Keeyask Generation Project

CEC Hearings - Environmental Impact Statement

KEEYASK
Hydropower Limited Partnership

Socio-economic, Resource Use and Heritage Resources

Panel and Presentation Guide

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Regulatory Environmental Assessment

- Approach, Methods and Processes
- Physical Environment
- Aquatic and Terrestrial Environments
- Socio-economic, Resource Use, Heritage Resources

Panel Members

Janet Kinley (Panel Chair)	• Principal, InterGroup Consultants Ltd.
Karen Anderson	• Fox Lake Cree Nation Negotiations Office
Councillor George Neepin	• Councillor, Fox Lake Cree Nation
Martina Saunders	• Negotiator, York Factory First Nation Future Development Office
Vicky Cole	• Manager, Major Projects and Licensing, Manitoba Hydro
Don MacDonell	• North/South Consultants Inc.
Virginia Petch, PhD	• President, Northern Lights Heritage Services
Ross Wilson	• Principal, Wilson Scientific

This Presentation

- Opening Remarks
- Context
- Approach to the Regulatory Assessment
- Socio-economic Environment
- Resource Use
- Heritage Resources

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Opening Remarks

Karen Anderson,
Fox Lake Cree Nation Negotiations Office

Martina Saunders,
York Factory First Nation Future Development Office

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Context

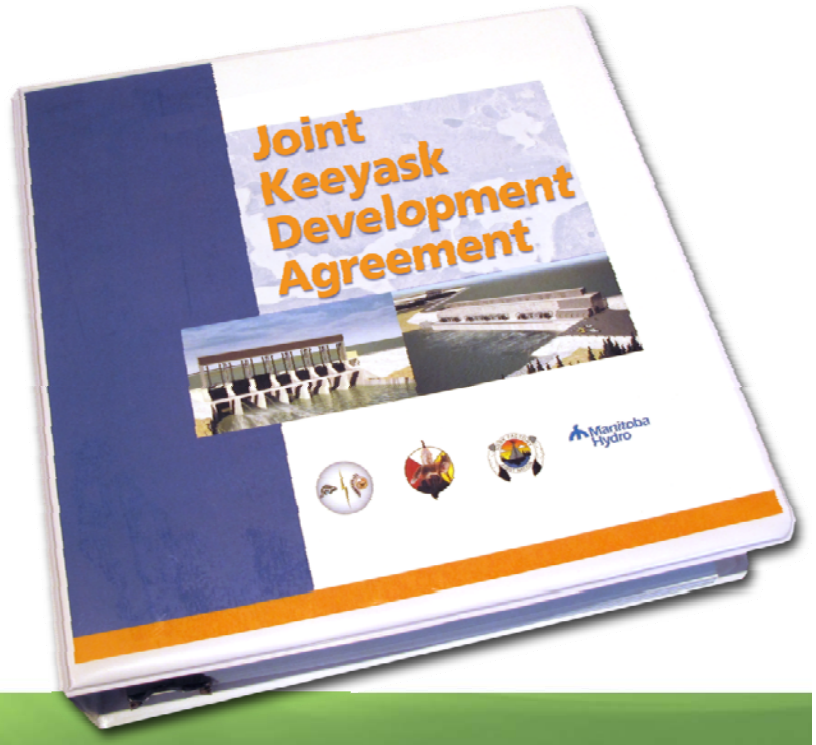
Janet Kinley,
Principal, InterGroup Consultants

Relationship Between the Partner First Nations and Manitoba Hydro

- **Road from difficult history before Keeyask to respectful relationships in planning Keeyask**
- **The people most affected by Keeyask (i.e., the Partner communities) have worked with Manitoba Hydro to plan a better Project**
- **Foundation for the regulatory assessment established through agreements:**
  - Joint Keeyask Development Agreement
  - Adverse Effects Agreements
  - Approved through referendum in each Partner First Nation.

Joint Keeyask Development Agreement

- **KHLP Governance**
- **Project Description – fundamental features**
- **Training and employment benefits**
- **Business opportunities**
- **Waterways Management Program**
- **Forebay Clearing Plan**
- **Adverse Effects Agreements.**

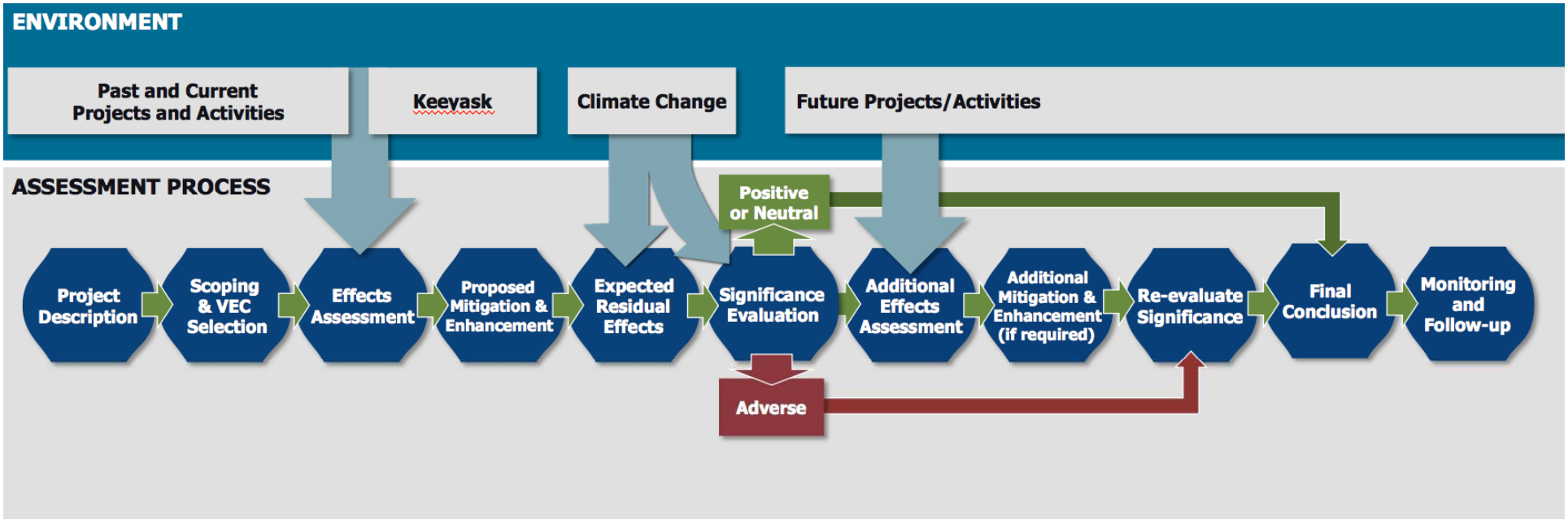


Adverse Effects Agreements

- **Partner First Nations and Manitoba Hydro worked to avoid and alleviate adverse effects of the Project**
- **Each agreement is tailored to effects identified by each Partner First Nation**
- **Programs and initiatives help to mitigate effects on the Partner First Nations.**

Two-track Assessment Process

Environmental Effects Assessment



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Approach to the Regulatory Assessment

Janet Kinley: Principal, InterGroup Consultants

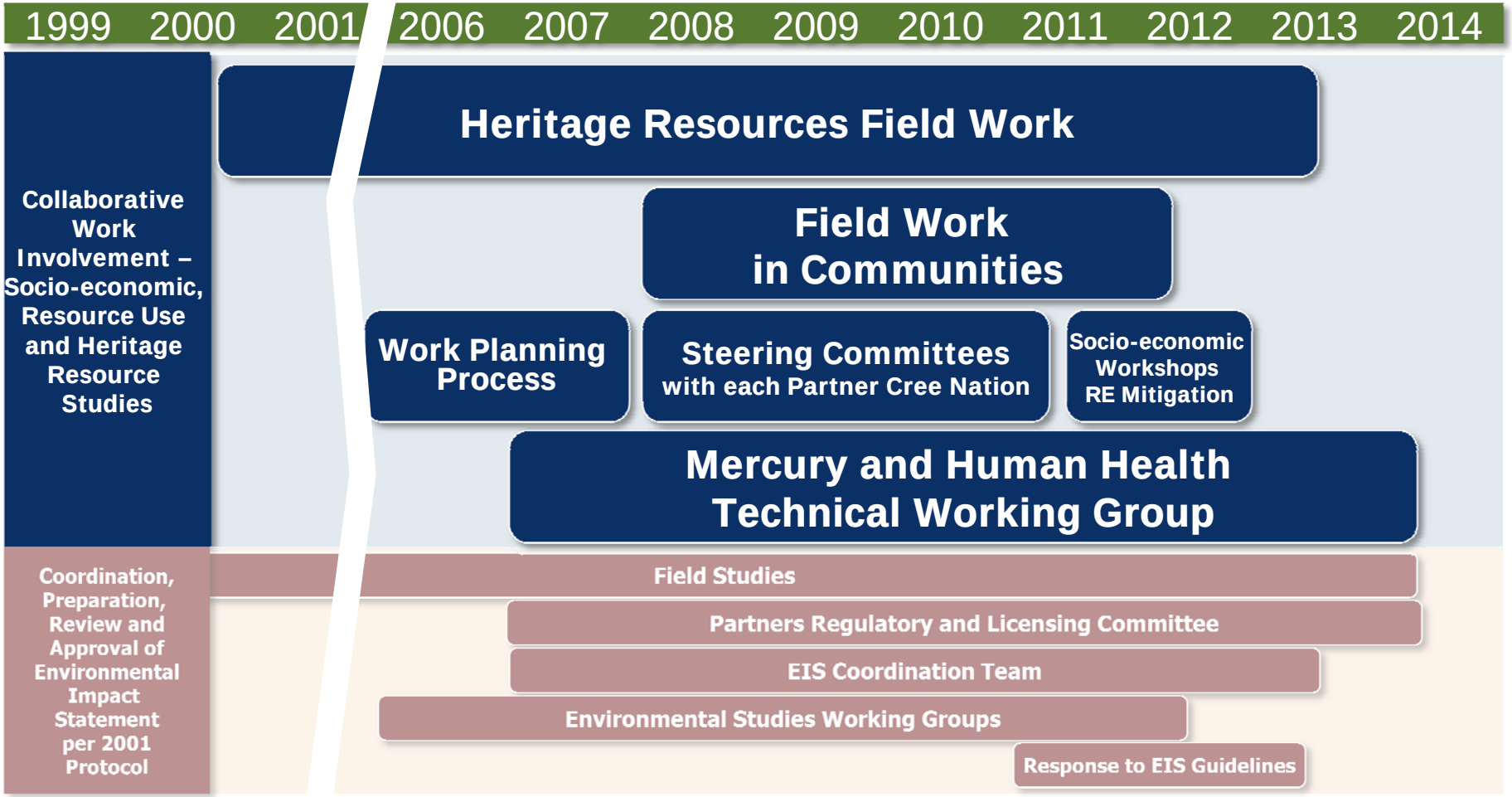
Final Environmental Impact Statement Guidelines

- **Section 8 Existing Environment**
  - Section 8.3 Socio-economic Environment
    - *Economy*
    - *Population, Infrastructure and Services*
    - *Personal Family and Community Life*
    - *Land and Resource Use*
    - *Heritage Resources*
- **Section 9 Environmental Effects Assessment**
- **Section 10 Economic and Social Benefits of the Project**
- **Section 12 Environmental Management.**

