highway may lead to increased highway speeds on completed highway leading to increased ungulate mortality		
Borrow Pits (Peace Reach/Del Rio Pits)		
Disturbance to wildlife during gravel extraction operations		
Increased mortality of ungulates due to #'s of trips to and from pits along key access routes and approaches.		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

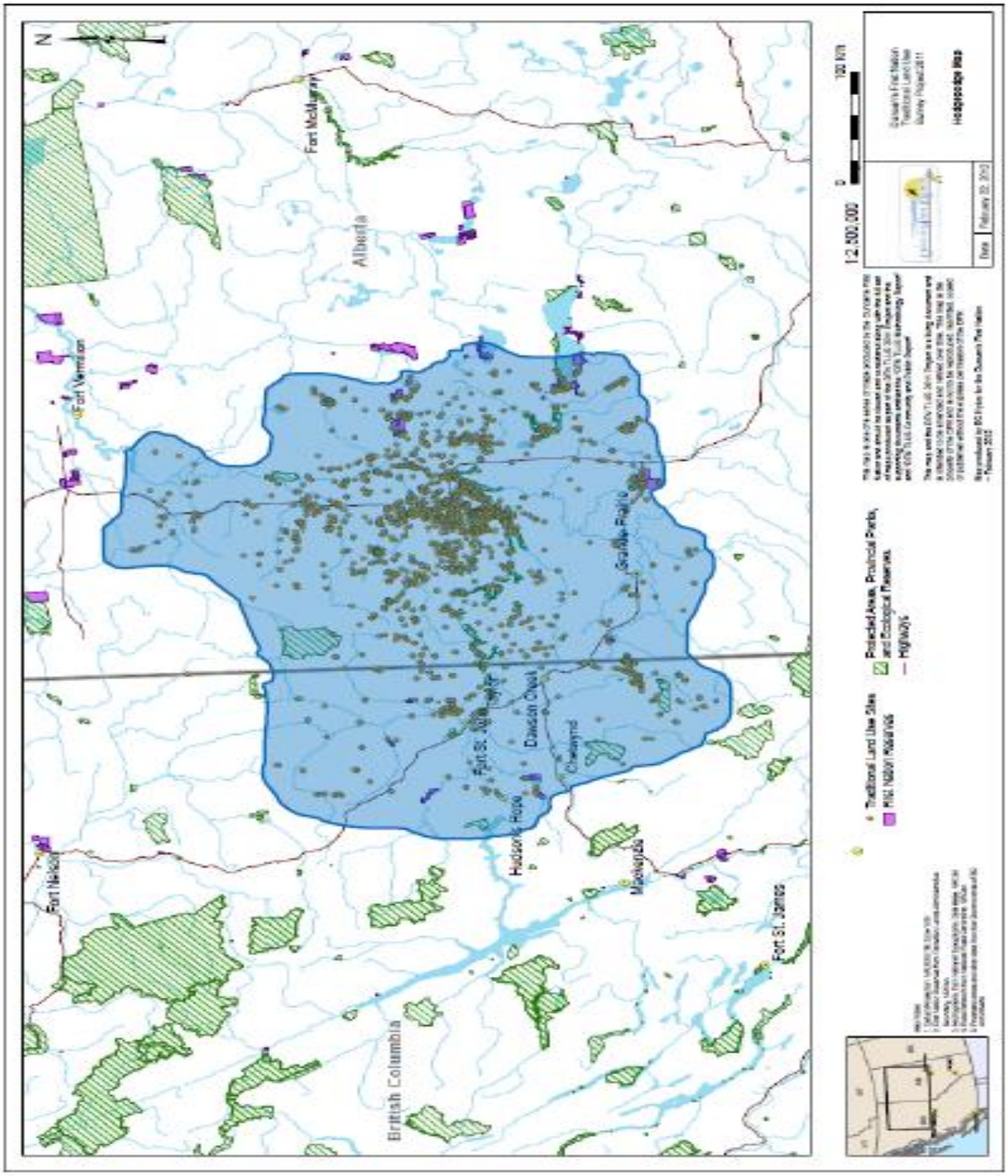
IMPACTS ASSOCIATED WITH TRANSMISSION LINE, HIGHWAY 29 ALTERATIONS AND BORROW PITS		
DFN Interest >	**Community Health and Well Being**	**Ecological and Treaty Interest**
Potential Project Effect	Y	Y
Transmission Line		
Direct loss of forest and vegetation to clearing and widening of existing ROW Corridor	Y	Y
Disturbance to/ displacement of wildlife from clearing and construction activities	Y	Y
Increased access effect on wildlife populations through increased predation by humans and predators	Y	Y
Increased fragmentation and increase of anthropogenic edge within Peace Moberly Tract - area containing critical ungulate habitat and values		
Increased potential for creation of energy corridor with other proponents and operators seeking access to area and twinning existing corridor	Y	Y
Highway 29 Alterations		
Disturbance to wildlife during construction combined with clearing in adjacent reserovir area and dam site		
Direct loss of forest resources and vegetation in area that has been impacted by farming and recent wave of Pine Beetle infestation		
Straightened highway may lead to increased highway speeds on completed highway leading to increased ungulate mortality		
Borrow Pits (Peace Reach/Del Rio Pits)		
Disturbance to wildlife during gravel extraction operations		
Increased mortality of ungulates due to #'s of trips to and from pits along key access routes and approaches.		
END OF SECTION		

Potential Project Effects
Duncan's First Nation Interest Interaction Matrix

IMPACTS ASSOCIATED WITH TRANSMISSION LINE, HIGHWAY 29 ALTERATIONS AND BORROW PITS	
DFN Interest >	**Cumulative Interaction w/ Dunvegan Hydro Project and DFN Interest**
Potential Project Effect	
Transmission Line	
Direct loss of forest and vegetation to clearing and widening of existing ROW Corridor	
Disturbance to/ displacement of wildlife from clearing and construction activities	
Increased access effect on wildlife populations through increased predation by humans and predators	
Increased fragmentation and increase of anthropogenic edge within Peace Moberly Tract - area containing critical ungulate habitat and values	
Increased potential for creation of energy corridor with other proponents and operators seeking access to area and twinning existing corridor	
Highway 29 Alterations	
Disturbance to wildlife during construction combined with clearing in adjacent reserovir area and dam site	
Direct loss of forest resources and vegetation in area that has been impacted by farming and recent wave of Pine Beetle infestation	
Straightened highway may lead to increased highway speeds on completed highway leading to increased ungulate mortality	
Borrow Pits (Peace Reach/Del Rio Pits)	
Disturbance to wildlife during gravel extraction operations	
Increased mortality of ungulates due to #'s of trips to and from pits along key access routes and approaches.	
END OF SECTION	

