

Hackett River Environmental and Socio–Economic Baseline Studies

Environmental and Socio-Economic Baseline Surveys - Hackett River Project

Study Elements

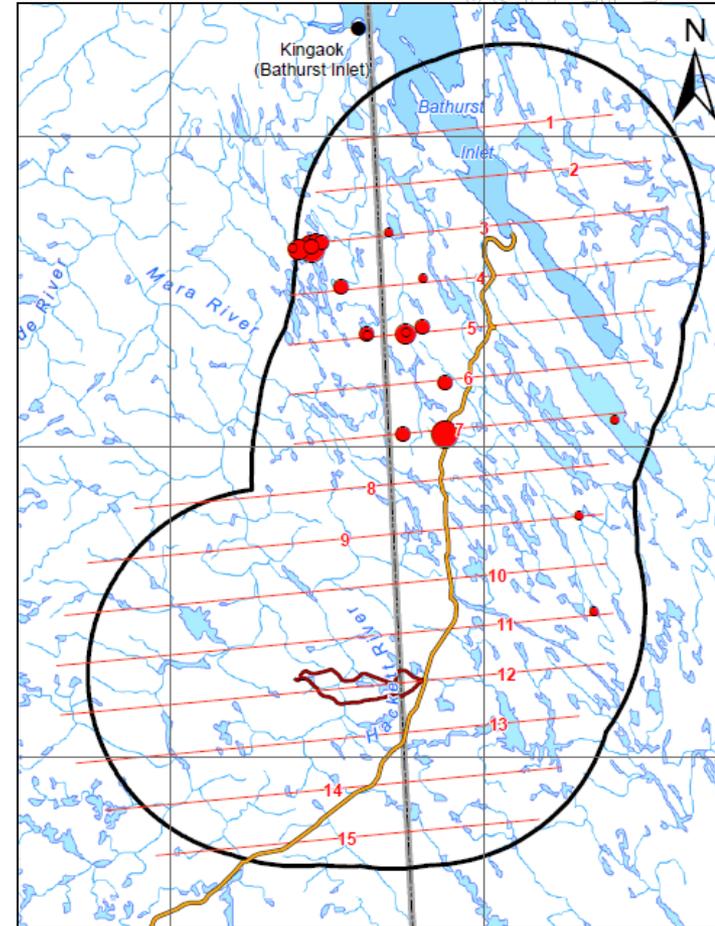
Air Quality and Climate	Fish and Fish Habitat
Wetlands	Wildlife
Hydrogeology	Socio-economics
Geochemistry	Land Use
Terrain and Soils	Archaeology
Surface Water Hydrology	Community Consultation
Terrestrial Ecosystems , Vegetation and Wetlands Mapping	Traditional Knowledge
Aquatic Resources	Country Foods
Marine Environment	



Wildlife

Study Objectives and Work to Date

- Record mammals and birds in the study area;
 - Map wildlife habitat for important species;
 - Conduct birds surveys – seabirds, ducks, raptors and upland birds;
 - Study the distribution of grizzly bears using DNA from hair;
 - Map how caribou and muskox use the area; and
 - Map and monitor dens – wolves, foxes and grizzlies.
- 2007, 2008, 2010, 2012



Wildlife

- Motion-triggered Photos



Caribou using esker



Caribou using esker



Vegetation and Ecosystems

2007 and 2012 Baseline Programs

- Mapped local study area for vegetation communities and surveyed 106 plots (2007) and 131 (2012);
- Identify presence and extent of rare plants;
- Identified 125 plant species; and
- Collected plant tissue samples for metals analysis in both years.



Terrain and Soils

2007 and 2012 Field Programs

- Completed field surveys for terrain and soils covering 131 plots (2007) and 87 (2012);
- Collected soil samples for metals analysis; and
- A terrain and soils map will be created.