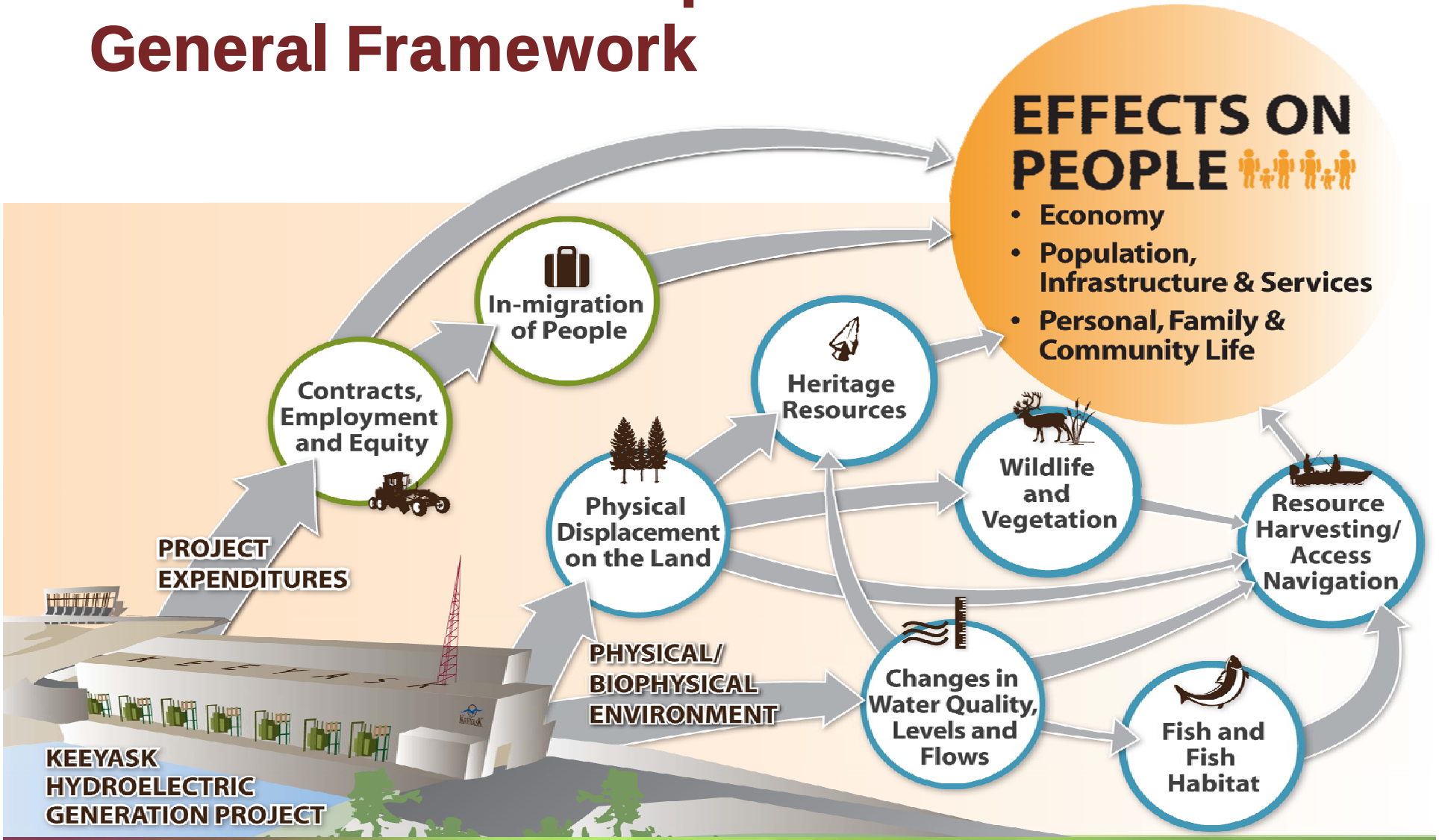
Role of Aboriginal Traditional Knowledge in the Regulatory Environmental Assessment

- **ATK grounded in Cree Worldview**
- **ATK principles developed and applied in:**
  - Identifying issues, concerns
  - Learning about effects of past developments
  - Identifying mitigation options
  - Discussing uncertainty
  - Identifying importance of monitoring and follow-up
  - Discussing how to document ATK and technical science in the filing
  - Reviewing and approving the filing.

How Partner Cree Nations, Manitoba Hydro and EA Team Worked Together



Socio-economic Impact Assessment General Framework



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Identifying and Selecting Valued Environmental Components (VECs)

- **Sources**
  - Regulatory guidelines
  - Workshops with Partner First Nations
  - Public Involvement Program
  - Other environmental assessments
- **Criteria**
  - Overall importance/value to people*
  - Key for ecosystem function
  - Umbrella indicator
  - Amenable to scientific study in terms of the analysis of existing and post-construction conditions
  - Potential for substantial Project effects*
  - Regulatory requirements*

*Primary consideration for socio-economic, resource use and heritage resources.

The Socio-economic VECs and Supporting Topic

Economy

- Employment and Training Opportunities (VEC)
- Business Opportunities (VEC)
- Income (VEC)
- Cost of Living (VEC)
- Resource Economy (VEC)

Population, infrastructure, & services

- Population (Supporting Topic)
- Housing (VEC)
- Infrastructure and Services (VEC)
- Land (VEC)
- Transportation Infrastructure (VEC)

Personal, family & community life

- Governance, Goals and Plans (VEC)
- Community Health (VEC)
- Mercury and Human Health (VEC)
- Public Safety and Worker Interaction (VEC)
- Travel, Access and Safety (VEC)
- Culture and Spirituality (VEC)
- The Way the Landscape Looks/Aesthetics (VEC)

The Resource Use and Heritage Resources VECs and Supporting Topics

Resource Use

- Domestic Fishing (VEC)
- Domestic Hunting and Gathering (VEC)
- Commercial Trapping (VEC)
- Commercial Fishing
- Commercial Forestry
- Mining
- Recreational Resource Use
- Lodges, Outfitters and Tourism
- Protected Areas and Scientific Sites

Heritage Resources

- Heritage Resources (VEC)

Geographic Scope – Study Areas

- **Socio-economic, resource use and heritage resources have:**
  - Study Areas tailored to VECs
  - A Local Study Area and a Regional Study Area
- **In addition, heritage resources has a Core Study Area.**

Temporal Scope: Past, Present, Future

- **The Past (Chapter 6)**
  - Understanding history of the area and people
  - Learning from past hydroelectric development
  - Understanding influences on and vulnerability of the VECs
- **The Present and Future without the Project (Chapter 6)**
  - State of the VECs
  - Future trends, to the extent apparent
- **The Future with the Project (Chapter 6)**
  - Construction Phase
  - Operation Phase
- **The Future with other Projects and Activities (Chapter 7)**
  - Construction Phase
  - Operation Phase.

Socio-economic Environment

KEEYASK
Hydropower Limited Partnership

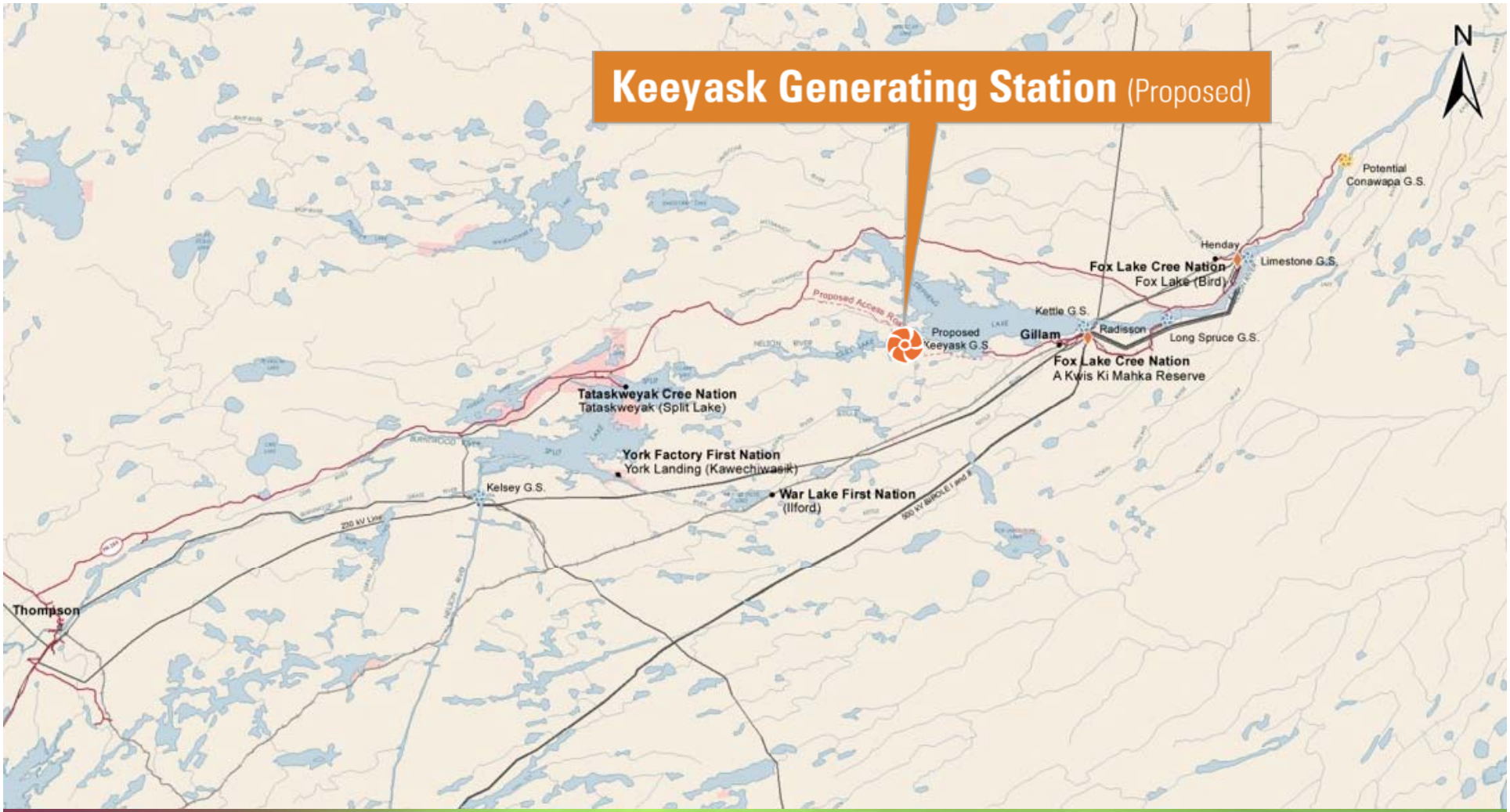
Janet Kinley: Principal, InterGroup Consultants

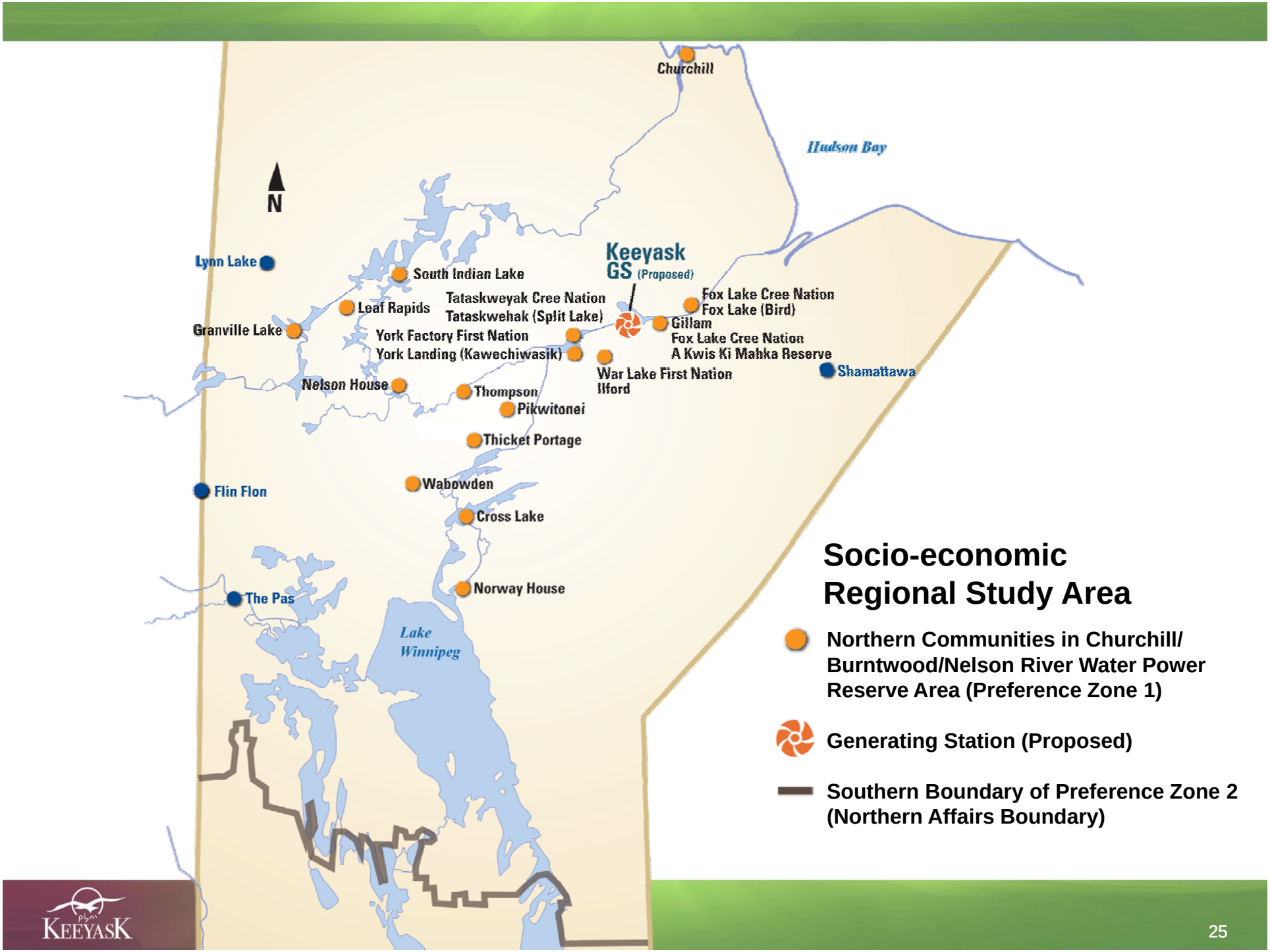
Martina Saunders, York Factory First Nation Future Development Office