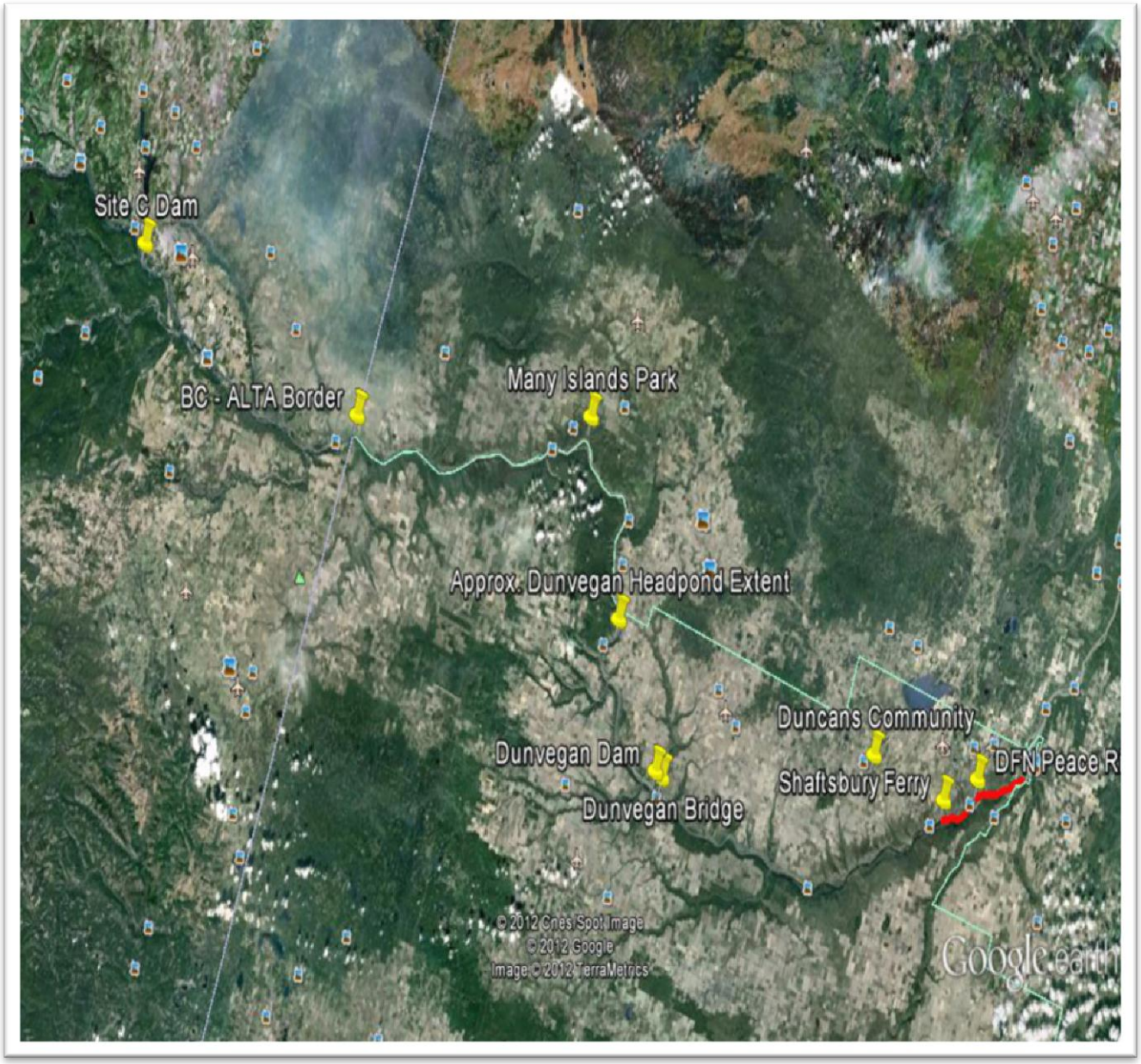
Appendix 2: Treaty #8 Area Map

Appendix 3: DFN Traditional Territory Map

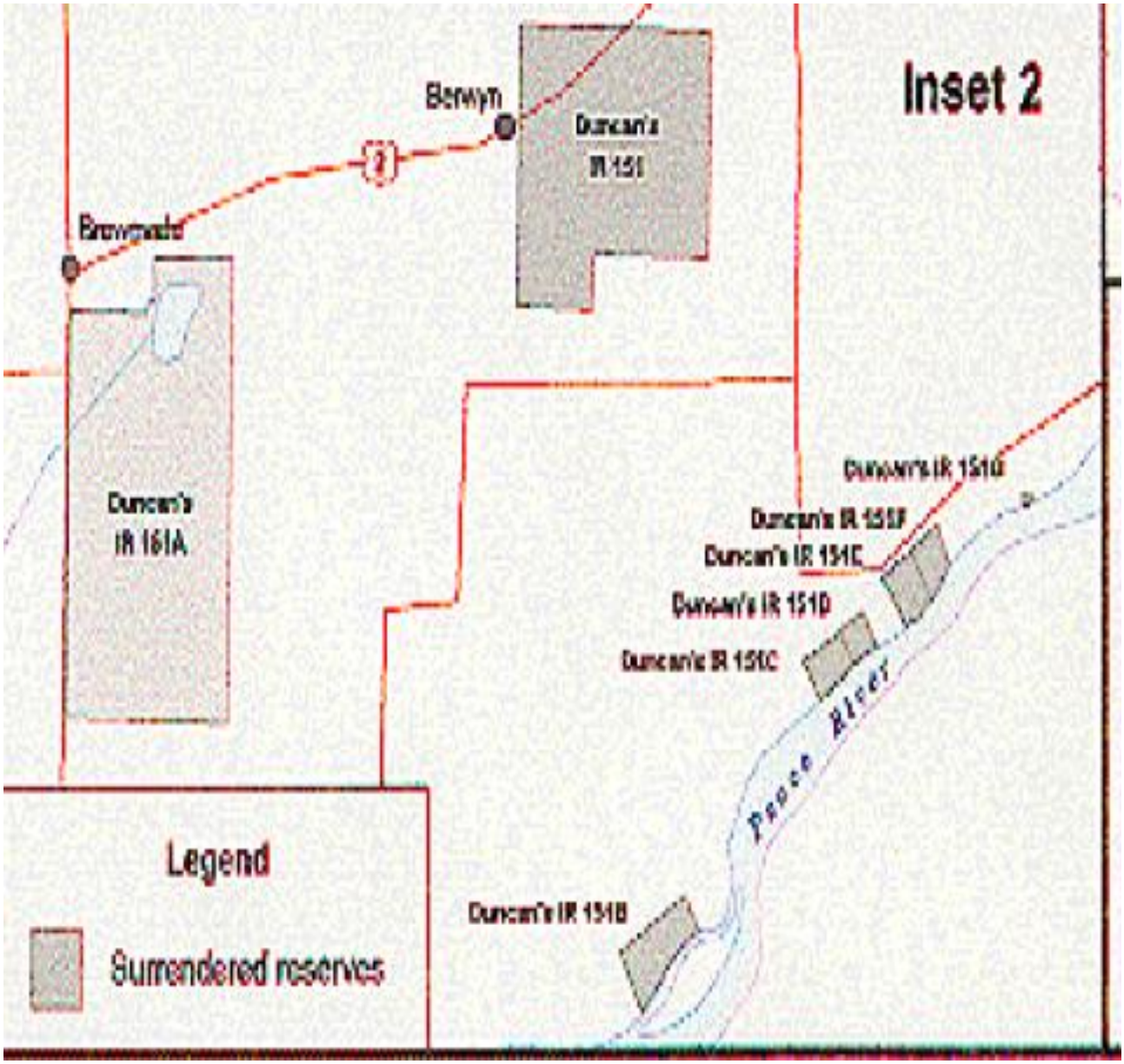


Note: The above "DFN Traditional Territory Map" is being produced in an updated format and will be provided to BC Hydro and regulators as a supplementary document.

Appendix 4: DFN Reserves on Peace River



Appendix 4: DFN Reserves on Peace River



Appendix 5: Trading Post Locations: Northern River Basins Study

Currently Unavailable

Appendix 6: DFN 2012 Country Food Harvest Survey

Harvest Survey - Duncan's First Nation (2012)

These tables were formatted for printing by BC Hydro using information provided by Duncan's First Nation

Respondent #	**A**	**B**	C	D	E
Sex	F	M	F	M	M
Age	21-40	41-60	21-40	41 - 60	Over 60
Preffered Plants	Berries Ratroot	Berries Ratroot	Berries Ratroot	Berries Ratroot Red Willow Birch	Saskatoons Chokecherry Raspberry
Personal Plant Consumption/Week(X's)	Berries - 3 Ratroot - 3	Berries - 1	Berries - 4 Ratroot - 3 (Season)	Berries - 3 Ratroot - 1 Red Willow - 2 Birch - 1	Saskatoons - 3 x 6 times per season Chokecherry - 1 x 8 times per season Raspberry - 4 x 10 times per season
Preffered Wildlife Species	Moose Rabbit Chicken	Moose Elk Rabbit Ducks	Moose Deer Elk Deer Chicken Ducks	Moose Elk	Moose Elk Birds Rabbbit
Personal Consumption/ Meals Per Week(X's)	Moose - 3 Rabbit - 1 Chicken - 1	Moose - 1 Elk - .25 Rabbit - Seasonal Ducks-Seasonal	Moose - 1 Deer - 1 Elk - 1 Chicken - Seasonal Ducks-Seasonal	Moose -4 Elk - 1	Moose - 3 Elk - Seasonal Birds - Seasonal Rabbit - Seasonal
# of People in Household	3	2	4	5	2
Total Household Wildlife Consumption - Meals Per Week / Yr	Moose - 3 / 156 Chicken -1 / 52	Moose - 2 / 104 Elk - .25 /13 Rabbit-Seasonal Duck - Seasonal	Moose - 1 / 52 Elk - 1 / 52 Deer - 1 / 52	Moose - 1 / 52 Elk - 1 / 52	Moose 3 / 156
Total Oz of Wildlife Consumed Per Week / Yr. by Household (#of people X #of meals X total oz consumed/person)	Moose - 108oz / 5616oz Chicken -135oz/7020oz Total - 243 0z / 12635 oz	Moose - 108oz / 5616oz Elk-1.5oz/ 78oz Total 109.50 / 5694 oz	Moose - 18oz / 936 oz Deer - 18oz / 936 oz Elk - 18 oz / 936 oz Total - 54oz / 2808 oz	Moose - 21 oz / 1092 oz Elk - 21 oz / 1092 oz Total - 42 oz / 2184 oz	Moose 18 0z / 936 oz Total 18 0z / 936 oz
Total Household Fish Consumption - Meals Per Week /Yr	Trout -1/ 52	Jackfish -1 / 52	Walleye 1 / 52	Whitefish 1/ 52 Pickerell 1 / 52	Whitefish - 2 / 104 Trout - 4 / 208 Northern Pike - 1 / 52