Wetlands

Objectives and Field Program

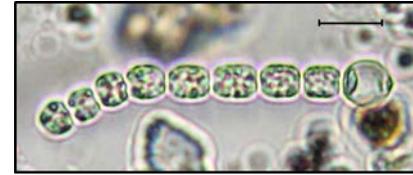
- Identify, delineate and classify wetland habitat;
- Collect vegetation, groundwater, and soils information to identify potential wetland functions;
- Sampled 78 wetlands and recorded dominant vegetation and soils information (2012); and
- Collected water sedge for metals concentration analysis.



Aquatic Resources

- **Work to Date**

- Surveys done in 2007, 2008, 2009 and 2012
- Assessed physical, chemical, and biological properties of 37 lakes and 38 streams in the winter, spring, summer, and autumn;
- Collected water, sediment, bacteria, algae, and invertebrates; and
- Collected temperature, dissolved oxygen, and water clarity data.



Fish and Fish Habitat Work to Date



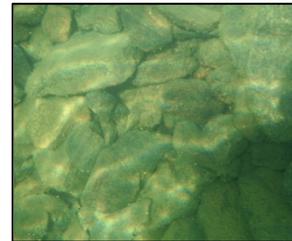
- Surveys done in 2007, 2008, 2010 and 2012
- Collected data from 30 lakes, 5 large river sites, 33 stream sites and 6 ponds located in Project Area;
- Surveyed fish community and fish habitat at ponds and streams within waste rock and tailings options; and
- Mapping of depth in over 35 lakes and ponds.



Fish and Fish Habitat

Fish Habitat Compensation Surveys

- Fish Habitat needs to be compensated when impacted
- Scouted ~37 potential fish habitat compensation sites
- Types of compensation
 - Improving access
 - Improving rearing and spawning with shoals



Hydrology: Surface Water

Objectives and Work to Date

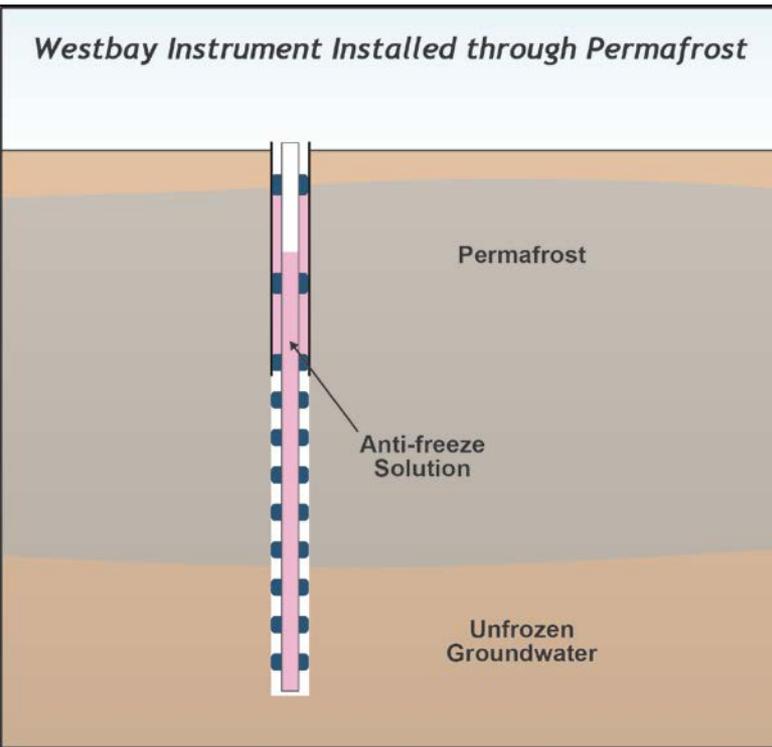
- Record the amount of snow on the landscape and the amount of water flowing in the Project area;
- Study how river flow changes during times of snow melt, rainfall, and dry times;
- Surveys done in 2007, 2008 and 2012;
- Monitored up to 15 rivers in the Project area; and
- Conducted snow surveys at 19 locations.