Karen Anderson, Fox Lake Cree Nation Negotiations Office

Virginia Petch, PhD: President, Northern Lights Heritage Services

Socio-economic Local Study Area




Churchill
Hudson Bay
N
Keeyask
GS (Proposed)
Lynn Lake
South Indian Lake
Leaf Rapids
Tataskweyak Cree Nation
Tataskwehak (Split Lake)
Granville Lake
York Factory First Nation
York Landing (Kawechiwasik)
Fox Lake Cree Nation
Fox Lake (Bird)
Gillam
Fox Lake Cree Nation
A Kwis Ki Mahka Reserve
War Lake First Nation
Ilford
Shamattawa
Nelson House
Thompson
Pikwitonei
Thicket Portage
Wabowden
Flin Flon
Cross Lake
Norway House
The Pas
Lake
Winnipeg
Socio-economic
Regional Study Area
Northern Communities in Churchill/
Burntwood/Nelson River Water Power
Reserve Area (Preference Zone 1)
Generating Station (Proposed)
Southern Boundary of Preference Zone 2
(Northern Affairs Boundary)

Effects on the Economy

Economy

- **Employment and Training Opportunities (VEC)**
- Business Opportunities (VEC)
- Income (VEC)
- Cost of Living (VEC)
- Resource Economy (VEC)

Population, infrastructure, & services

- Population (Supporting Topic)
- Housing (VEC)
- Infrastructure and Services (VEC)
- Land (VEC)
- Transportation Infrastructure (VEC)

Personal, family & community life

- Governance, Goals and Plans (VEC)
- Community Health (VEC)
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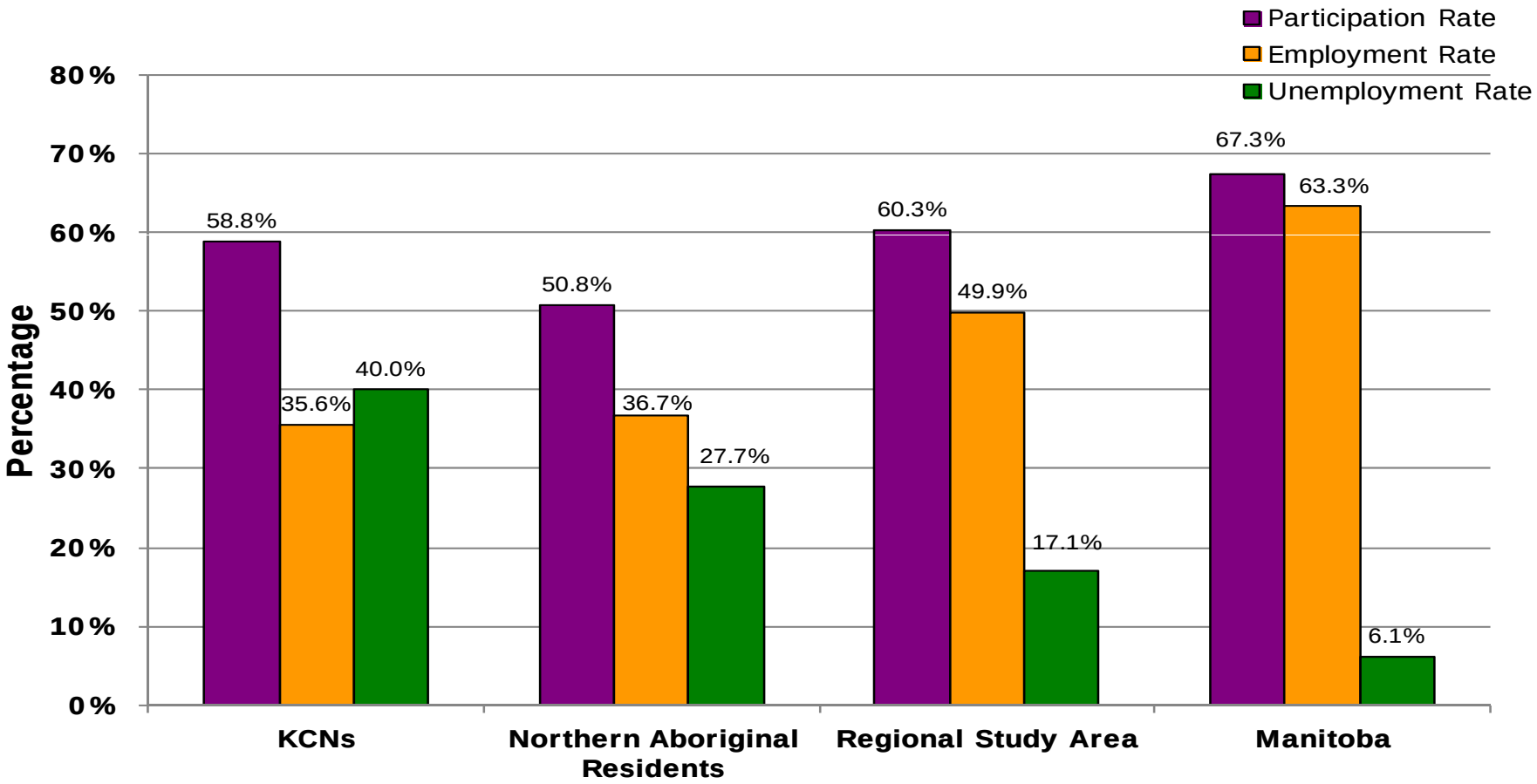
- Culture and Spirituality (VEC)
- The Way the Landscape Looks/Aesthetics (VEC)

Employment and Training VEC

Employment and Training VEC

Employment, Participation and Unemployment



Statistics Canada 2002

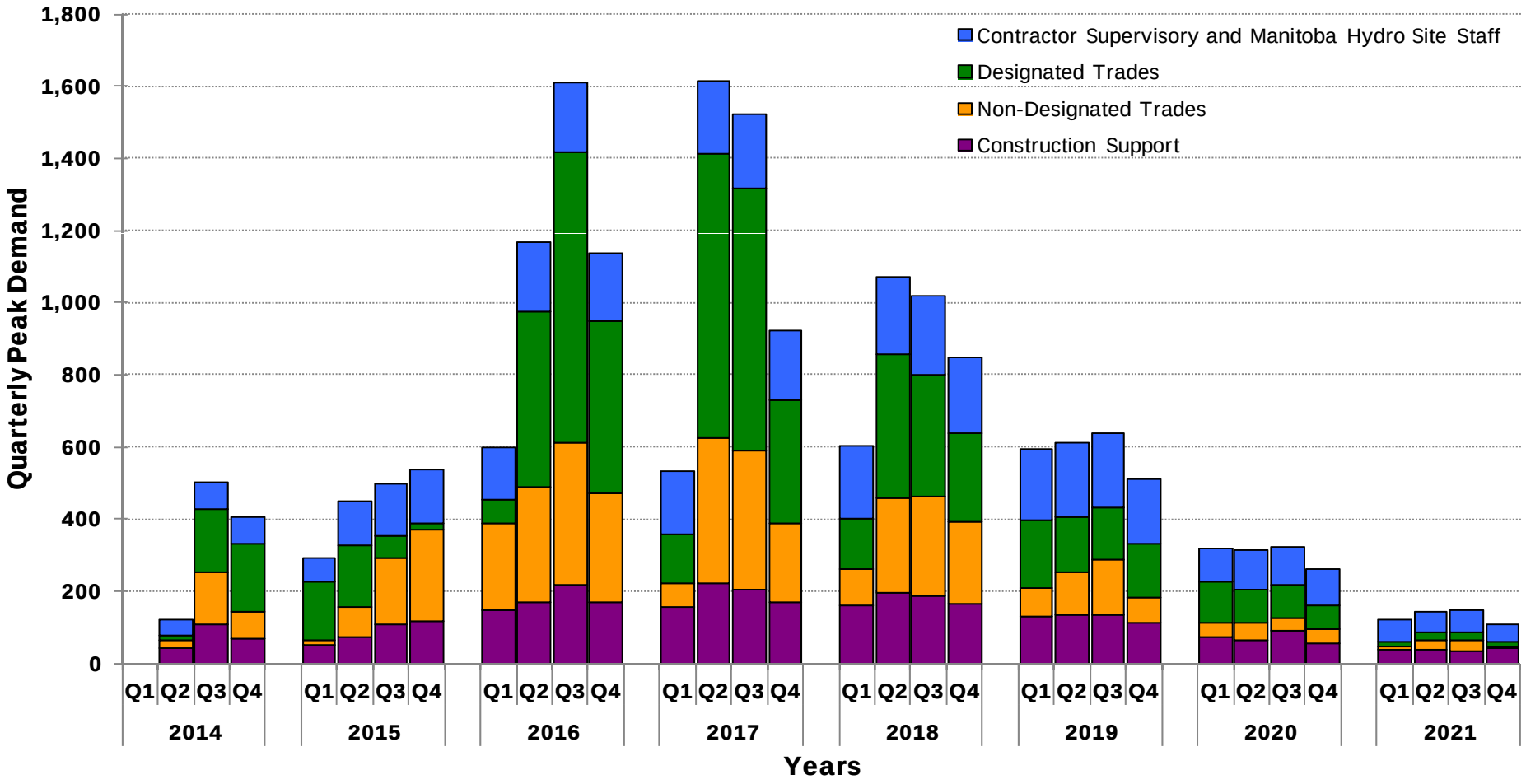
Employment and Training VEC

Aboriginal Labour Force in the Regional Study Area

- **Young and growing population moving into labour force**
- **Challenge of lower education levels than provincial population.**

Employment and Training VEC

Estimated Total Construction Workforce



Employment and Training VEC

Hydro Northern Training and Employment Initiative

- **Operated 2002 to 2010**
- **Partner First Nations, Nisichawayasihk Cree Nation, Manitoba Metis Federation, Manitoba Keewatinowi Okimakanak**
- **Funded by Manitoba Hydro, Manitoba, Canada**
- **2670 people in total completed training**
- **595 participants completed training in job categories required for Project construction; 242 from Partner First Nations.**

Employment and Training VEC

Project Construction Employment Enhancement Measures

- **Burntwood-Nelson Agreement preferences for qualified Aboriginal and northern workers**
- **Direct-negotiated contracts for Partner First Nations included in JKDA**
- **Employee retention and service contract (FLCN and YFFN)**
- **On-site employee liaison workers**
- **Aboriginal union representative hired by Allied Hydro Council**
- **Advisory Group on Employment**
- **Community based job referral officers.**

Employment and Training VEC

Project Employment Effects: Estimated Construction Person Years

Job Category	Partner First Nation Workforce		Regional Study Area Aboriginal Workforce	
	High	Low	High	Low
Construction Support	325	125	750	225
Non-Designated Trades	170	45	535	115
Designated Trades	95	55	310	105
Manitoba Hydro and Contractor Supervisory	10	10	105	105
TOTAL	*600*	*235*	*1,700*	*550*
Percent of Total Available Person Years	14%	6%	40%	13%

Employment and Training VEC

Project Employment Effects: Operation Phase

- **37 Keeyask site staff**
  - Project description update: 38
- **9 Gillam support staff**
  - Project description update: 11.25 to 42.25

Employment and Training VEC

JKDA Target for Full-time Operation Jobs in Manitoba Hydro's System

- **100 TCN members**
- **10 WLFN members**
- **36 YFFN members**
- **36 FLCN members**
- **TOTAL: 182 positions.**

Employment and Training VEC

Conclusion

- **VEC not carried through to consideration of effects in combination with future projects and activities.**

Conclusion: Positive effect.