Harvest Survey - Duncan's First Nation (2012)

These tables were formatted for printing by BC Hydro using information provided by Duncan's First Nation

Respondent #	**A**	**B**	C	D	E
Total Oz of Fish Consumed Per Week / Yr by Household (#of people X #of meals X total oz consumed/person)	9oz / 468 oz	12oz / 624 oz	Walleye - 72oz / 3744 oz	Whitefish - 105 oz / 5460 oz Pickerell - 105 oz / 5460 oz Total - 210 oz / 10920	Whitefish - 6oz / 312 oz Trout - 12oz / 624 oz Northern Pike 3oz -154 oz Total - 21 oz / 1090 oz
Total Protein Per Household (Wildlife and Fish) Oz Per Week / Oz Per Year	Moose - 108oz / 5616oz Chicken -135oz/7020oz Fish - 90z / 468oz Total - 333oz / 13104oz	Moose - 108oz / 5616oz Elk-1.5oz/ 78oz Jackfish - 12oz / 624 oz Total - 135 oz / 6318 oz	Moose - 18oz / 936 oz Deer - 18oz / 936 oz Elk - 18 oz / 936 oz Walleye - 72oz / 3744 oz Total - 126oz / 6552oz	Moose - 21 oz / 1092 oz Elk - 21 oz / 1092 oz Whitefish - 105 oz / 5460 0z Pickerell - 105 oz / 5460 oz Total 252 oz / 13, 104 oz	Moose 18 0z / 936 oz Whitefish - 6oz / 312 oz Trout - 12oz / 624 oz Northern Pike 3oz -154 oz Total - 39oz / 2026 oz
Trad. Use Activity Participation Reported Per Household	Hunting - 3 Traps - 2 Fishing - 3 Gathering - 3	Hunting -1 Trap - 1 Fish - 1 Gathers - 2	Hunting - 4 Trapping-1 Fishing-4 Gathering - 4	Hunting - 4 Trapping-0 Fishing- 4 Gathering - 4	Hunting - 1 Trap - 1 Fish - 1 Gather - 1
Reported Barriers to Hunting	Cost / Limited Time / Difficult to access good places / Changes in pop health and abundance	Cost /Difficult to access good places / Changes in pop health and abundance	Broken equipment/cost/difficult to access good place / changes in health and abundance	Lack of equipment / Cost / Time / Difficult to access good places / Changes in health and abundance	Difficult to access good places / Changes in population health and abundance
Reported Barriers to Fishing	Changes in pop health and abundance	Lack of equipment/costs/changes in pop health and abundance	Broken equipment/cost/difficult to access good place / changes in health and abundance	NA	Difficult to access good places / Changes in population health and abundance
Favorite / Frequent Place to Hunt	Peace River Valley / North of William Mackenzie IR	Peace River Valley / Sulpur Lake / North of Whitemud Hills	By Peace River and where there is water / West of Three Creeks	By the Peace River / Along the Peace River	Through Traditional Territory / All Over
Favourite / Frequent Place to Fish	Peace River	Peace River	Peace River	Peace River	NA
Sharing of Harvest With Family Out of Household	Y - 50%	Y - 25%	Y-25%	Y - 75%	Y - 75%

Harvest Survey - Duncan's First Nation (2012)

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Respondent #	**A**	**B**	C	D	E
Bartering (Y)-Commodities	Y-Meat for ammunition	NA	NA	NA	NA
Children Btwn. 5-18 being taught to hunt	Y	Y	Y	Y	Y
Children Btwen 5-18 being taught to fish	Y	Y	Y	Y	Y
Any Householder Employed 6 Months and Over	Y	Y	Y	Y	Y
Perceived Community Favourite Country Foods	Moose, Fish, Berries	Moose, Fish, Berries	Moose, Berries	Moose, Fish,	Wild Game, Berries
Perceived Community Children Favourite County Foods	Moose, Berries	Moose, Berries	Moose, Berries	Moose, Fish	Berries
Concerned Re Health of Country Foods	Contamination in fish / widlife	Contaminiation in fish	No	Contaminantion in fish / wildlife	Contamination in water / soil
Do You Consume More/Less Country Foods Than Prior Yrs	5Yrs - Same /15Yys - Less / 30Yrs - Less	5yrs - Less / 15Yrs - same / 30Yrs - Same	5Yrs - More / 15Yrs - More / 15Yrs - More	5yrs - Same / 15 Yrs - Less / 30 Yrs - Lesss	5Yrs - same / 15 yrs - Less / 30 Yrs - Same
Do You Consume As Much Country Food As You Would Like	No	No	No	No	No
Why is Harvesting Country Foods Important to You	Part of culture and tradition	Cheaper and healthier than store bought meat	Health and leaner meat (diet)	Health, well being, pyshically active, spirituality	Value of traditional foods and trad. Lifestyle

END OF SECTION

Harvest Survey - Duncan's First Nation (2012)

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Respondent #	F	G	H	I	J
Sex	F	M	M	M	M
Age	41 - 60	41-60	21 - 40	Over 60	41 - 60
Preffered Plants	Berries Mint Tea	Berries	Berries Mint Tea	Berries	Berries Herbs
Personal Plant Consumption/Week(X's)	Berries - 1 X / Week Mint Tea - 7 X / Week	Berries - .25 X / Week	Berries - 1 Mint Tea - 1	Berries - 2 (In Fall)	Berries - 7 Herbs - 7
Preffered Wildlife Species	Moose Chicken	Moose Elk Caribou Chicken	Moose Elk Deer Ducks Geese Chicken	Moose Elk Geese Chicken Rabbit Procupine	Moose, Deer, Caribou, Elk, Bear, Rabbit
Personal Consumption/ Meals Per Week(X's)	Moose - 7	Moose - 2 Chicken - .25 Elk - .25 Caribou - Seasonal	Moose -1 Elk - 1 Deer - Occasional Ducks - Seasonal Geese - Seasonal Chicken - Occasional	Moose -2 Elk -2 (Fall and Winter) Geese (Fall) Chicken (Occassional) Rabbit - 2 Procupine (Occasional)	Moose - 7 Elk - 7
# of People in Household	2	4	5	2	1
Total Household Wildlife Consumption - Meals Per Week / Yr	Moose-7 / 364	Moose 2 / 104 Elk .25 / 13	Moose 1 / 52 Elk 1 / 52`	Moose 2/ 52 Elk 2 / 52	Moose 7 / 52 Elk 7 / 52
Total Oz of Wildlife Consumed Per Week / Yr. by Household (#of people X #of meals X total oz consumed/person)	Moose 126 oz / 6552 oz	Moose 54 oz / 2808 oz Elk 6.75 oz / 351 oz Total 60.75 / 3159 oz	Moose 54oz / 2808 oz Elk 54 oz / 2808 oz Total 108 oz / 5616 0z	Moose - 18oz / 936 oz Elk - 18 oz / 936 oz Total - 36oz / 1872 oz	Moose - 42oz / 2184 oz Elk - 42 oz / 2184 oz Total - 84 oz / 4368 oz
Total Household Fish Consumption - Meals Per Week /Yr	Whitefish -.5 / 26 Walleye - .5 / 26	Trout - 1 / 52	No - Don't consume fish re contamination concerns	Walleye - Seasonal (Winter) Northern Pike - Seasonal (Winter)	Whitefish - Undetermined Northern Pike - Undetermined Walleye - Undetermined

Harvest Survey - Duncan's First Nation (2012)