Hydrogeology: Groundwater

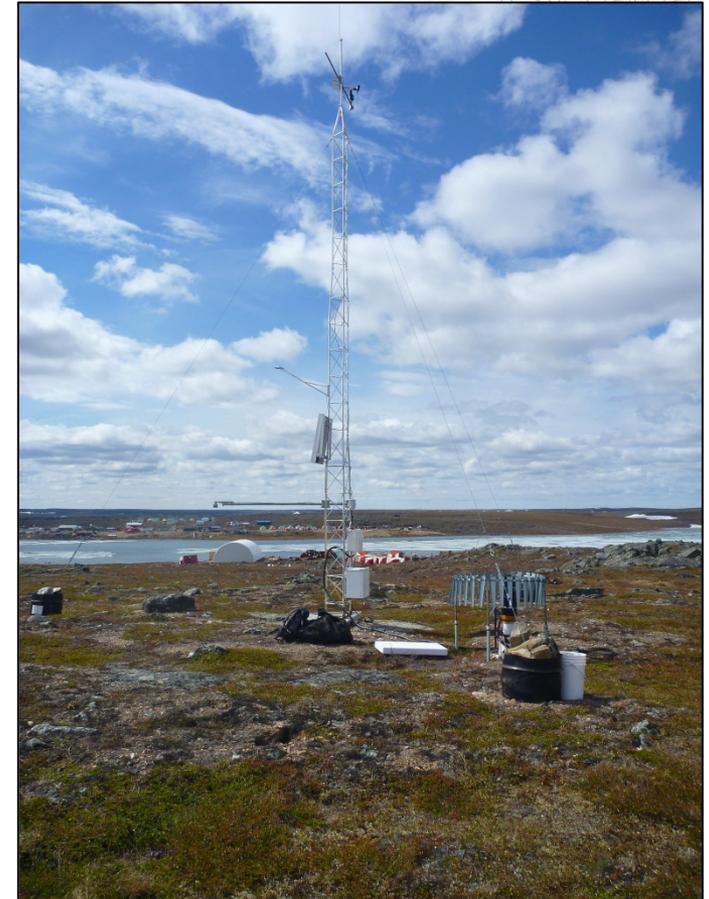
2012 Field Program

- Measured water quality in groundwater below the permafrost (below 525 m deep); and
- Measuring shallow and deep ground temperatures at 11 sites in proposed mine construction areas.



Air Quality and Climate Work to Date

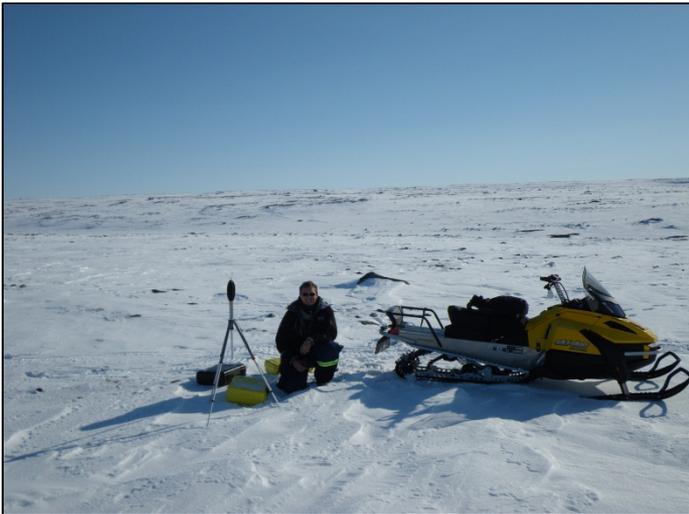
- Weather station (2007-2012)
- Installed a small-scale weather station (2012).



Air Quality and Climate

2012 Field Program

- Recorded noise/sound in the natural environment during the winter and summer; and
- Sampled the air quality during the summer.