Effects on the Economy

Economy

- Employment and Training Opportunities (VEC)
- Business Opportunities (VEC)
- Income (VEC)
- Cost of Living (VEC)
- Resource Economy (VEC)

Population, infrastructure, & services

- Population (Supporting Topic)
- Housing (VEC)
- Infrastructure and Services (VEC)
- Land (VEC)
- Transportation Infrastructure (VEC)

Personal, family & community life

- Governance, Goals and Plans (VEC)
- Community Health (VEC)
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- Travel, Access and Safety (VEC)
- Culture and Spirituality (VEC)
- The Way the Landscape Looks/Aesthetics (VEC)

Effects on Population, Infrastructure & Services

Economy	Population, infrastructure, & services	Personal, family & community life
• Employment and Training Opportunities (VEC)	• Population (Supporting Topic)	• Governance, Goals and Plans (VEC)
• Business Opportunities (VEC)	• Housing (VEC)	• Community Health (VEC)
• Income (VEC)	• **Infrastructure and Services (VEC)**	• Mercury and Human Health (VEC)
• Cost of Living (VEC)	• Land (VEC)	• Public Safety and Worker Interaction (VEC)
• Resource Economy (VEC)	• Transportation Infrastructure (VEC)	• Travel, Access and Safety (VEC)
		• Culture and Spirituality (VEC)
		• The Way the Landscape Looks/Aesthetics (VEC)

Infrastructure and Services VEC

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Infrastructure and Services VEC

Local Study Area – Partner First Nations

- **Population growth and limited financial resources challenge the ability to provide services to Members living on-reserve**
  - In 3 of 4 communities, students must leave home for high school
  - Childcare facilities operating at capacity
  - Health care services described as underfunded; members often travel to Gillam, Thompson and Winnipeg to access additional care.

Infrastructure and Services VEC

Local Study Area – Gillam

- **Gillam infrastructure and services**
  - Kindergarten through to high school available
  - New child care facility
  - Hospital with space for current patient volume
  - Gillam Redevelopment and Expansion Program will result in other improvements.

Infrastructure and Services VEC

Project Effects

Construction phase

- Gillam (in particular) and Split Lake – possible adverse effects on social services due to worker interaction and lifestyle changes
- Partner First Nations concerned that Project may draw skilled workers from local service jobs
- Partner First Nations Adverse Effects Agreements include new infrastructure and services

Operation phase

- Population increase in Gillam – add to demand for infrastructure and services
- Equity income to Partner First Nations – could be used for infrastructure and services

Infrastructure and Services VEC

Project Mitigation

- **Emergency medical / ambulance services at camp**
- **Communication with service providers in Local Study Area for timely planning**
  - Partnership working with Northern Regional Health Authority and RCMP re: construction-related needs
- **Gillam Land Use Planning process considered increased demands from permanent population**
- **Harmonized Gillam Development process provides on-going forum for discussion.**

Infrastructure and Services VEC

Interaction with Future Projects/Activities

	KEEYASK CONSTRUCTION	KEEYASK OPERATION
Keeyask Transmission	YES	NO
Bipole III/Keewatinow	YES	NO
Gillam Redevelopment	YES	NO
Conawapa	YES	NO

Infrastructure and Services VEC

Conclusion

- **Construction workers from other future projects will add to pressure on infrastructure and services in Gillam**
  - Corporate-wide approach to worker interaction
- **Overall growth in Gillam – base of northern operations**
  - Processes in place for Manitoba Hydro, Fox Lake Cree Nation and Town of Gilam to plan for growth

Conclusion: Adverse effect. Not significant.

Effects on Population, Infrastructure & Services

Economy

- Employment and Training Opportunities (VEC)
- Business Opportunities (VEC)
- Income (VEC)
- Cost of Living (VEC)
- Resource Economy (VEC)

Population, infrastructure, & services

- Population (Supporting Topic)
- Housing (VEC)
- Infrastructure and Services (VEC)
- Land (VEC)
- Transportation Infrastructure (VEC)

Personal, family & community life

- Governance, Goals and Plans (VEC)
- Community Health (VEC)
- Mercury and Human Health (VEC)
- Public Safety and Worker Interaction (VEC)
- Travel, Access and Safety (VEC)
- Culture and Spirituality (VEC)
- The Way the Landscape Looks/Aesthetics (VEC)

Effects on Personal, Family and Community Life

Economy	Population, infrastructure, & services	Personal, family & community life
• Employment and Training Opportunities (VEC)	• Population (Supporting Topic)	• Governance, Goals and Plans (VEC)
• Business Opportunities (VEC)	• Housing (VEC)	• Community Health (VEC)
• Income (VEC)	• Infrastructure and Services (VEC)	• **Mercury and Human Health (VEC)**
• Cost of Living (VEC)	• Land (VEC)	• **Public Safety and Worker Interaction (VEC)**
• Resource Economy (VEC)	• Transportation Infrastructure (VEC)	• Travel, Access and Safety (VEC)
		• **Culture and Spirituality (VEC)**
		• The Way the Landscape Looks/Aesthetics (VEC)

Mercury and Human Health VEC

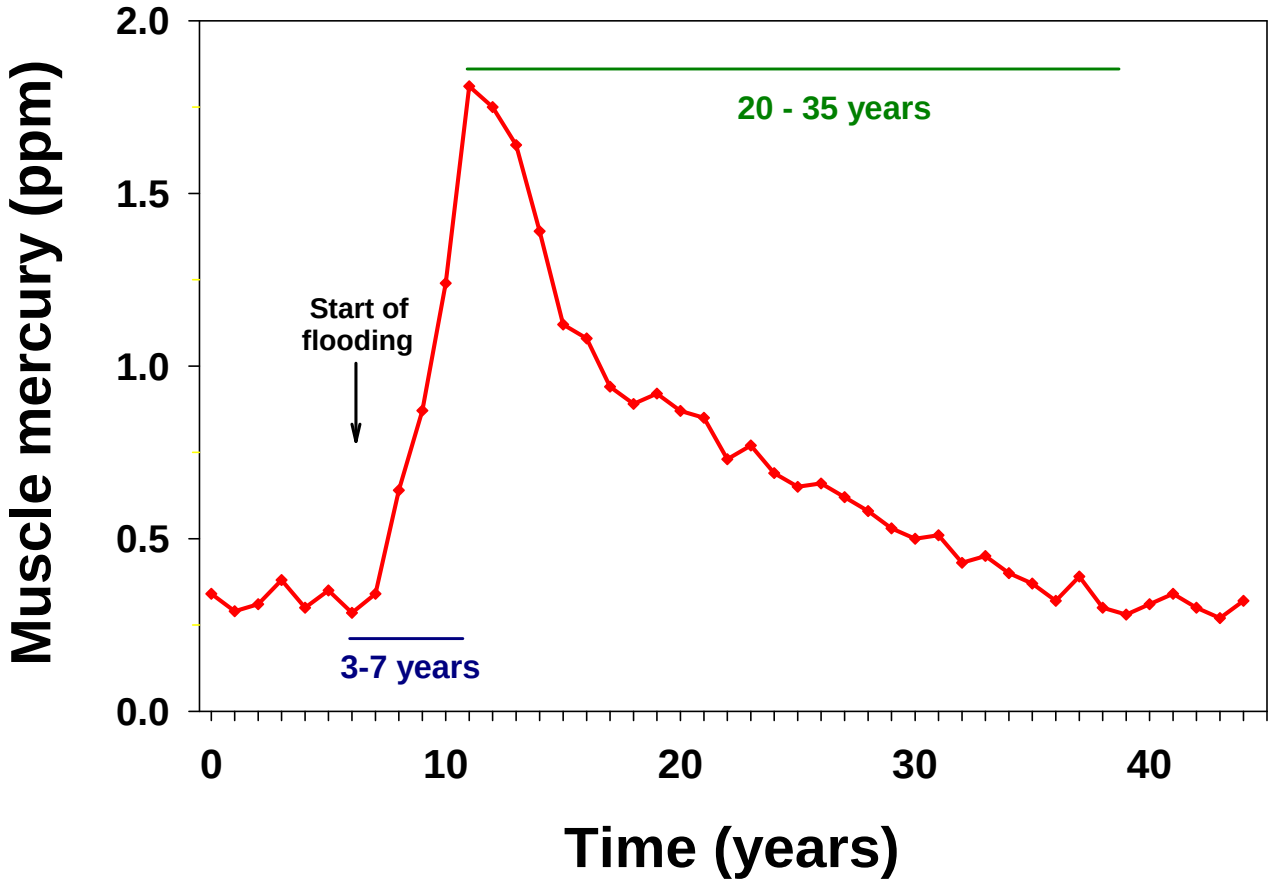
Mercury and Human Health

- **Methylmercury (mercury) is found in soil and water**
- **It moves up the food chain from small organisms to fish**
- **Fish that eat other fish (e.g., pike and walleye) have higher mercury than fish that eat bugs (e.g., whitefish)**
- **Larger fish have higher mercury concentrations than smaller fish**
- **People acquire mercury by eating fish**
- **Women of childbearing age and children are sensitive groups**
- **Methylmercury Tolerable Daily Intake for fish (World Health Organization, Health Canada)**
  - 0.2 micrograms per kg of bodyweight per day (sensitive individuals)
  - 0.47 micrograms per kg of bodyweight per day (general population)

Mercury and Human Health VEC

Mercury from Past Hydroelectric Projects

Typical time course of mercury concentrations in predatory fish after reservoir flooding



Mercury and Human Health VEC

Mercury from Past Hydroelectric Projects

- **Health Canada tested people between about 1976 - 1990**
- **Concerns about mercury led to reduced use of fish from affected waterways by Partner First Nations**
- **Mercury levels in fish in Gull and Stephens lakes have come down, but concerns by local residents remain**
- **Past effects of mercury were one of many influences on the negotiations of Adverse Effects Agreements –**
  - i.e., put in place access programs to obtain country food in areas unaffected by the Project.

Mercury and Human Health VEC

Project Effects

- **Increased mercury in fish from Gull and Stephens lakes**
  - Predicted to peak 3 to 7 years after impoundment
  - Predicted to return to stable levels over 25-30 years
- **Risks from consuming fish from Gull reservoir and Stephens Lake, especially for women of childbearing age and children**
  - Greater for Walleye (pickerel) and Northern Pike (jackfish)
  - Less for Lake Whitefish
- **Risks from consuming other country foods not of concern**
- **Water:**
  - Risks from swimming in water not of concern
  - Drinking untreated surface water not recommended without boiling, but risk from mercury in the water is not of concern.