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Respondent #	F	G	H	I	J
Total Oz of Fish Consumed Per Week / Yr by Household (#of people X #of meals X total oz consumed/person)	Whitefish - 8oz / 832 oz Walleye - 8 oz / 832 oz Total - 16 oz / 1664 oz	Trout - 18oz / 936 oz	NA	NA	Whitefish, Northern Pike, Walleye - Undetermined
Total Protein Per Household (Wildlife and Fish) Oz Per Week / Oz Per Year	Moose 126 oz / 6552 oz Whitefish 8oz / 832 oz Walleye 8 oz / 832 oz Total 142oz / 8216 oz	Moose 54 oz / 2808 oz Elk 6.75 oz / 351 oz Trout 18 oz / 936 oz Total 78.75 oz / 4095 oz	Moose 54oz / 2808 oz Elk 54 oz / 2808 oz Total 108 oz / 5616 0z	Moose - 18oz / 936 oz Elk - 18 oz / 936 oz Total - 36oz / 1872 oz	Moose - 42oz / 2184 oz Elk - 42 oz / 2184 oz Total - 84 oz / 4368 oz
Trad. Use Activity Participation Reported Per Household	Hunting - 1 Trap - 2 Fish - 2 Gather - 2	Hunting - 4 Trap - 0 Fishes - 4 Gather - 4	Hunting - 5 Trap - 0 (Trapped in Past) Fish - 5 Gather - 5	Hunting - 2 Trapping - 0 Fishing - 2 Gathering - 2	Hunting - 1 Trapping - (Trapped in Past) Fishing - 1 Gathering 1
Reported Barriers to Hunting	None	Time	Time, Difficult to access good places, Changes in poulation health and abundance	None	Cost, Employment, Difficult to access good places, Changes in population health and abuncance
Reported Barriers to Fishing	None	NA	Concerns re mercury/contam.	Water too muddy in Peace and other rivers, contaminants in rivers	River is dirty, full of contimants, fewer fish in areas we used to go on Peace River
Favorite / Frequent Place to Hunt	By Peace River and where there is water / Heart Creek Area / NE of Town of Peace River	Peace River Valley to Duncans IR ("This is key migration route')	Top to bottom of Peace River - Across BC / Alberta border along Peace River	Along Silver Valley / Peace River and where two rivers meet / Hunts at Many Islands at camp that community has at Many Islands on the Peace River	Peace River Valley / Around William Mackenzie IR / North of Clear Hills IR
Favourite / Frequent Place to Fish	Peace River	Peace River	NA	Peace River	Peace River
Sharing of Harvest With Family Out of Household	Y - 50%	Y - 75%	Y - 50%	Y - 75%	Y - 50%

Harvest Survey - Duncan's First Nation (2012)

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Respondent #	F	G	H	I	J
Bartering (Y)-Commodities	NA	NA	NA	No	YES - Trade for other fish
Children Btwn. 5-18 being taught to hunt	Y	Y	Y	Y	Y
Children Btwen 5-18 being taught to fish	Y	Y	Y	Y	Y
Any Householder Employed 6 Months and Over	Y	Y		Y	Y
Perceived Community Favourite Country Foods	Moose, Berries, Rabbit, Chickens	Moose, Elk, Deer, Fish	Moose, berries, deer, elk,	Moose, Fish, Berries, Wild Potatoes	Fish, Moose, Berries
Perceived Community Children Favourite County Foods	Moose, Berries, Rabbit, Chickens	Moose, Elk, Deer, Fish	Moose, Berries	Moose, Fish, Berries, Wild Potatoes	Moose Meat (Dried)
Concerned Re Health of Country Foods	Contaminantion in fish / wildlife	Water quality in Peace River	Concerned re mercury in fish and contamintation from industry	Concerned re mercury in fish and contamintation from industry	Water quality in Peace River
Do You Consume More/Less Country Foods Than Prior Yrs	5Yrs - Same / 15 Yrs - More / 30 Yrs - Less	5yrs - More / 15yrs - Same / 30yrs ago - Less	5Yrs - Less / 15Yrs - Less - 30 Yrs - Less	5Yrs - Same / 15Yrs - Same / 30 Yrs - Same	5Yrs - Less / 15 Yrs - Less / 30Yrs - Less
Do You Consume As Much Country Food As You Would Like	No	No	No	Yes	Yes
Why is Harvesting Country Foods Important to You	Readily available, cheaper than store bought meat	Major food source, healthier source of protien	Way of life, part of culture	Healthy source of meat vs store bought meats	Cheaper than store bought foods

END OF SECTION

Harvest Survey - Duncan's First Nation (2012)

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Respondent #	K	L	G	H	I
Sex	F	F	M	F	M
Age	21 - 40	Over 60	Over 60	41-60	41-60
Preffered Plants	Labrador Tea Berries Ratoot	Berries Herbs	Berries Ratroot	Ratroot Diamond Willow Fungus Laboom Tea	Berries Saskatoons
Personal Plant Consumption/Week(X's)	Labrador Tea - 3 Berries - 2 Ratoot - 1	Berries - 5 Herbs - 1	Berries - 7 Ratroot - 1	Ratroot - 7 Diamond Willow Fungus -7 Laboom Tea -7	Berries - 1 Saskatoons - 1
Preffered Wildlife Species	Moose Deer Bear Ducks Chicken	Moose Deer Elk Rabbits Duck Chicken	Moose Deer Caribou Elk Bear Rabbitt Duck Chicken Geese	Moose Caribou Elk Bear Beaver Chicken	Moose Elk Rabbitt
Personal Consumption/ Meals Per Week(X's)	Moose -1 Deer -2 Bear -Occassional Ducks - Seasonal Chicken - Seasonal	Moose -2 Deer - .25 Elk - 1 Rabbits -2 Duck -2 Chicken -2	Moose - 3 Deer - Occasional Caribou - In the past Elk - Occasional Bear - In the past Rabbitt - Occassional Duck - Occasional Chicken - Occassional Geese - Occassional	Moose - 1 Caribou - (4 X Per Year) Elk -1 Bear - Used for medince as required Beaver - Occassional Chicken- Seasonal Buffalo	Moose - 1 Elk - 1 Rabbitt (Occassional)
# of People in Household	5	2	1	4	3
Total Household Wildlife Consumption - Meals Per Week / Yr	Moose 1 / 52 Deer 2 / 104	Moose 2 / 104 Deer .25 / 13 Elk 1 / 52	Moose 2 / 52	Moose - 1 / 52 Buffalo - 1 / 52 Chicken (Seasonal)	Moose - 1 / 52 Elk - 1 / 52
Total Oz of Wildlife Consumed Per Week / Yr. by Household (#of people X #of meals X total oz consumed/person)	Moose - 12 oz / 624 oz Elk - 24 oz / 1248 oz Total - 36 oz / 1872 oz	Moose -12oz / 624 oz Elk - 6oz / 312 oz Deer - 1.5 oz / 78 oz Total - 108 oz / 1014 oz	Moose - 6oz / 312 oz	Moose - 16oz / 832 0z Buffalo - 16 oz / 832 oz Chicken - Seasonal Total - 32 oz / 1664 oz	Moose - 9oz / 468 oz Elk - 9oz / 468 oz Total - 18 oz / 936 oz
Total Household Fish Consumption - Meals Per Week /Yr	Walleye - Seasonal Whitefish - Seasonal	Whitefish - Seasonal Northern Pike-Seasonal	Whitefish - 1 / 52 Northern Pike - 1 / 52	Whitefish - 1 / 52	Trout - 1 / 52

Harvest Survey - Duncan's First Nation (2012)