Geochemistry: Rock Chemistry

Study Objective and Work to Date

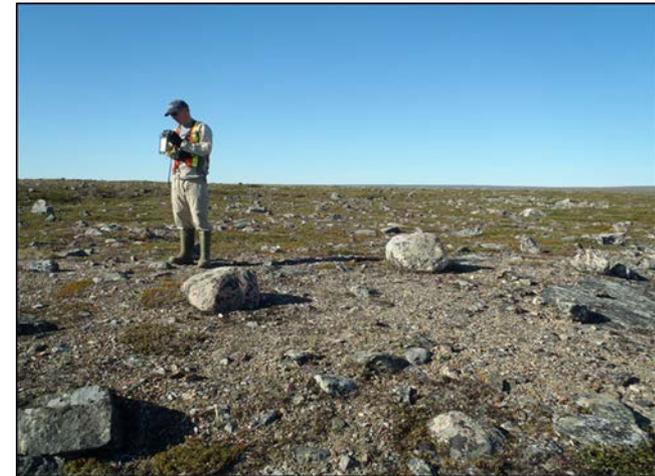
- Assess the potential for metals to be washed off from rock being exposed to air and water; and
- Conducted tests on over 1,800 core samples.



Archaeology

Study Objectives and Work to Date

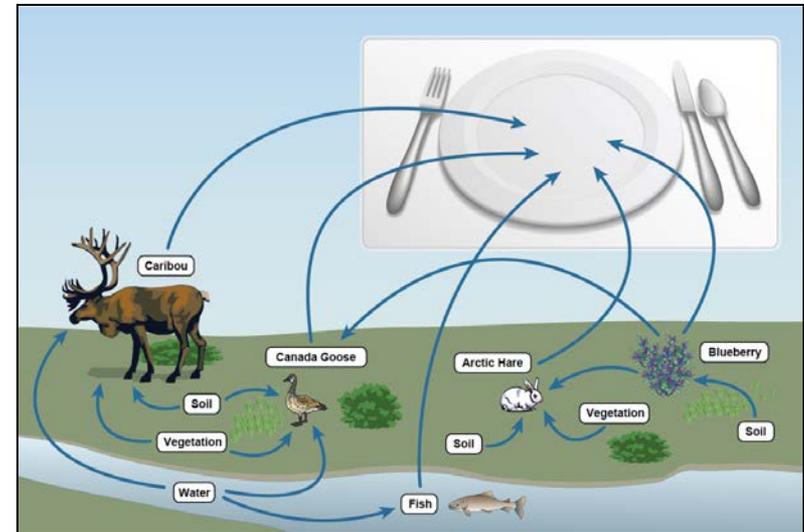
- Identify and evaluate archaeological sites near proposed developments;
- Surveys done in 2007, 2009, 2010 and 2012
- 98 archaeological sites recorded.



Country Foods

Study Objectives and Work to Date

- To identify contaminants present in the environment today that may be of concern during Project development;
- Estimate the risk of consuming country foods (fish, wildlife, berries, medicinal plants);
- Studies done in 2007, 2008, and 2012; and
- Collection of plant, berries, fish tissue, water, soil, and sediment for analysis of metal concentrations.



Socio-economics

Baseline Studies

- Provide information about the human environment at the territorial, regional, and local or community scale;
- Topics include history, society, economy, culture, education and health;
- Compile information from available sources; and
- Complete research and 60 interviews with key informants.