Mercury and Human Health VEC

Project Mitigation

- **Each Adverse Effects Agreement includes programs for Partner First Nations to access areas unaffected by Keeyask to obtain country food**
- **Risk Communication Plan**
  - For Partner First Nations, Gillam and other users of affected lakes
  - Partnership to work with federal and provincial health authorities to establish consumption guidance
  - Communicate risks of consuming fish from affected lakes, based on mercury monitoring results
  - Encourage use of low-mercury fish and other country foods – plants and animals; communicate results of mercury monitoring
- **Consumption survey and Human Health Risk Assessment repeated every 5 years after peak reached, until mercury concentrations return to stable levels.**

Mercury and Human Health VEC

Interaction with Future Projects/Activities

	KEEYASK CONSTRUCTION	KEEYASK OPERATION
Keeyask Transmission	NO	NO
Bipole III/Keewatinow	NO	NO
Gillam Redevelopment	NO	NO
Conawapa	NO	NO

Mercury and Human Health VEC

Conclusion

- **No spatial overlap between effects on environmental mercury concentrations and human health from Keeyask and effects of other future projects / activities.**
- **Adverse Effects Agreements and Risk Communication Plan mitigate adverse effects.**

Conclusion: Adverse effect during operation. Not significant.

Public Safety and Worker Interaction VEC

Public Safety and Worker Interaction VEC

Worker Interaction in Past Hydroelectric Projects

- **Long history of adverse interactions between non-local construction workers and residents in Gillam area, beginning with Kettle Project in 1960s**
- **Fox Lake Cree Nation Members see this as one of the main socio-economic effects of hydroelectric development**
  - FLCN identified harassment, racist comments, sale of drugs, physical abuse, violence, infidelity, pregnancy, and paternal abandonment as outcomes of previous projects
- **Harmonized Gillam Development Agreement signed between FLCN, Town of Gillam and Manitoba Hydro in 2007**
  - Foundation for dealing with issues between FLCN, Manitoba Hydro and the Town of Gillam, including future projects such as Keeyask.

Public Safety and Worker Interaction VEC

Project Effects

- **Experience indicates worker interaction issues during construction phase**
  - Likely in Gillam, closest centre to construction camp
  - Also of concern to TCN at Split Lake
  - Other Partner First Nations note possibility of interaction when in Gillam or Thompson
- **Not possible to forecast the frequency or types of events with certainty**
  - Precautionary approach was applied (i.e., assume adverse local interactions could occur).

Public Safety and Worker Interaction VEC

Project Mitigation

Measures focused on construction workers at camp

- Cultural awareness training for all workers will include expectations of respectful behaviour on site and in communities
- Lounge and recreation facilities at camp
- Restrict unauthorized public visits to camp
- Restrictions on use of company vehicles for personal use
- Discourage non-northern workers from bringing vehicles to site; shuttle from Gillam and Thompson airports
- Camp rules and oversight committee

Measures focused on prevention and coping

- Worker Interaction Committee established as part of Harmonized Gillam Development to coordinate monitoring and strategies in Gillam; also involves RCMP and service providers
- On-going dialogue between Manitoba Hydro and RCMP in Gillam and Thompson

Public Safety and Worker Interaction VEC

Interaction with Future Projects/Activities

	KEEYASK CONSTRUCTION	KEEYASK OPERATION
Keeyask Transmission	YES	NO
Bipole III/Keewatinow	YES	NO
Gillam Redevelopment	YES	NO
Conawapa	YES	NO

Public Safety and Worker Interaction VEC

Conclusion

- **Construction of future projects will increase number of non-local construction workers – 2,300 total workforce at peak**
- **Increased chance of worker interaction effects**
- **Manitoba Hydro intends to address these risks through a corporate-wide strategy.**

Conclusion: Adverse effects mainly during construction. Not significant.

Culture and Spirituality VEC

KEEYASK
Hydropower Limited Partnership

Opening Remarks

Karen Anderson,
Fox Lake Cree Nation Negotiations Office

Martina Saunders,
York Factory First Nation Future Development Office

Culture and Spirituality

Culture and spirituality are dynamic and interactive processes that:

- Represent a composite of values, beliefs, perceptions, principles, traditions and world views and religion
- Distinguish groups of people
- Are based on individual and collective history, experience and interpretation
- And are commonly celebrated through the oral tradition and are constantly being shaped and reshaped through experience, information, knowledge and wisdom.

Split Lake Cree Nation: Analysis of Change

Culture and Spirituality VEC

Identifying and Selecting the VEC of Culture and Spirituality

- **Sources:**
  - Regulatory guidelines
  - Workshops with Partner First Nations
  - Anthropological literature
- **Criteria:**
  - Overall importance/value to people
  - Potential for substantial Project effects
  - Regulatory requirements
- **The Cree worldview informed the culture and spirituality portion of the socio-economic impact assessment.**

Culture and Spirituality VEC

Culture and Spirituality

- **Culture and spirituality also fall within the realm of intangible cultural heritage as defined by the United Nations Educational, Scientific and Cultural Organization (UNESCO) as…**

  "…the practices, representations, expressions, knowledge, skills-as well as the instruments, objects, artefacts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage."

  (UNESCO Convention for the Safeguarding of the Intangible Cultural Heritage 2003: Article 2).

Culture and Spirituality VEC

Historical and Current Context

- **Culture and spirituality of the Partner First Nations has been directly affected by the historical experience with outside influences.**

A. V. Thomas Collection ca. 1910
(Courtesy of the Manitoba Archives)

John A. Campbell Collection 1925
(Courtesy of the Manitoba Archives)

Port Nelson and the Hudson Bay Railway ca. 1917 (Courtesy of the Public Archives of Canada)

Culture and Spirituality VEC

Historical and Current Context

- **Each of the Partner First Nations trace their ancestral roots to the York Factory region:**
  - Each of the Partner First Nations self-identify as Cree, speak the Cree language and acknowledge their roots to York Factory coastal Cree
  - Each share core Cree values based on traditional relationships with the land
- **However, each First Nation's historic experience has been unique.**
- **With the advent of the European fur trade new ideas and technologies were made known. These and other foreign values greatly influenced and continue to influence Cree culture.**

Culture and Spirituality VEC

Historical and Current Context

- **Still, core Cree values persist and these are reflected in the many rich and informative documents that have been produced by the Partner First Nations**
- **It is this cultural resilience that has shaped the current path of the Partner First Nations.**



Culture and Spirituality VEC

Project Effects, Mitigation/Enhancement

- **Nine cultural indicators were selected to facilitate the description and analysis of change of culture and spirituality in relation to the Partner First Nations; and to trace potential effects of the Project during construction and operation:**

Worldview	Language	Traditional knowledge
Cultural practices	Health and Wellness	Kinship
Leisure	Law and Order	Cultural products

- **Indicators were validated through thematic frequency noted during key person interviews and within community documentation.**

Culture and Spirituality VEC

Project Effects, Mitigation/Enhancement

Key mitigation measures to moderate and offset Project effects on culture and spirituality are:

- Being partners in the Project
- The Adverse Effects Agreements negotiated and signed by each of the Partner First Nations
- The Employee Retention and Support Services DNC

Culture and spirituality indicators linked to AEA programs:

- **Cree language** – each of the Partner First Nations have offset programs to enrich and strengthen their Cree language
- **Cultural practices** – each of the Partner First Nations have traditional resource harvesting programs to enable members to access lands and waters to carry out "customs, practices and traditions" and to share wild foods within their communities.

Culture and Spirituality VEC

Project Effects, Mitigation / Enhancement

- **Traditional knowledge**
  - Programs such as TCN's Traditional Knowledge Learning program, WLFN's Museum and Oral Histories program, YFFN's Cultural Sustainability program and FLCN's Youth Wilderness Traditions program provide opportunities for the sharing of ATK across generations
- **Additional mitigation / enhancements**
  - The Employee Retention and Support Services DNC includes cultural training of workers, counselling services and the implementation of ceremonies at key Project milestones to give thanks and show respect for the land
  - A video of Gull Rapids and the Nelson River (identified under The Way the Landscape Looks)
  - Incorporation of Cree worldview into the assessment, monitoring and follow-up programs.

Culture and Spirituality VEC

Interaction with Future Projects/Activities

	KEEYASK CONSTRUCTION	KEEYASK OPERATION
Keeyask Transmission	YES	YES
Bipole III/Keewatinow	YES	YES
Gillam Development	YES	YES
Conawapa	YES	YES

Culture and Spirituality VEC

Conclusions

- **Physical alterations to the land and water will occur, thus affecting the Partner First Nations' cultural relationship to the land and water**
- **However, the AEAs that have been negotiated have the flexibility to make adjustments in their programs and to negotiate additional programming if unforeseen or unanticipated effects arise**
- **Therefore, from a culture and spirituality perspective, the degree of confidence in mitigating the adverse effects is high.**

Conclusion: Adverse for both construction and operation. Not significant.

Effects on Personal, Family and Community Life

Economy

- Employment and Training Opportunities (VEC)
- Business Opportunities (VEC)
- Income (VEC)
- Cost of Living (VEC)
- Resource Economy (VEC)

Population, infrastructure, & services

- Population (Supporting Topic)
- Housing (VEC)
- Infrastructure and Services (VEC)
- Land (VEC)
- Transportation Infrastructure (VEC)

Personal, family & community life

- Governance, Goals and Plans (VEC)
- Community Health (VEC)
- Mercury and Human Health (VEC)
- Public Safety and Worker Interaction (VEC)
- Travel, Access and Safety (VEC)
- Culture and Spirituality (VEC)
- The Way the Landscape Looks/Aesthetics (VEC)

Socio-economic Monitoring Plan

Socio-economic Monitoring Plan

Scope

- **The Socio-economic Monitoring Plan covers:**
  - Economy
  - Population, Infrastructure and Services
  - Personal, Family and Community Life
- **The Partner First Nations will play an important role in socio-economic monitoring**
  - Inputs from Aboriginal Traditional Knowledge and community-based monitoring will inform socio-economic monitoring
- **Inputs also from the aquatic and terrestrial monitoring programs.**

Socio-economic Monitoring Plan

Objectives

- **Test effects predicted in EIS**
- **Identify unanticipated effects related to the Project**
- **Monitor the effectiveness of mitigation measures**
- **Determine if adaptive management is required to reduce unanticipated adverse effects**
- **Confirm compliance with regulatory requirements.**

Socio-economic Monitoring Plan

Schedule

- **Construction Phase**
  - Employment, training and business opportunities and labour income
  - Population changes (with related effects on housing, infrastructure and services)
  - Worker interaction; road travel safety; and culture and spirituality
- **Operation Phase**
  - Population change in Gillam during first 5 years
  - Water levels at Split Lake (re: travel safety)
  - Mercury and human health.

Socio-economic Monitoring Plan

Economy

- **Employment – to determine overall outcomes during construction**
- **Business – to determine the success and effectiveness of efforts to enhance local and Aboriginal business participation and general indication of economic impact on Manitoba**
- **Employment Income – to provide an indication of the direct economic impact of the Project; as well as potential indirect and induced economic impacts.**

Socio-economic Monitoring Plan

Population, Infrastructure and Services

- **Population – extent of population change during construction and an estimation of Project-induced in- and out-migration to the Partner First Nation communities and Gillam**
- **Housing – to test the prediction of minimal demand on housing in Partner First Nation communities and Gillam**
- **Infrastructure and Services**
  - To test the prediction of minimal demand on infrastructure and services in Partner First Nation communities
  - To understand effects from influx of non-local construction workers on demand for infrastructure and services in Gillam (part of worker interaction coordinated effort by Manitoba Hydro, the town and FLCN)
- **Transportation Infrastructure – on-going monitoring of water levels at Split Lake (to continue in operation phase).**

Socio-economic Monitoring Plan

Personal, Family and Community Life

- **Public Safety and Worker Interaction – coordinated effort across all Manitoba Hydro projects with Manitoba Hydro, the Town of Gillam and FLCN – construction phase only**
- **Travel, Access and Safety**
  - During construction, Waterways Management Program will manage and monitor water and ice-based travel, access and safety; Manitoba Infrastructure and Transportation will collect traffic statistics re: PR 280
  - During operation, Waterways Management Program will manage and monitor water and ice-based travel, access and safety
- **Culture and Spirituality – a worker-family survey will be undertaken.**

Socio-economic Monitoring Plan

Personal, Family and Community Life

- **Mercury and Human Health – Operation Phase only**
  - Every 5 years starting in 2022, a survey of country food consumption
  - An updated Human Health Risk Assessment every 5 years after peak mercury levels have been reached.