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Respondent #	K	L	G	H	I
Total Oz of Fish Consumed Per Week / Yr by Household (#of people X #of meals X total oz consumed/person)	Walleye - Seasonal (3X Fall) Whitefish - (3X Fall)	Whitefish - Seasonal (2 X Fall) Northern Pike - Seasonal (2 X Fall)	Whitefish - 3oz / 156 oz Northern Pike -3oz / 156 oz Total - 6oz / 312 oz	Whitefish -12 0z / 624 oz	Trout - 15oz / 780oz Grayling - 15 oz / 780 oz Total - 30oz / 1560 oz
Total Protein Per Household (Wildlife and Fish) Oz Per Week / Oz Per Year	Moose - 12 oz / 624 oz Elk - 24 oz / 1248 oz Total - 36 oz / 1872 oz	Moose -12oz / 624 oz Elk - 6oz / 312 oz Deer - 1.5 oz / 78 oz Total - 108 oz / 1014 oz	Moose - 6oz / 312 oz Whitefish - 3oz / 156oz Northern Pike 6 oz / 312 oz Total - 15 oz / 780 oz	Moose - 16oz / 832 0z Buffalo - 16 oz / 832 oz Chicken - Seasonal Whitefish - 12oz / 624 oz Total - 44 oz / 2288 oz	Moose - 9oz / 468 oz Elk - 9oz / 468 oz Trout - 15oz / 780oz Grayling - 15 oz / 780 oz Total - 48 oz / 2496 0z
Trad. Use Activity Participation Reported Per Household	Hunting - 1 Trapping - (Trapped in Past) Fishing - 5 Gathering	Hunting - 1 Trapping - (trapped in past) Fishes - 2 Gathering - 2	Hunting - 1 Trapping - In the past Fishing - 1 Gathering - 1	Hunting - 4 Trap - In the Past Fishing - 4 Gathering - 4	Hunting - 3 Traps -In past Fishing - 3 Gathering - 3
Reported Barriers to Hunting	Time, Difficult to access good place, Changes in population health and abundance	NA	None	None	Costs, Broken equipment, difficult to access good places
Reported Barriers to Fishing	Time, Difficult to access good places, Changes in population health and abundance	NA	Sometime fish don't look right and throw them back	None	None
Favorite / Frequent Place to Hunt	Along Peace River - South side of River / Near Tangent and Watino	Along Peace River - South side of River / Across Shaftsbury Crossing	Along the Hills of the Peace River and by the Peace River / Rambling Creek and Notikewin Valley	South of DFN IR to Peace River and south of River - Dunvegan / Chinook Valley / Sulphur Lake	Along the Peace River / Heart River and Near Carmon Lake
Favourite / Frequent Place to Fish	Peace River	Peace River	Peace River	Peace River	Peace River
Sharing of Harvest With Family Out of Household	Y - 50%	Y - 25%	Y - 50%	Y - 50%	Y - 25%

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Respondent #	K	L	G	H	I
Bartering (Y)-Commodities	NA	No	No	No	No
Children Btwn. 5-18 being taught to hunt	Y	Y	Y	Y	Y
Children Btwen 5-18 being taught to fish	Y	Y	Y	`Y	Y
Any Householder Employed 6 Months and Over	Y	No	No	Mother is employed 6 months / Year	Yes
Perceived Community Favourite Country Foods	Moose, Elk, Berries, Chickn, Ducks	Moose, Fish	Moose, Fish, Berries	Moose, Chicken, Fish, Berries	Elk, Moose, Rabbit, Chicken, Berries
Perceived Community Children Favourite County Foods	Moose, Berries, Chicken	Moose (Dried)	Moose, Fish, Berries,	Moose(DryMeat), Berries, Fish	Berries
Concerned Re Health of Country Foods	Contaminants in fish and wildlife, berries	Contamination	Pollution in Peace River	Spraying from herbicides on plants	No conerns
Do You Consume More/Less Country Foods Than Prior Yrs	5Yrs - Same / 15Yrs - Less / 30 Yrs	5Yrs - Less / 15Yrs - Less / 30 Yrs - More	5Yrs - Same / 15 Yrs - Same / 30 Yrs - More	5yrs - Less / 15yrs - More / 30Yrs - More	5yrs - Same / 15yrs - Same / 30 Yrs - More
Do You Consume As Much Country Food As You Would Like	No	Yes	No	Yes	Yes
Why is Harvesting Country Foods Important to You	Was raised on country foods, culture, healthier, cheaper	Healthier than store bought meat / foods	Part of culture, cheaper than store bought food, good exercise, keeps way sickenss	Way of life, pass on culture,	Health of country foos vs store bought foods, part of and continues culture

END OF SECTION

Harvest Survey - Duncan's First Nation (2012)

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Respondent #	J	K	L	M	N
Sex	F	F	F	F	F
Age	Over 60	41 - 60	Over 60	Over 60	Over 60
Preffered Plants	Saskatoons Cranberry Blueberry	Blueberries Strawberries	Laboom Tea Rhubarb Berries	Berries Straawberry Peppermint Tea Rosehip	Berries Wild Rhubarb Laboom Team
Personal Plant Consumption/Week(X's)	NA	Blueberries - 3 Strawberries - 3	Laboom Tea - 7 Rhubarb - Winter / Seasonal Berries - 7 Winter / Spring / Seasonal	Berries - 5 (In Winter) Strawberry - 5 (In Winter) Peppermint Tea -2 (In Winter) Rosehip - 2 (In Winter)	Berries -3 Wild Rhubarb - 1 Laboom Team -4
Preffered Wildlife Species	Moose Deer Caribou - Occasional Elk - Seasonal Bear - Occasional Duck - Seasonal Prairie Chicken - Seasonal	Moose Deer Duck Geese Rabbit Chicken	Moose Deer Elk Rabbitt Prarie Chicken	Moose Deer Caribou Elk Bear Chicken Rabbit	Moose Deer Duck Geese Rabbit
Personal Consumption/ Meals Per Week(X's)	Moose - 1 Deer - 1 Caribou - Occasional Elk - Seasonal Bear - Occasional Duck - Seasonal Prairie Chicken - Seasonal	Moose -1 Deer - 1 Duck - Seasonal (2x week in fall) Geese - Seasonal (2X week in fall) Rabbit - Occassional Chicken - Occasional	Moose - 7 Deer - 7 - When available Elk - 7 - When available Rabbit - When available Chicken - When available	Moose - 1 Deer - 1 Caribou - Seasonal Elk - Seasonal Bear - Once a year Chicken - Once per month Rabbit - Once per month	Moose -2 Deer -2 Duck - Seasonal Geese - Seasonal Rabbit - Seasonal
# of People in Household	2	1	1	1	6
Total Household Wildlife Consumption - Meals Per Week / Yr	Moose 2 / 104 Deer 2 / 104	Moose 1 / 52 Deer 1 / 52	Moose 7 / 364	Moose .5 / 26 Deer .5 / 26	Moose 2 / 104 Deer 2 / 104
Total Oz of Wildlife Consumed Per Week / Yr. by Household (#of people X #of meals X total oz consumed/person)	Moose 24 oz / 1248oz Deer 24 oz / 1248 oz Total 48 oz / 2,469 oz	Moose 6oz / 312oz Deer 6 oz / 312 oz Total 12oz / 624oz	Moose 21 oz / 1092 oz	Moose 3oz / 156oz Deer 3oz / 156 oz Total 6oz / 312 oz	Moose 48oz / 2496 oz Deer 48 oz / 2496 oz Total 96 oz / 4992 oz
Total Household Fish Consumption - Meals Per Week /Yr	Whitefish 1 / 52 Northern Pike 1 / 52	Whitefish - Seasonal Northern Pike- Seasonal	Whitefish 1 / 52 Northern Pike 1 / 52	Whitefish 2 / 104 Northern Pike (When Available)	No Fish Consumed

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Respondent #	J	K	L	M	N
Total Oz of Fish Consumed Per Week / Yr by Household (#of people X #of meals X total oz consumed/person)	Whitefish 12 oz / 624 oz Northern Pike 12 oz / 624 oz Total 24 oz / 1248 oz	Whitefish - Seasonal Northern Pike- Seasonal	Whitefish - 21oz / 1092 oz	Whitefish 6oz / 312 oz Northern Pike- When Available	NA
Total Protein Per Household (Wildlife and Fish) Oz Per Week / Oz Per Year	Moose 24 oz / 1248oz Deer 24 oz / 1248 oz Whitefish 12 oz / 624 oz Northern Pike 12 oz / 624 oz Total 72 oz / 3,744 oz	Moose 6oz / 312oz Deer 6 oz / 312 oz Total 12oz / 624oz	Moose 21 oz / 1092 oz Whitefish 21 oz / 1092 oz Total - 42oz / 2184 oz	Moose 3oz / 156oz Deer 3oz / 156 oz Whitefish 6 oz / 312 oz Total 12 0z / 624 oz	Moose 48oz / 2496 oz Deer 48 oz / 2496 oz Total 96 oz / 4992 oz
Trad. Use Activity Participation Reported Per Household	Hunting - 2 Trapping - (In the past) Fishes - 2 Gathering - 2	Hunting - 1 Trap - No Fish - 1 Gather - 1	Hunting - 0 Trap - 0 Fish - 1 Gather - 0	Hunting - 1 Trap - No Fishing - 1 Gathering - 1	Hunt - 6 Trap - No Fish - No Gather - 6
Reported Barriers to Hunting	None	None	Lack of equipment, Costs, Difficult to access good places	None	Lack of equipment, broken equipment, cost, time, changes in population health and abundance
Reported Barriers to Fishing	None	None	Lack of equipment, Costs, Difficult to access good places	None	Do not fish due to pollution and sedimentation in rivers
Favorite / Frequent Place to Hunt	Up and down Peace River Valley	Along the Peace River Valley / South of DFN IR	Used to hunt south of DFN IR and along Peace River	Along banks of Peace River between Dunvegan and Many Islands	South of DFN IR and along Peace River Valley / Dunvegan to Beatton River
Favourite / Frequent Place to Fish	Peace River	Peace River	Peace River	Peace River	No
Sharing of Harvest With Family Out of Household	Y - 50%	Y - 75%	N	Y - 75%	Y - 75%