Land Use

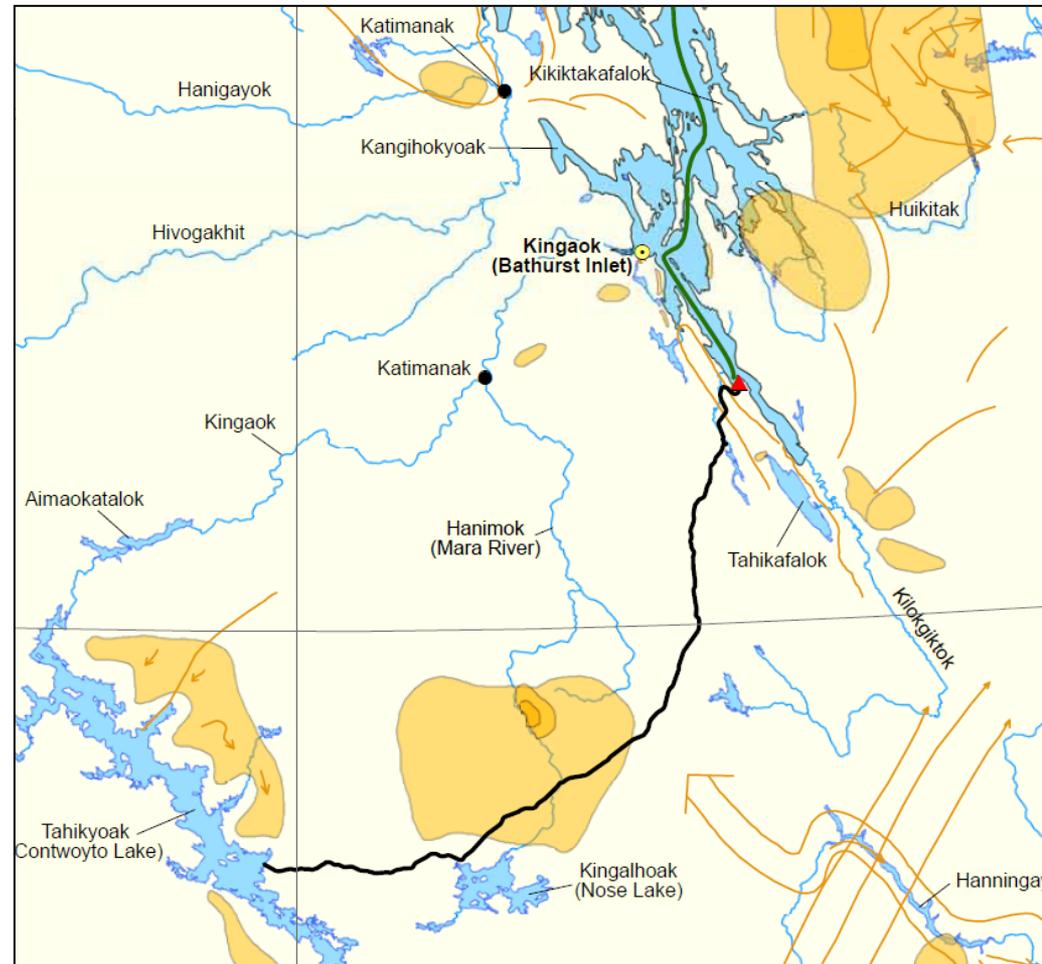
Study Objectives

- Review available information;
- Complete interviews with focus groups (Nov 2012) working with the HTOs;
- Address both regional and local scales;
- Current land use by people, communities and organizations;
- Conduct resource and land use mapping; and
- Changes in land use patterns and changes over time.



Traditional Knowledge

- Xstrata will work with the KIA to obtain Traditional Knowledge information from the database available;
- These data will create a comprehensive understanding of land, wildlife, water and other elements in the area; and
- The data will also assist in conducting the Environmental Impact Assessment.



Bathurst Inlet Port and Road Environmental and Socio-Economic Baseline Studies

Bathurst Inlet Port and Road

Work to Date

Baseline studies began in 2001:

- Fish and Fish Habitat – lake and streams
- Aquatic Ecology – lake and streams
- Marine Environment – Port Site
- Wildlife
- Bedrock Geology
- Terrain
- Vegetation
- Atmospheric
- Metal Leaching/ARD
- Surficial Geology and Soils
- Traditional knowledge
- Community Consultation
- Economic



Bathurst Inlet Port and Road

Work to Date

Baseline studies continued in 2007:

- Vegetation – plant tissue
- Aquatic Ecology – stream water and sediment
- Marine Environment – marine mammals and habitat
- Marine Environment – water, invertebrates, sediment, algae
- Wildlife – birds, caribou
- Atmospheric
- Metal Leaching/ARD
- Community Consultation



Bathurst Inlet Port and Road

Draft Environmental Impact Statement



A Draft Environmental Impact Statement was completed in 2007 and submitted to the Nunavut Impact Review Board (NIRB) in January of 2008.