Conclusions about Effects on the Socio-economic Environment

Conclusions: Socio-economic Environment

- **There will be both positive and adverse effects on the socio-economic environment; degree of certainty varies**
- **The Joint Keeyask Development Agreement, Adverse Effects Agreements address and resolve adverse effects of the Keeyask Project on the Partner First Nations**
- **Plans are in place to address growth and change in Gillam**
- **Employment benefits are expected to accrue to the Partner First Nations and to residents in the Regional Study Area.**

KEEYASK
Hydropower Limited Partnership

Resource Use

Don MacDonell, North/South Consultants Inc.

Resource Use

Resource Use

- **Domestic Fishing (VEC)**
- **Domestic Hunting and Gathering (VEC)**
- **Commercial Trapping (VEC)**
- Commercial Fishing
- Commercial Forestry
- Mining
- Recreational Resource Use
- Lodges, Outfitters and Tourism
- Protected Areas and Scientific Sites

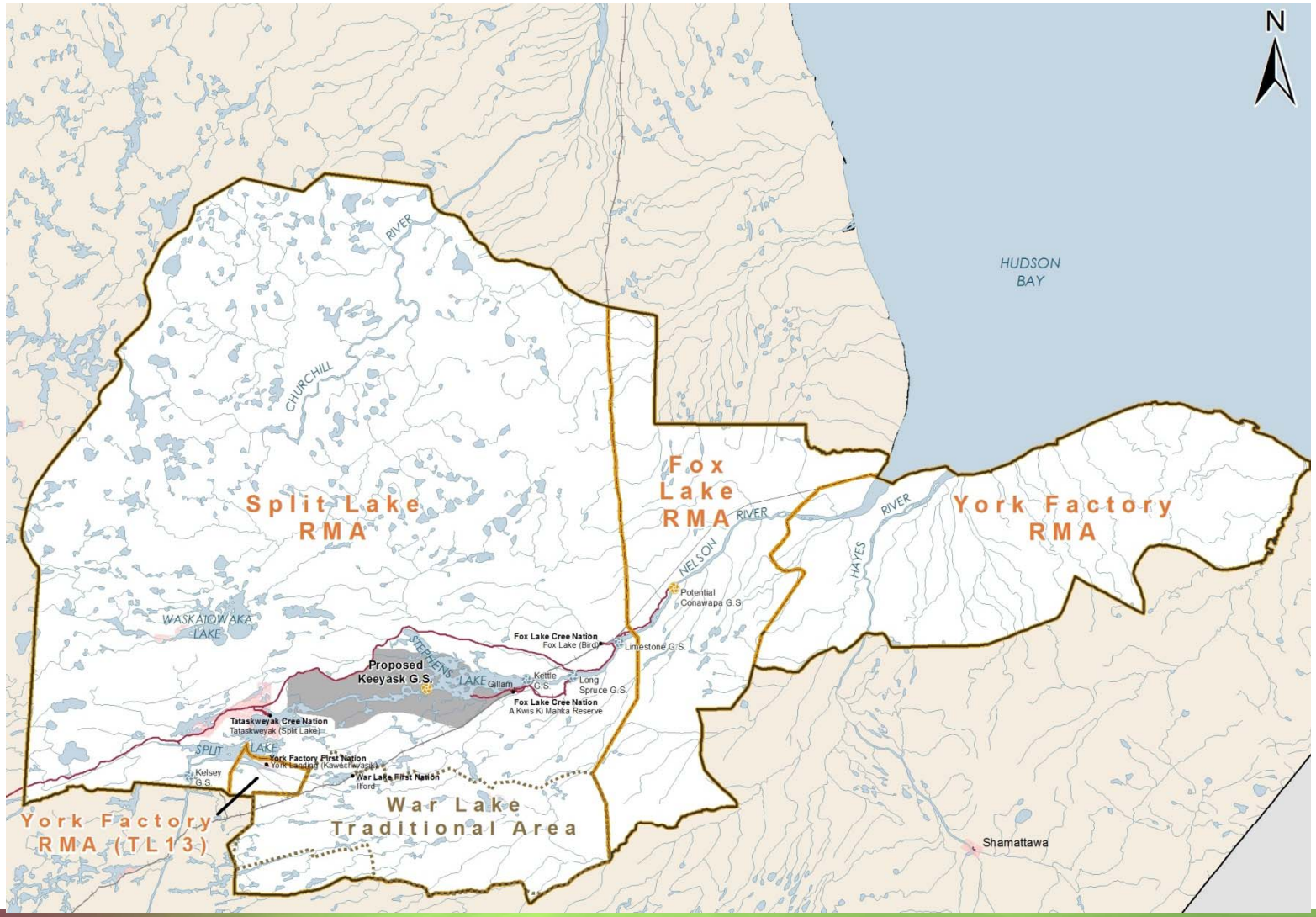
Resource Use

- **Domestic/subsistence, commercial, recreational use of resources derived from the natural environment**
  - And scientific and protected areas
- **Resource use VEC selection primarily based on:**
  - Importance and value to people
  - Potential for substantial project effects
  - Regulatory requirements.

Valued Environmental Components (VECs)

- **Resource Use VECs include:**
  - Domestic Fishing
  - Domestic Hunting and Gathering
  - Commercial Trapping
- **Important for Aboriginal subsistence**
- **Conducted in the area directly affected by the Project**
- **Highly valued as cultural activities:**
  - Sustain spiritual and emotional relationships with lands and waters
  - Provide ways to share skills and knowledge among generations thereby preserving culture.

Resource Use Local and Regional Study Area



Adverse Effects Agreements (AEAs)

- **Key mitigation measure for domestic resource use VECs**
- **Meet the specific needs of each Partner First Nation community and each have Offsetting Programs that address effects to domestic resource use.**

The Offsetting Programs within the Adverse Effects Agreements

- **Provide substitute opportunities for Partner First Nations to conduct domestic resource use in unaffected areas**
- **Increase opportunities to practice traditional pursuits on the land**
- **Increase the availability of healthy country foods to community members**
- **If community needs change over time, the agreements are flexible to shift funds among programs or create new programs**
- **Offsetting programs will be operated in a manner that conserves resources, considers safety of participants and others and is respectful to other resource users.**

Construction Access Management Plan

Purpose and Objectives

- **Purpose**
  - To manage access to the Project site during construction
- **Objectives**
  - Provide safe, coordinated access to the Project for authorized users
  - Protect the safety of and restrict access to unauthorized individuals who may otherwise enter the Project site
  - Support sustainable use through protection of the area's natural resources
  - Provide worker orientation regarding respect for the surrounding area, fisheries and wildlife resources, heritage resources and local communities.

Access Management Measures

- **Access road ownership – private road during construction**
- **Security gates – north and south access gates staffed 24/7**
- **Security patrols to monitor use of the access roads**
- **Access road users**
  - Project workers, contractors, Manitoba Hydro staff
  - Authorized users (e.g., resource harvesters that currently use site)
  - Emergency personnel and regulators
- **Access road conditions**
  - No firearms or recreational vehicles on Project site or along access roads.

Other Aboriginal Groups

- **Based on available information, First Nation groups, other than the Partner First Nations, are not known to use areas directly affected by the Project for domestic resource use (the Resource Use Local Study Area)**
- **The MMF have identified a fishing area in Stephens Lake in an existing report. Frequency, intensity and specific timing of use were not reported. If use is current:**
  - There is limited spatial overlap with affected areas and therefore effects are expected to be negligible
  - Key mitigation in place that applies to all resource users:
    - *The Waterways Management Program*
    - *Communication products with respect to mercury in fish.*

Other Aboriginal Groups

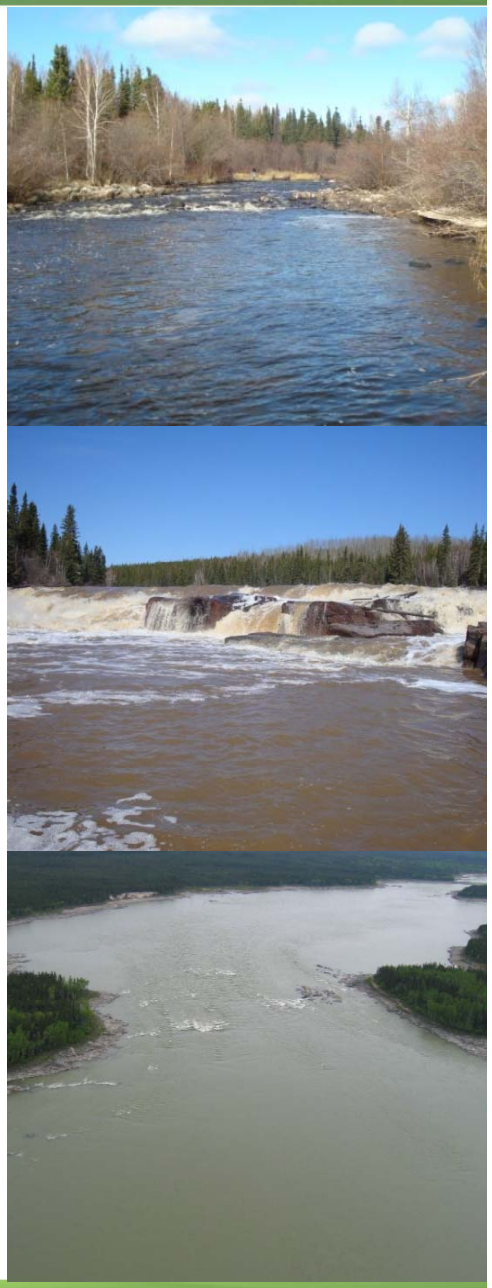
- **An agreement has been achieved with the MMF to conduct a traditional land use and knowledge study, a socio-economic impact assessment and an historical narrative**
- **Manitoba Hydro and the Pimicikamak Cree Nation are discussing a potential land use study**
- **Manitoba Hydro, on behalf of the Partnership, is committed to consider any additional information received.**

Domestic Fishing VEC

Domestic Fishing VEC

Historical and Current Context

- **Historically**
  - Important fishing grounds were used as central gathering places
  - Fish were critical to sustenance of Aboriginal peoples
  - Fishing was conducted concurrent with other resource harvesting activities
- **Previous hydroelectric development on the Nelson River has:**
  - Altered patterns of domestic fishing
  - Added hidden costs in terms of safety and increased time and effort to fish (e.g., debris)
- **Along with social changes, this has profoundly affected the domestic fishing practices in local areas.**



Domestic Fishing VEC

Historical and Current Context

- **All Partner First Nation communities conduct domestic fishing - typically in spring and fall**
- **In the Regional Study Area, pickerel (walleye), jackfish (northern pike) and whitefish are harvested in areas typically close to communities**
- **In the Local Study Area sturgeon harvest has been documented on Clark and Gull lakes, also on other water bodies regionally.**

Domestic Fishing VEC

Historical and Current Context

- **Due to concerns of poor quality (taste, texture and colour), many Partner First Nation members do not consume fish from the Nelson River main stem**
- **Fishing continues to be culturally important**
  - Respect and honour are displayed to animals that have been killed
  - Only enough to eat is taken and shared.

Domestic Fishing VEC

Potential Project Effects and Mitigation

- **Key construction phase effects:**
  - Changes in water-based access; mitigated by:
    - *AEA offsetting programs that will facilitate harvesting in unaffected areas*
    - *Waterways Management Program*
  - Competition for resources from the Project workforce is not expected to be noticeable to domestic resource users but is a concern to the Partner First Nations; mitigated by:
    - *Construction Access Management Plan (AMP)*
    - *AEA offsetting programs.*

Domestic Fishing VEC

Potential Project Effects and Mitigation

- **Key operation phase effects:**
  - Changes to fish (Hg or palatability) are expected to change preferences for fish; mitigated by:
    - *AEA offsetting programs and consumption advisories*
  - 120-150 people moving into Gillam will increase local recreational resource use; mitigated by
    - *AEA offsetting programs*
    - *Provincial harvest restrictions for non-Aboriginal people*
  - Changes in access to the local area may increase competition for resources by other (non-Aboriginal) resource users. Domestic users will also benefit from better access; mitigated by:
    - *AEA offsetting programs*
    - *Provincial harvest restrictions for non-Aboriginal people.*

Significance of Residual Effects

- **Residual effects of construction and operation include:**
  - Redistribution of domestic fishing
  - The Partner First Nations regard workforce harvest as having potential to cause a residual effect
  - Resource users will need to adjust to new conditions in local areas
  - Offsetting programs expected to have overall positive effect
  - Neutralized by change in the cultural nature of their domestic fishing activities.