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Respondent #	J	K	L	M	N
Bartering (Y)-Commodities	No	No	No	No	No
Children Btwn. 5-18 being taught to hunt	Y	Y	Y	Y	Y
Children Btwen 5-18 being taught to fish	Y	Y	Y	Y	Y
Any Householder Employed 6 Months and Over	No	No	No	No	Yes
Perceived Community Favourite Country Foods	Moose, Elk, Bear, Berries	Moose, Chicken, Fish, Berries	Moose, Wild Potatoes	Moose	Moose, Deer, Fish, Berries
Perceived Community Children Favourite County Foods	Moose, Berries (Saskatoons)	Moose (Dry Meat), Chicken	Moosemeat	Moose, Berries	Moose (Dry Meat), Saskatoon Berries
Concerned Re Health of Country Foods	No concerns	Fish are tasting different than they use to, fish contamination	Contaminants in fish and water	Contamination in water / soil / Good fishing places along Peace are dry now	Pollution in Peace River / Contaminated Fish
Do You Consume More/Less Country Foods Than Prior Yrs	5yrs - Same / 15yrs - Same / 30 Yrs - More	5 yrs - Less / 15yrs - Same / 30 Yrs - Less	5Yrs - Less / 15Yrs - Less / 30 Yrs - Less	5Yrs - More / 15yrs - More - 30Yrs - More	5 Yrs - Same / 15yrs - More / 15Yrs - More
Do You Consume As Much Country Food As You Would Like	No	No	No	Yes	No
Why is Harvesting Country Foods Important to You	Have eaten this way whole life, Cheaper than store bought food	Fresh food, no additives	Healthier than store bought food, and cheaper (cost)	Healthier than store bought food and know how to prepare and serve	Leaner meat, healthier and cheaper than store bought meat

END OF SECTION

Harvest Survey - Duncan's First Nation (2012)

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Respondent #	O	P	Q	R	S
Sex	F	M	M	M	M
Age	41 - 60	41 - 60	41 - 60	Over 60	21-40
Preffered Plants	Berries Mint Tea	Saskatoons Wild dandelion	Rat Root Saskatoons	Diamond Willow Fungus Willow Strawberries Berries	Berries Ratroot
Personal Plant Consumption/Week(X's)	Berries - 5 Mint Tea - Intermittent	Saskatoons - Seasonal Wild dandelion - Seasonal	Rat Root - Once / Week as needed Saskatoons - Once / Week in Fall / Winter	Diamond Willow F. - 5 Willow - 5 Strawberries - 5 (Summer Months) Berries - 5 (Summer Months	Berries -3 Ratroot - 2
Preffered Wildlife Species	Moose Deer Caribou Elk Bear Rabbits Ducks	Moose	Moose Deer Caribou Elk Bear Duck Rabbit Chickens	Mooose Elk Rabbit Duck	Moose Deer Elk Bear
Personal Consumption/ Meals Per Week(X's)	Moose - 1 Deer - 1 Per Month (or .25 X Week) Caribou - 2 Times Per Month in Fall Elk - Occasional Bear - Occasional Rabbits - 1 in Summer Ducks - Fall and Spring (Seasonal)	Moose	Moose - 3 Deer - 2 Elk - 1 Caribou - In spring - 1 Time Bear - Fall Duck - Fall Rabbit - Spring / Fall - As availabloe Chickens - Spring / Fall - As available	Moose- 1 Elk - Seasonal Rabbit - When available Duck - Seasonal	Moose - 7 Deer - 5 Elk - 4 Bear - 4 X's Year
# of People in Household	8	5	2	3	9
Total Household Wildlife Consumption - Meals Per Week / Yr	Moose 1 / 52 Deer .25 / 13	Moose 1 / 52	Moose 3 / 156 Deer 2 / 104 Elk 1 / 52	Moose 1 / 52	Moose - 7 / 364 Deer - 5 / 260 Elk - 4 / 208 Bear - 4 X's Year
Total Oz of Wildlife Consumed Per Week / Yr. by Household (#of people X #of meals X total oz consumed/person)	Moose 15oz / 780 oz Deer 3.75 oz / 195 oz Total - 18.75 / 975 oz	Moose 24oz / 1248 oz	Moose 36oz / 1872 oz Deer 24 oz / 1248 oz Elk 12oz / 624 oz Total 72 oz / 3,744 oz	Moose 12oz / 624 oz	Moose 126 oz / 6552 oz Deer 90 oz / 4680 oz Elk 72oz / 3744 oz Total 288 oz / 14976 oz
Total Household Fish Consumption - Meals Per Week /Yr	Walleye / Jack Fish / Whitefish - 1 / 52	Fish - Undetemined (Summer Months)	Whitefish - 1 / 52 Rainbow Trout 1 / 52 Northern Pike 1 / 52	Northern Pike 1 / 52	Northern Pike - Seasonal Ling Cod / Burbot - Seasonal Whitefish - Seasonal Walleye - Seasonal

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Respondent #	O	P	Q	R	S
Total Oz of Fish Consumed Per Week / Yr by Household (#of people X #of meals X total oz consumed/person)	Walleye Jackfish Whitefish Total 15oz / 780oz	Fish - Undetermined (Summer Months)	Whitefish - 12 oz / 624oz Rainbow Trout - 12 oz / 624 oz Northern Pike - 12 oz / 624 oz Total - 36oz / 1872 oz	Northern Pike - 12 oz / 624 oz	Northern Pike - Seasonal Ling Cod / Burbot - Seasonal Whitefish - Seasonal Walleye - Seasonal
Total Protein Per Household (Wildlife and Fish) Oz Per Week / Oz Per Year	Moose 15oz / 780 oz Deer 3.75 oz / 195 oz Fish 15 oz / 780 0z Total 33.75 oz / 1755 oz	Moose 24oz / 1248 oz	Moose 36oz / 1872 oz Deer 24 oz / 1248 oz Elk 12oz / 624 oz Whitefish - 12 oz / 624oz Rainbow Trout - 12 oz / 624 oz Northern Pike - 12 oz / 624 oz Total 96 oz / 4368 oz	Moose 12oz / 624 oz Northern Pike 12oz / 624 oz Total 24 oz / 1248 oz	Moose 126 oz / 6552 oz Deer 90 oz / 4680 oz Elk 72oz / 3744 oz Total 288 oz / 14976 oz
Trad. Use Activity Participation Reported Per Household	Hunt - 8 Trap - 1 (In Past) Fish - 8 Gather - 8	Hunt - 2 Trap - 1 Fish - 5 Gather - 5	Hunt - 2 Trap - 2 (In Past) Fish - 2 Gather - 2	Hunt - 3 Trap -1 Fishes - 3 Gather - 3	Hunt - 9 Trap - o Fish - 9 Gather - 9
Reported Barriers to Hunting	Cost	Lack of equipment, costs, difficult to access good placers, change in population and abundance	None	None	None
Reported Barriers to Fishing	Water levels rising and falling on Peace cut of fishing times	Quick changes in river levels and warm temps in Peace River channels	Poor water quality in Peace River	None	None
Favorite / Frequent Place to Hunt	All Over Peace River Area	All over Peace River Area	Along Peace River / Into north of Dawson Creek and around BC / ALTA border	Along Peace River	Peace River Valley. Chinchaga Valley, Along Peace on DMI Road
Favourite / Frequent Place to Fish	Peace River	Peace Riverr	Peace River	Peace River	Peace River
Sharing of Harvest With Family Out of Household	Y - 50%	Y - 25%	Y - 50%	Y - 25%	Y - 75%