Bathurst Inlet Port and Road

Work to Date

Baseline studies continued in 2010:

- Noise and Meteorology
- Hydrology
- Terrain and Soils
- Wetlands
- Ecosystem Mapping
- Freshwater Aquatic Resources
- Freshwater Fish and Fish Habitat
- Marine Aquatic Resources
- Marine Fish and Fish Habitat
- Marine Birds
- Human Health



Bathurst Inlet Port and Road

Historic Work to Date

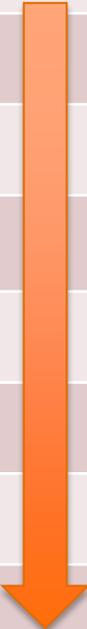
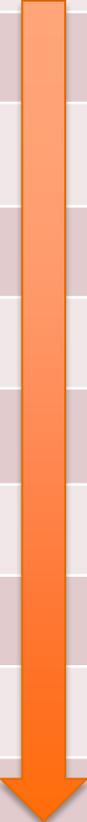
Baseline studies completed in 2012:

- Noise and Meteorology
- Hydrology
- Upland Breeding Birds
- Rare Plants
- Marine Shellfish
- Ocean Currents

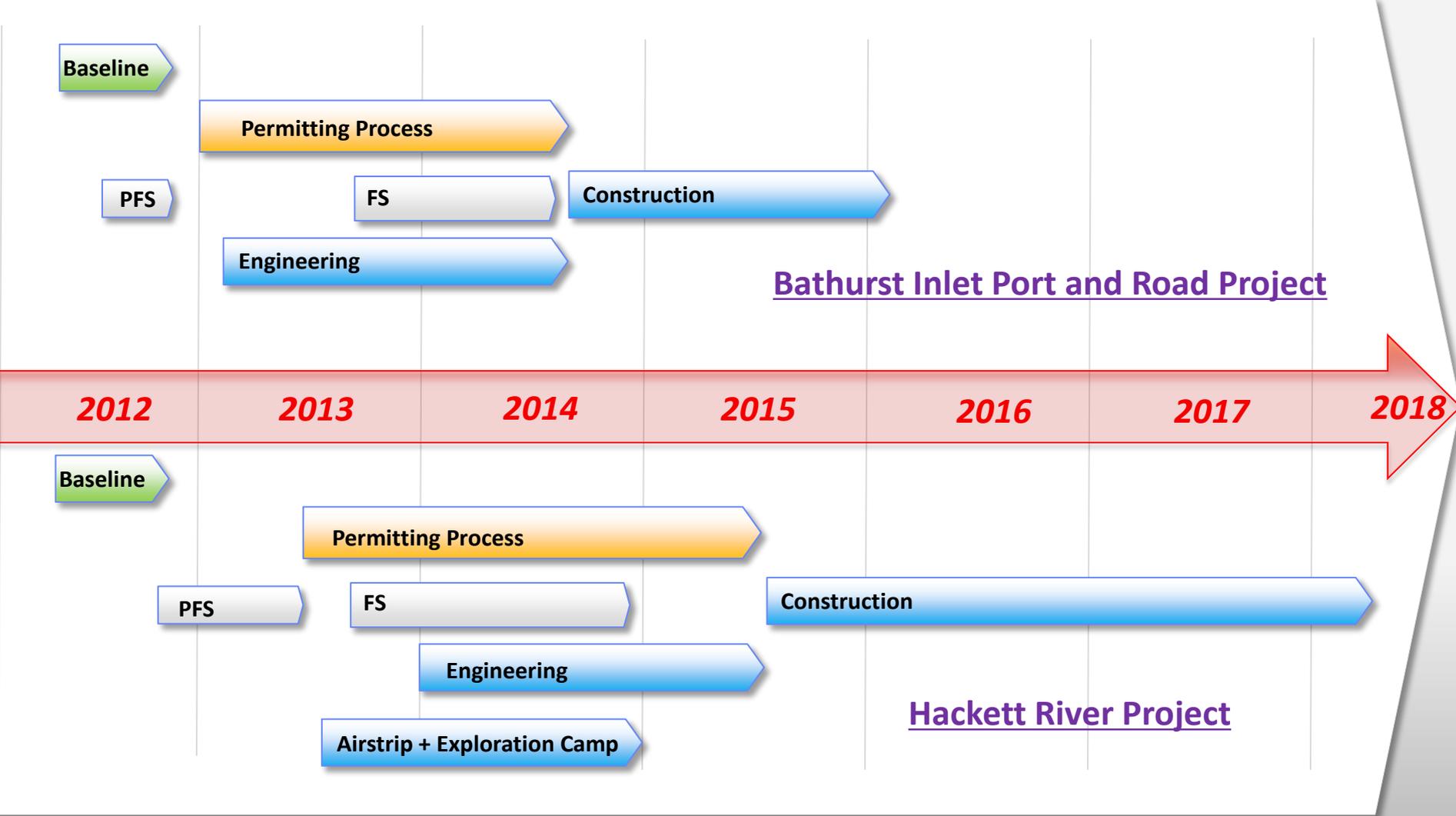


Next Steps for Hackett River and BIPR Projects

Nunavut Impact Review Board (NIRB) Process Steps	BIPR Project	Hackett River Project
Issuance of Guidelines for the preparation of a Draft Environmental Impact Statement (EIS)	2004	2008
Preparation and <u>submission of the Draft EIS</u>	2008	
NIRB – Guideline Conformity review of Draft EIS		
Technical review of the Draft EIS	2008	
Technical Meeting		
Pre-Hearing Conference (PHC)		
Preparation and <u>submission of the Final EIS</u>		
NIRB – Final EIS compliance review		
Technical review of the Final EIS		
Final Hearing		
NIRB’s Determination Final Hearing Report to the Minister		

Nunavut Impact Review Board (NIRB) Process Steps	BIPR Project	Hackett River Project
Issuance of Guidelines for the preparation of a Draft Environmental Impact Statement (EIS)	2004	2008
 Preparation and <u>submission of the Draft EIS</u>	2008 / End 2012	Fall 2013
NIRB – Guideline Conformity review of Draft EIS		
Technical review of the Draft EIS	2008 / Mid 2013	