Conclusion: **Neutral effect. Not significant.**

Domestic Fishing VEC

Interaction with Future Projects/Activities

- **Given an overall neutral assessment on domestic fishing, interactions with future projects and activities were not considered.**

Domestic Hunting and Gathering VEC

Domestic Hunting and Gathering VEC

Historical and Current Context

- **Focused on moose, caribou, waterfowl, small game, plants for medicinal purposes, berries, and tea**
- **Historically these resources were critical to the sustenance of the Cree and these continue to be very important today**
- **Resources were harvested throughout a broad region. Waterways were used as the main travel corridors**
- **Previous hydroelectric development has disrupted waterway travel (on the Churchill and Nelson Rivers) and flooded land**
- **Along with social changes, this has substantively affected domestic hunting and gathering activities.**

Domestic Hunting and Gathering VEC

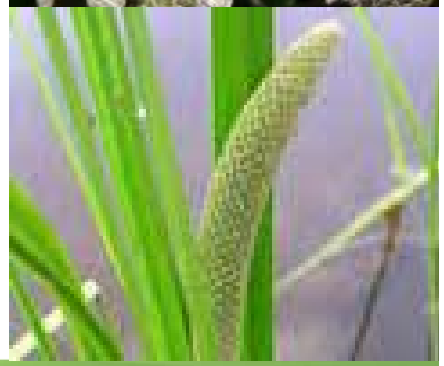
Historical and Current Context

- **Moose hunting occurs in many regional areas, including Project affected areas and is typically conducted by boat**
- **Caribou hunting occurs primarily in winter and varies spatially depending on the location of the herds. Typically, little hunting occurs in the Local Study Area due to low numbers of animals (however, this can vary from year to year)**
- **Waterfowl hunting typically occurs near communities, although some Partner First Nation members travel to the coast for this purpose.**

Domestic Hunting and Gathering VEC

Historical and Current Context

- **Small game (e.g., rabbit, ptarmigan) are typically hunted close to communities, but also opportunistically anywhere hunters are present**
- **Gathering of berries, medicinal plants and other plant products typically occurs near communities. No gathering activity has been documented in the Local Study Area (except for Lillian Island upstream from Gull Rapids) by TCN Members**
- **Hunting and gathering remains integral to the cultural identity of the Cree**
  - Respect and honour are displayed to animals and plants harvested
  - Only enough to eat is taken and shared.



Domestic Hunting and Gathering VEC

Potential Project Effects and Mitigation

- **Key construction phase effects:**
  - Changes in water-based access; mitigated by:
    - *AEA offsetting programs – facilitate harvesting in unaffected areas*
    - *Waterways Management Program*
  - Competition for resources from Project workforce is not expected to be noticeable to domestic resource users but is a concern to the Partner First Nations; mitigated by:
    - *Construction Access Management Plan*
  - Disturbances causing potential reductions to wildlife resources
    - *Assessments indicate no noticeable (i.e., small magnitude) reduction in wildlife abundance. On-going and long-term monitoring will occur*
    - *AEA offsetting programs – facilitate harvesting in unaffected areas.*

Domestic Hunting and Gathering VEC

Potential Project Effects and Mitigation

- **Key operation phase effects:**
  - Shifting patterns of resource use due to AEA offsetting programs (also a construction phase effect):
    - *Expected to disperse hunting pressures to a broader land base. Managed/monitored by the Moose Harvest Sustainability Plan (SLRMA) and the Partner First Nations cultural approach to harvesting*
  - Increasing populations in Gillam (120-150 people) and increases in access (roads and boat launches):
    - *Managed by MCWS through recreational harvest restrictions and no licensed hunting of caribou in GHA 09 that overlaps the Project area;*
    - *Mitigated by: AEA offsetting programs.*

Domestic Hunting and Gathering VEC

Significance of Residual Effects

- **Residual effects of construction and operation include:**
  - Redistribution of domestic hunting and gathering
  - Resource users will need to adjust to new conditions in local areas
  - Offsetting programs are expected to have an overall positive effect. Neutralized by cultural change in harvesting activities.

Conclusion: Neutral effect. Not significant.

Domestic Hunting and Gathering VEC

Interactions with Future Project/Activities

- **Given an overall neutral assessment on domestic hunting and gathering, interactions with future projects and activities were not considered.**

Commercial Trapping VEC

Commercial Trapping VEC

Historical and Current Context

- **Important component of the social and cultural environments and economy in the north**
- **Winter activity**
- **Harvest is tied to fur value, line access, and furbearer abundance.**

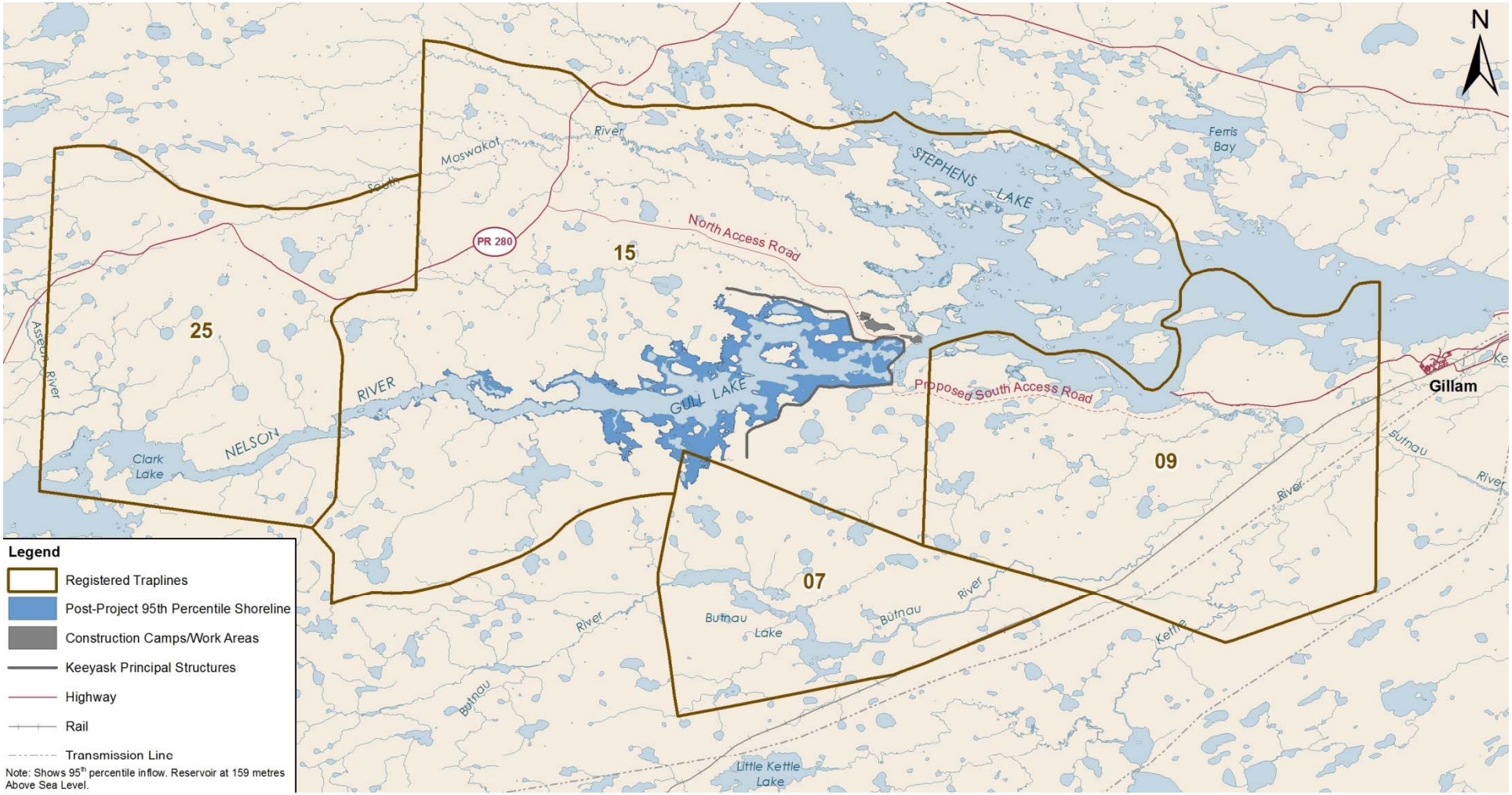
Commercial Trapping VEC

Historical and Current Context

- **In the last two decades, production has shifted from beaver and muskrat to American marten**
- **Though trapping activity has decreased over time, it remains a highly valued cultural activity**
- **Trapping incomes, though much more modest than historic incomes, remain important to many people in the north.**

Commercial Trapping VEC

Potential Project Effects



Commercial Trapping VEC

Potential Project Effects and Mitigation

- **Project construction disturbances; mitigated by:**
  - Compensation agreements
  - Construction Access Management Plan
- **Project operation disturbances; mitigated by:**
  - Compensation agreements
- **Changes to furbearer populations; mitigated by:**
  - Compensation agreements
- **Improved access on Traplines 09 and 15 over the long-term**
  - No mitigation required.

Commercial Trapping VEC

Significance of Residual Effects

- **Residual effects of construction and operation include:**
  - Compensation agreements (with all four affected traplines), improvements in access during operation (on Traplines 15 and 09), and cultural components of AEAs are expected to offset residual effects.

Conclusion: Neutral effect. Not significant.

Commercial Trapping VEC

Interaction with Future Projects/Activities

- **Given an overall neutral assessment on commercial trapping, interactions with future projects and activities were not considered.**

Resource Use Monitoring Plan

- **Workforce harvest monitoring**
- **Recreational harvest monitoring**
  - Work with MCWS managers to understand trends
  - Monitor recreational license demand
  - Monitor recreational big game harvests.

Other Relevant Monitoring Related to Resource Use

- **ATK monitoring**
- **Monitoring from Offsetting Programs**
- **Terrestrial and aquatic monitoring programs.**

Resource Use Monitoring and Follow-up

- **Compilation report at completion of construction synthesizing results of relevant monitoring programs**
- **All monitoring results will inform Resource Management Boards which will provide a forum for resource management decisions**
- **Recreation harvest monitoring will continue for at least 8 years post construction.**

Conclusions: Resource Use

- **There is a high certainty that the long-term benefits of the Adverse Effects Agreements, which were negotiated by the Partner First Nations to meet the specific needs of their members and communities, in combination with other mitigation measures such as the Waterways Management Program and the Construction Access Management Plan will offset adverse effects of the Project on resource use**
- **Therefore, it is expected that the residual effects of the Project on Domestic Fishing, Domestic Hunting and Gathering, and Commercial Trapping will be Neutral.**