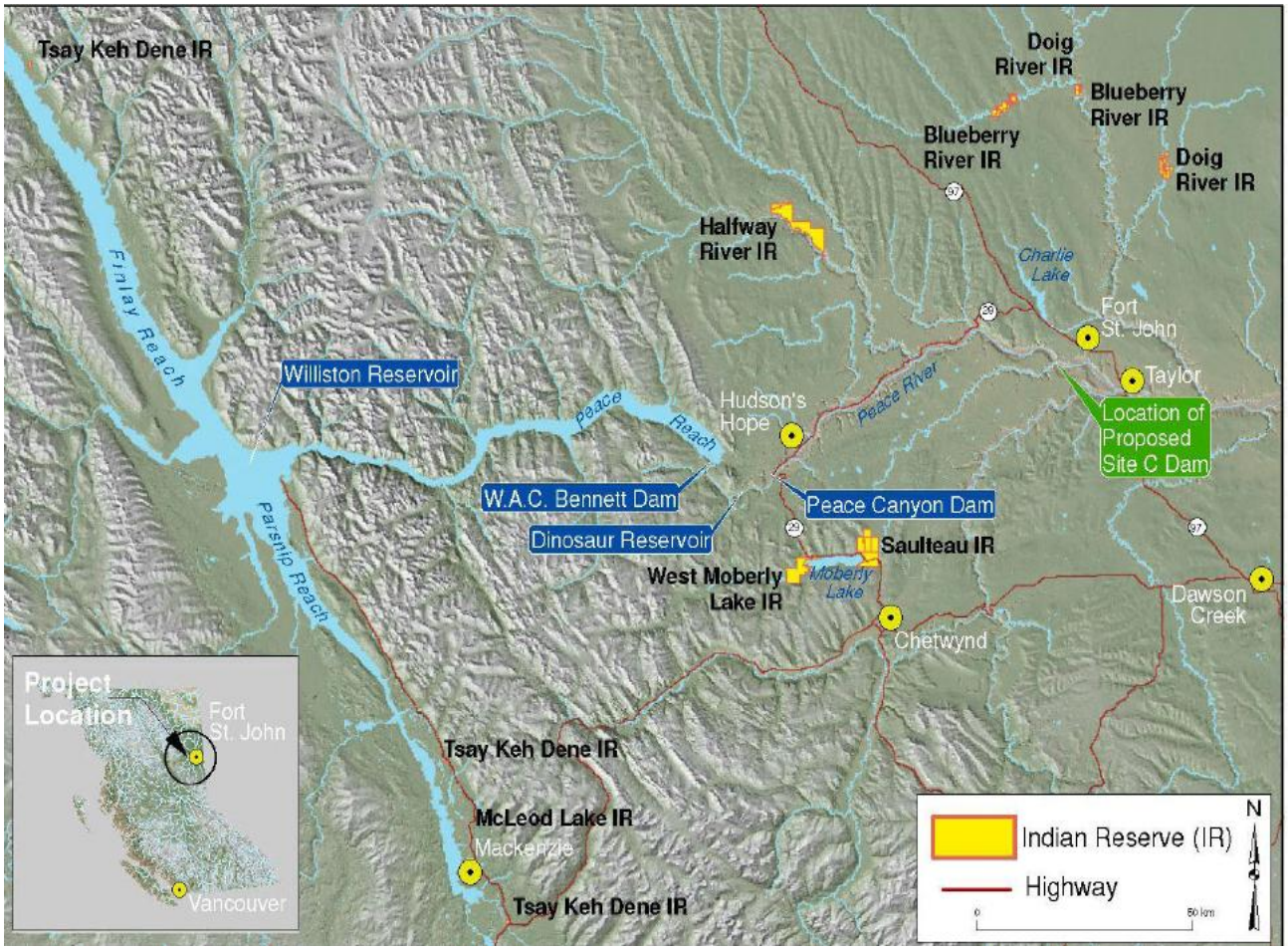
Harvest Survey - Duncan's First Nation (2012)

These tables were formatted for printing by BC Hydro using information provided by Duncan's First Nation

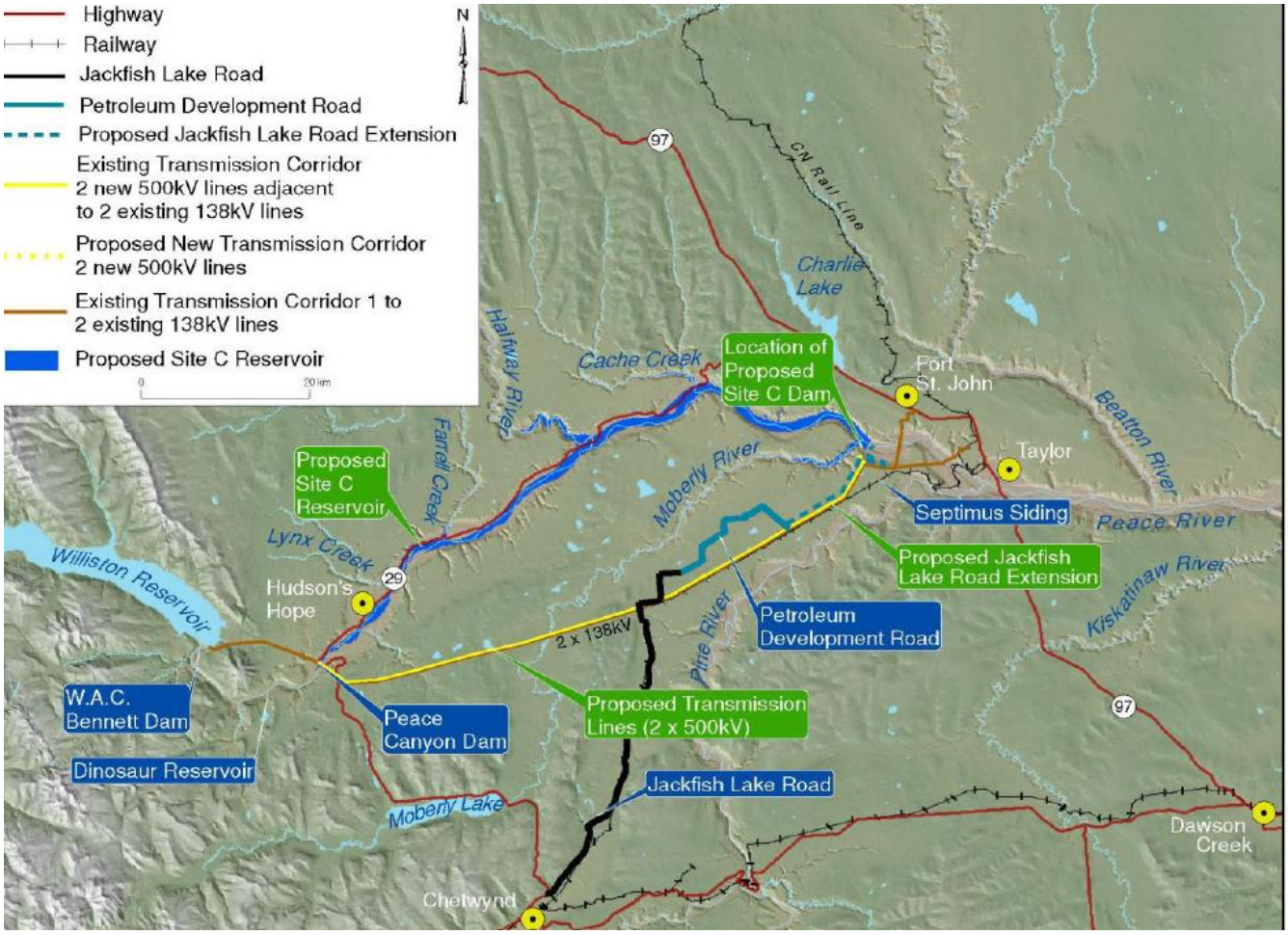
Respondent #	O	P	Q	R	S
Bartering (Y)-Commodities	No	No	Yes - Trades meat with people in BC for salmon	No	No
Children Btwn. 5-18 being taught to hunt	Y	Y	Y	Y	Y
Children Btwen 5-18 being taught to fish	Y	Y	Y	Y	Y
Any Householder Employed 6 Months and Over	Yes	No	Yes	Yes	Yes
Perceived Community Favourite Country Foods	Moose, Fish, Ducks	Moose, Elk, Caribou, Fish	Moose, Fish	Moose	Moose, Elk, Deer, Fish
Perceived Community Children Favourite County Foods	Moose (Dry Meat)	Moose	Moose (Dry Meat), Fish	Moose, Berries	Moose, Elk, Deer
Concerned Re Health of Country Foods	Deer have brain disease	Contamination in water	Contaminants and sediment in Peace River / Can only fish where creeks run into Peace River	Concerns re herbicides	NA
Do You Consume More/Less Country Foods Than Prior Yrs	5 Yrs - Same / 15 Yrs - Ago / 30 Yrs - Same	5Yrs - Same / 15 Yrs Ago - More / 30 Yrs - More	5Yrs - More / 15Yrs - Less / 30 Yrs Ago - Same	5Yrs - Same / 15Yrs - Same / 30 Yrs - Less	5Yrs - More / 15Yrs - More / 30 Yrs - More
Do You Consume As Much Country Food As You Would Like	Yes	No	Yes	Yes	Yes
Why is Harvesting Country Foods Important to You	Healthier meat from bush than stores	Culture, Way of Life, Cost	Cheaper than store bought foods	Part of culture and tradition	Cheaper to feed family