Technical Meeting		
Pre-Hearing Conference (PHC)		
 Preparation and <u>submission of the Final EIS</u>		
NIRB – Final EIS compliance review		
Technical review of the Final EIS		
Final Hearing		
 NIRB’s Determination on acceptability of project Final Hearing Report to the Minister	 Fall 2014	 Fall 2015

BIPR and Hackett River Projects Timelines



Regulated processes (NIRB, NWB, DFO, KIA, AANDC, EC)

Pre-Feasibility (PFS) or Feasibility Studies (FS)

Project Engineering

Field

Community Commitments

- Currently developing a Community Investment Strategy with a focus on education & training, community development, sustainability and arts & culture



- Initial Investments Include:
 - Kitikmeot Cup – ‘Player of the Game’ sponsor
 - Kitikmeot Games Sponsorship
 - Kugluktuk’s ‘Last Chance Fishing Derby’
 - Women Building Futures – attracting women in trades



Our Team



Hackett River and BIPR – Summary and Next Steps

- The Hackett River Project has the potential to be a major driver of jobs and economic growth for the Kitikmeot Region
- Construction of a multi-user port and a road (BIPR) can lead to other major developments in the area.
- There will be a need for skilled employees and service providers leading to a high demand for workers of the Kitikmeot Region – especially skilled trades - and opportunities for the next generation of young workers.
- Given the specific window for this project, success depends on timely permitting
- We will have other community consultation sessions in 2013 and are actively engaging community leaders and government agencies on this project.



Questions ?