KEEYASK
Hydropower Limited Partnership

Heritage Resources

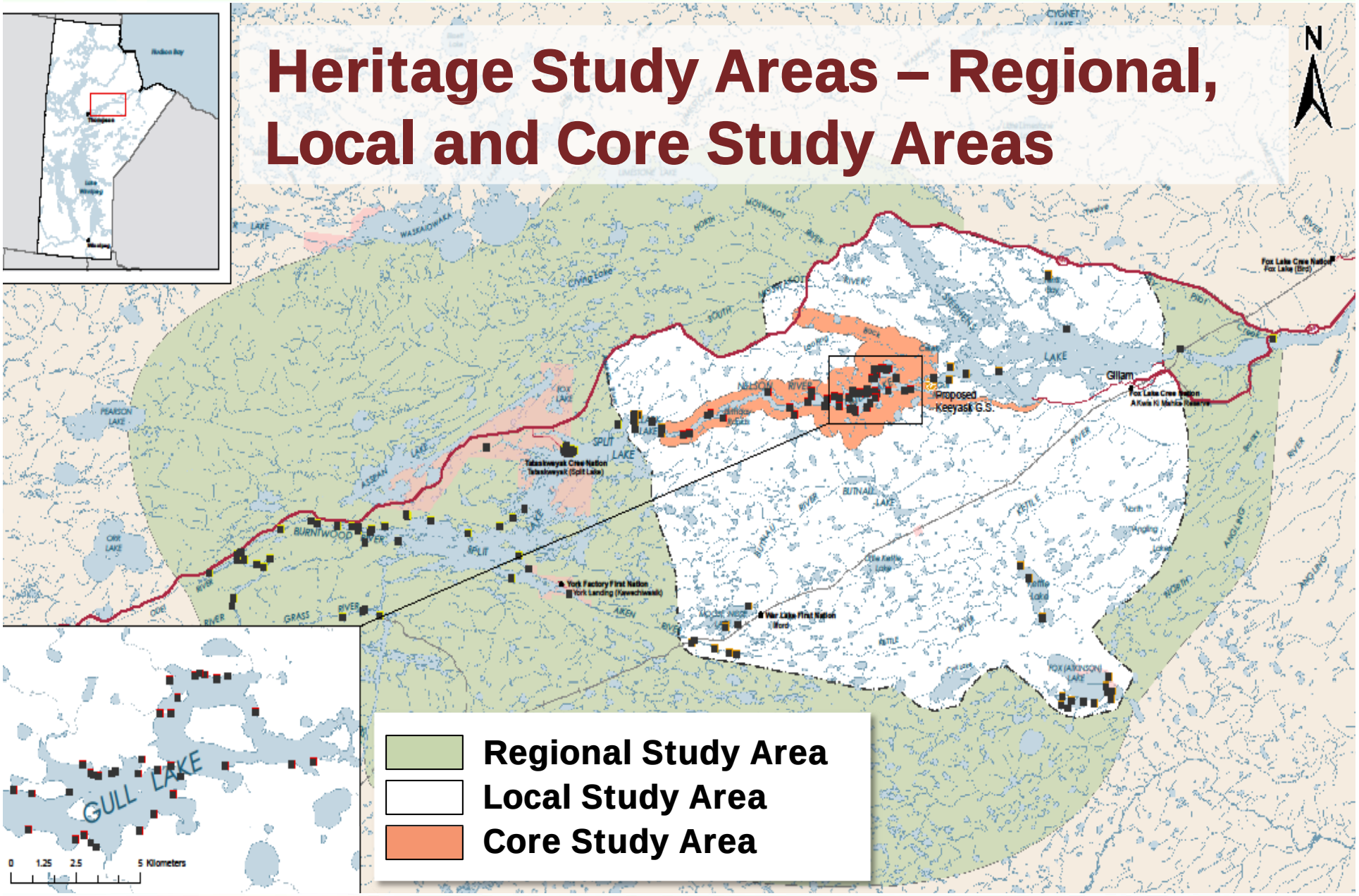
Virginia Petch, PhD: President,
Northern Lights Heritage Services

Heritage Resources VEC

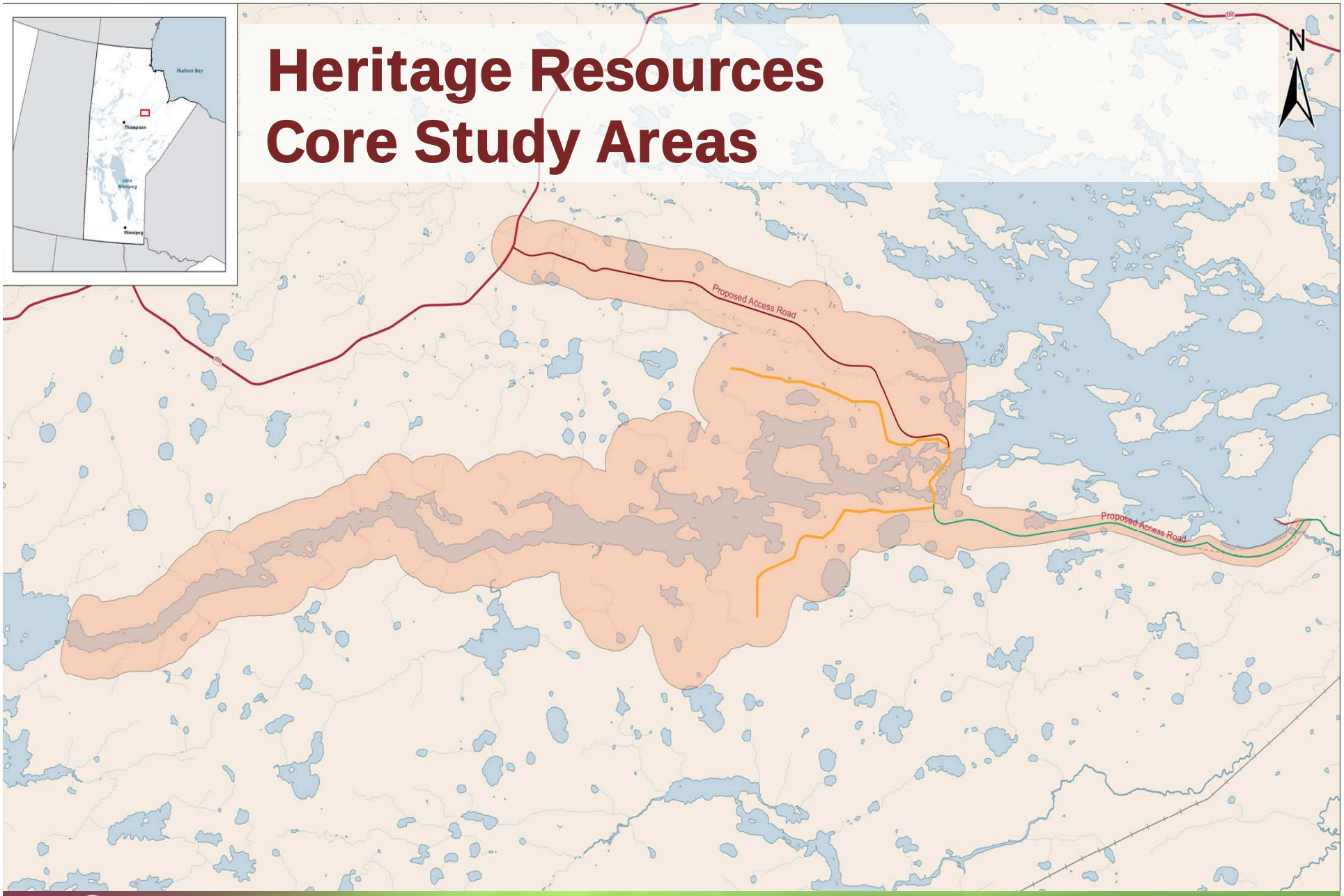
Heritage Resources

- Heritage Resources (VEC)

Heritage Study Areas – Regional, Local and Core Study Areas



Heritage Resources
Core Study Areas



Heritage Resources VEC

Historical and Current Context

- **All Heritage Resources are protected under *the Heritage Resources Act* (1986) (*the Act*)**
- **Tangible heritage resources only are considered as per the definition in *the Act***
- **Historically, no archaeological sites were recorded within the core study area prior to the Keeyask Project**
- **Archaeological investigations continue to be conducted through the System-Wide Archaeological Program taken place in association with the Lake Winnipeg Regulation and the Churchill River Diversion projects.**

Heritage Resources VEC

Historical and Current Context

- **HRIAs associated with the Keeyask Project have identified 114 archaeological sites within the local and core study areas**
- **Of these, 64 sites are within the core area**
  - These represent Pre-European contact and Historic periods
  - The oldest site, found human remains, was radiocarbon dated to 4800±40 years before present (BP)
  - Projectile points associated with this time period were recovered
- **Artifacts collected through heritage field investigations have been catalogued, scanned and stored at NLHS; upon completion of the hearing, the artifacts will be turned over to the Heritage Resources Branch.**

Heritage Resources VEC

Participation

- **Elders and resource-users, through ATK and the many personal interactions enriched the archaeological process and provided detail about certain areas.**

Heritage Resources VEC

Benefits of the Study Process

- **Two high school credit programs were developed through the TCN and WLFN Educational Authorities with Elders involvement**
- **Archaeological field training and experience for support staff**
- **Through the decade-long investigations, over 30,000 artifacts were recovered, resulting in added cultural and heritage knowledge for the Partnership and Manitobans in general.**

Heritage Resources VEC

Project Effects: Construction

- **Linkages were sought between the heritage resources and Project environmental effects that could cause change to the status of the heritage resources**
- **Permanent disturbance / loss of 7 known archaeological sites during construction activities**
- **Permanent loss of future unknown heritage resources**
- **Permanent changes in the interpretive capacity of the region**
- **Increased traffic over areas of unknown and known heritage resources.**

Heritage Resources VEC

Project Effects: Operation

- **Reservoir impoundment will affect 57 of the 64 registered sites**
- **Shoreline erosion caused by flooding or fluctuating water levels will affect heritage resources**
- **Permanent loss of historically-known cultural landscapes and the ability of the Partner First Nations to orally recount their history.**

Heritage Resources VEC

Mitigation: Construction

- **Archaeological salvage of the affected sites with further annual monitoring under the HRPP**
- **Identification and development of a cemetery and memorial marker for any found human remains in the heritage Core Area**
- **Implementation of the Heritage Resources Protection Plan (HRPP)**
- **Education and awareness of Project workers regarding heritage**
- **TCN's AEA program includes measures that facilitate the display and interpretation of heritage resources through the Keeyask Cultural Centre's Museum and Oral History Program.**

Heritage Resources VEC

Mitigation: Operation

- **Shoreline surveys and archaeological salvage of known sites prior to reservoir creation**
- **Waterways Management Program (JKDA, Schedule 11-2) will be implemented – this includes periodic seasonal monitoring of the shoreline and reclamation of disturbed sites.**

Heritage Resources VEC

Significance of Residual Effects

- **Residual Project effects (after mitigation) on heritage resources will be adverse for both construction and operation phases**

Conclusion: **Adverse effect. Not significant.**

Heritage Resources VEC

Interaction with Future Projects/Activities

	KEEYASK CONSTRUCTION	KEEYASK OPERATION
Keeyask Transmission	YES	YES
Bipole III	NO	NO
Gillam Development	NO	NO
Conawapa	NO	NO

Heritage Resources VEC

Overall Conclusion

- **The only future project with spatial and temporal overlap with the Project is the Keeyask Transmission Project**
- **Given the mitigation and monitoring associated with both projects, no additional mitigation or monitoring will be required**

Conclusion: The conclusion from the residual effects significance assessment does not change.

Heritage Resources Protection Plan

Heritage Resources Protection Plan

- **The HRPP has been drafted by Manitoba Hydro and the Partner First Nations to address adverse environmental effects that may occur during the construction phase of the Keeyask Project**
- **The HRPP provides a set of guidelines to the field construction and Manitoba Hydro staff regarding the discovery of heritage resources during construction.**

Heritage Resources Protection Plan

Core Concepts Were Incorporated

- **Value and respect of Cree culture and tangible and intangible heritage**
- **Stewardship**
- **Meaningful involvement**
- **Consistency with existing legislation**
- **Culturally appropriate application of protocol in the HRPP**
  - (Keeyask Generation Project Construction Heritage Resources Protection Plan April 2013 - CEA Registry Reference Number:11-03-64144).

Conclusions: Heritage Resources

- **Core Study Area heritage sites will be lost, primarily due to reservoir impoundment**
- **Mitigation includes:**
  - **Current and on-going salvage prior to construction and reservoir impoundment**
  - **Implementation of on-going shoreline monitoring**
  - **Heritage Resources Protection Plan**
  - **Waterways Management Program (JKDA Schedule 11-2)**
  - **System Wide Archaeological Program.**

Keeyask Generation Project

CEC Hearings - Environmental Impact Statement

KEEYASK
Hydropower Limited Partnership

Thank You