END OF SECTION

Appendix 7: Map of Site C Project Components



Appendix 7: Map of Site C Project Components



1 INTEGRATION OF COMMUNITY BASELINE REPORT INTO EIS: SUMMARY REVIEW TABLE – DUNCAN'S FIRST NATION

Duncan's First Nation prepared the "First Nations Community Baseline Profile: Duncan's First Nation" for inclusion in the Site C Clean Energy Project (the Project) Environmental Impact Statement (EIS). The report is presented in its entirety in this Appendix. A Summary Review Table (Table 1) was prepared to specify where in the Duncan's First Nation Community Baseline report certain topical information is located, and where this information was considered within the EIS.

The information in Table 1 is presented by baseline information category (e.g., Traditional Use of Lands and Resources, Community Demographics, Services and Infrastructure, Economics, Community Health, and Non-Traditional Use of Lands). Where Duncan's First Nation reserves are not included in the spatial boundaries of a VC, and where Duncan's First Nation has not identified an interest or concern with the Project in relation to a particular VC, the information from the baseline report is not linked to a VC in Table 1. Where Duncan's First Nation has identified an interest or a concern regarding a particular VC, but where Duncan's First Nation's reserves are not included in the VC spatial boundaries, the interest is discussed in Volume 5 Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements, as identified in Table 1. For example, Duncan's First Nation identified interests and concerns regarding Project procurement. As the Local Assessment Area for the Economics VCs (Labour Market and Regional Economic Development) does not extend into Alberta, Duncan's First Nation's interest in procurement is discussed in Volume 5 Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements.

While the baseline profile focuses on social, cultural and economic information, to the extent that the baseline mentions concern with other VCs (e.g. environmental), this is captured in Table 1.and the Duncan's First Nation community baseline report were shared with environmental, social, economic, land use and health Technical Leads to guide them to relevant sections of the baseline report for review and consideration in their VC, as appropriate. For additional details, refer to Volume 3 Appendix B First Nations Community Baseline Reports, Part 1 Approach to Gathering and Integrating First Nations Community Baseline Information.

Table 1 Summary review table – Duncan's First Nation

Baseline Information Category	Category and Section of Baseline Report	EIS Section
Current Use of Lands and Resources for Traditional Purposes	Fishing- S. 4.2; 5.2; 5.3; 5.4; 5.5; 5.8; 5.9; 6; 7; 8; 9; 9.1.3; 9.2.1; 9.2.2; 9.2.3; 10.1.2; 11.1.3; 12; 13 Trapping - S. 4.2; 5.3; 5.6; 5.8; 5.9; 6; 7; 9.3 Hunting – S. 4.2; 5.2; 5.3; 5.4; 5.8; 5.9; 6; 7; 8; 9; 9.1.1; 9.1.2; 9.1.3; 9.1.4; 10.1.2; 11.1.1; 11.1.3; 12 Vegetation ["Plant and Earth Material Gathering Sites"] – S.4.2; 5.3; 5.7; 6; 7; 9.1.1; 9.1.3; 9.1.4; 9.4; 12 Cultural and Spiritual Use - S. 5.3; 5.7; 5.8; 5.9; 7; 9.4.2; 10.1.1; 10.1.2 Value of Country foods - S. 5.3	Section 19 Current Use of Lands and Resources for Traditional Purposes
	Fishing - S. 3.1.3; 4.2; 5.2; 5.3; 5.4; 5.5; 5.8; 5.9; 6; 7; 8; 9; 9.1.3; 9.2.1; 9.2.2; 9.2.3; 10.1.2; 11.1.3; 12; 14 Trapping - S. 4.2; 5.2; 5.3; 5.6; 5.8; 5.9; 6; 7; 9.3 Hunting - S. 3.1.3; 4.2; 5.2; 5.3; 5.4; 5.8; 5.9; 6; 7; 8; 9; 9.1.2; 9.1.2; 9.1.3; 9.1.4;10.1.2; 11.1.1; 11.1.3; 12; 13 Vegetation ["Plant and Earth Material Gathering Sites"] - S.3.1.3; 4.2; 5.3; 5.7; 6; 7; 9.1.1; 9.1.3; 9.1.4; 9.4; 12; 13 Cultural and Spiritual Use - S. 5.3; 5.7; 5.8; 5. 9; 7; 9.4.2; 10.1.1; 10.1.2 Value of Country foods - S. 5.3	Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements
Health	Fishing – S. 5.3; 7; 9.2.1; Potential Project Effects Matrix	Section 33 Human Health
Environment	Fishing - S. 4.2; 5.2; 5.5; 6; 7; 8; 9.2.1; 9.2.2; 9.2.3; 10.1.2; 11.1.1; 11.1.2; 11.1.3; 12; 14; Potential Project Effects Matrix	Section 12 Fish and Fish Habitats
	Vegetation – S. 4.2; 5.7; 6; 7; 9.1.1; 9.1.3; 9.1.4; 9.2.1; 9.4; 11.1.3; 12; Potential Project Effects Matrix	Section 13 Vegetation and Ecological Communities
	Wildlife – S. 4.2; 5.3; 5.4; 5.6; 5.9; 6; 7; 8; 9; 9.1.1; 9.1.2; 9.1.3; 9.1.4; 10.1.2; 11.1.3; 14; Potential Project Effects Matrix	Section 14 Wildlife Resources

Baseline Information Category	Category and Section of Baseline Report	EIS Section
Community Demographics, Services and Infrastructure	Transportation – S. 15.4.1; Potential Project Effects Matrix – Highway Alterations	Section 31 Transportation
	Childcare, Education and Training Services – S. 15.9	Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements
Economics	Labour Market – (Outside LAA (i.e., Peace River Regional District; Northern Rockies Regional Municipality – N/A to FNCA)	Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements
	Community Capacity - Education and Skills - S. 16.1.2	Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements
	Community Capacity – Local Businesses and Regional Economic Development - (Outside LAA (i.e., Peace River Regional District; Northern Rockies Regional Municipality – N/A to FNCA)	Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements
Community Health	Cultural vitality: language, traditional activities - S. 5.2; 5.3; 5.4; 5.6; 5.8; 10.1.2 11.1.3; 12; 15.5.1	Section 19 Current Use of Lands and Resources for Traditional Purposes
	Cultural vitality: language, traditional activities - S. 5.2; 5.3; 5.4; 5.6; 5.8; 10.1.2 11.1.3; 12; 15.5.1	Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements
	Health conditions - Potential Project Effects Matrix	Section 33 Human Health
	Health conditions – S. 5.2; 5.3; 9; 12; 15.5.1	Section 34 Asserted or Established Aboriginal and Treaty Rights, Aboriginal Interests and Information Requirements
Non-traditional Use of Land and resources	Land and Resource Use for non-traditional purposes - S. 5.2; 5.6; 9.3	Section 24 Harvest of Fish and Wildlife Resources
	Land and Resource Use for non-traditional purposes - S. 6; 7	Section 25 Outdoor Recreation and Tourism
Land and Resource Use Effects	Navigation – S. 9.1.2; 15.4; Potential Project Effects Matrix	Section 26 Navigation
	Visual – S. 7; Potential Project Effects Matrix	Section 27 Visual Aesthetics