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MR. BOB BROMLEY
MLA, WELEDEH

**Environment and Natural Resources
Commitments Made in Committee of the Whole**

In response to the commitments made in the Legislative Assembly on February 16, 2010, I offer the following:

1. Commitment to provide a list of all the subsidy programs, specifically reflecting their uptake and trends in the Northwest Territories (NWT).

The Department of Environment and Natural Resources (ENR) renewed its energy programs in 2008/2009 to reflect lessons learned and to react to increases in energy and heating fuel costs. Energy programs in 2009/2010 include: the Energy Conservation Program (ECP), the Alternative Energy Technologies Program (AETP), the Energy Efficiency Incentive Program (EEIP), and additional wind and biomass energy development activities. These programs, along with enhanced support for the Arctic Energy Alliance (AEA) has made the NWT one of the most progressive jurisdictions in Canada in terms of greenhouse gas programs.

There has been positive feedback for these programs, people are encouraged that the government is promoting energy efficiency and alternative energy.

Energy Conservation Program (ECP) - 2009/2010:

The ECP provides funding to communities and non-profit organizations for energy saving projects. In 2009/2010, eight projects (total \$114,730) were funded in three communities. ECP created \$52,925 in annual energy savings and 250 tonnes of carbon dioxide (CO₂) reductions.

Alternative Energy Technologies Program (AETP) - 2009/2010:

The AETP is split into three funds. In 2009/2010 the Small Renewable Energy Fund (SREF) provided funding for seven projects, totaling \$23,604. The Medium Renewable Energy Fund (MREF) provided funding for two businesses totaling \$22,529. The Community Renewable Energy Fund (CREF) provided funding for the Gwich'in Wellness Camp in Inuvik totaling \$16,000. In total, these AETP projects will create \$30,300 in annual energy savings and 35 tonnes of CO₂ reductions.

Energy Efficiency Incentive Program (EEIP) - 2009/2010:

A total of 1,167 rebate cheques were provided to residents from 18 communities as of April 27, 2010. As part of the EEIP in 2009/2010, the AEA also provided winterization workshops for high school students in Tuktoyaktuk, Paulatuk, Fort Good Hope and the Hay River Reserve. In each community, up to 10 students were trained in basic winterization techniques such as caulking and weatherstripping. Materials were purchased from local stores and the students applied their training by winterizing up to 10 homes in each community. Community events were organized to provide recognition to the winterization program participants.

ENR and the AEA finalized a review of EEIP delivery in 2008/2009 and changes to the program guidelines and product rebate eligibility criteria were made effective September 1, 2009.

EEIP Rebates by Category (Number and Dollar totals) - 2009/2010

	<u># Rebates</u>	<u>Dollar Totals</u>
Washer	229	\$ 31,600
Pellet stove	102	\$ 50,500
Fridge	149	\$ 17,250
Woodstove	81	\$ 31,900
Outboard less 30hp	28	\$ 7,000
EcoRetrofit	40	\$ 62,601
Oil Boiler	17	\$ 10,200
Oil Furnace	42	\$ 13,750
Outboard 30hp plus	22	\$ 11,000
Gas Boiler	4	\$ 3,600
Gas Furnace	18	\$ 6,000
Instant hot water	11	\$ 3,500
Condensing hot water	1	\$ 300
Oil or gas hot water	14	\$ 4,200
HRV	4	\$ 1,200
Pellet Boiler	7	\$ 6,500
Low Flush Toilets	44	\$ 3,300
Total:	813	\$264,401

Wind Energy Program:

In September of 2008, the Tuktoyaktuk Development Corporation (TDC) was identified as the lead proponent for the proposed wind energy project in Tuktoyaktuk. In September 2009, Dowland Contracting Inc. [an experienced Inuvik based northern construction company owned 51 percent by the Inuvialuit Regional Corporation (IRC)] formed a joint venture with the TDC called the Tuktoyaktuk Power Corporation (TPC) to develop, own, and operate the wind power project. ENR will be a major funding partner and is seeking assistance from the Government of Canada to advance this clean energy project.

The wind project in Tuktoyaktuk would generate electricity to be sold to the Northwest Territories Power Corporation (NTPC), to displace some of the diesel generation that would otherwise be required. TPC is currently negotiating a Power Purchase Agreement with NTPC.

The planned wind power project consists of three 100-kilowatt, NorthWind 100 wind turbines. The centre of the turbine hubs will sit 30 meters (100 feet) high on top of tubular towers about 175 meters apart, and the three revolving blades will be 21 meters in diameter.

The project is currently on schedule with commissioning of the turbine slated for July 2011. The project will roll out in three phases, (1) pre-construction activities (present to March 2010), (2) turbine/base/electrical design and equipment ordering (April 2010 to April 2011), and (3) installation and commissioning (April 2011 to July 2011). The project is estimated to cost up to \$3 million, and will offset 120,000 liters of diesel fuel per year.

Pre-feasibility studies and plain language reports have been produced for Ulukhaktok, Sachs Harbour, and Paulatuk. The Aurora Research Institute (ARI) and ENR traveled to these communities in February 2010 and held meetings with leaders regarding their wind energy planning processes and how they relate to the Tuktoyaktuk project. Wind monitoring is complete in these communities and the meteorological towers were taken down by ARI staff and put into storage.

At the request of the Yellowknives Dene First Nation, ENR funded ARI to produce a desktop study of the wind resource near Thor Lake, NWT and in September 2009 a 50 meter wind monitoring station was set up at Thor Lake to start recording wind speed data. Wind monitoring at Thor Lake is ongoing in 2010/11.

ENR funded ARI to produce a desktop study of the wind resource in Wekweètì. ARI and ENR will travel to Wekweètì in May 2010 to present the findings and consult with community leaders on where to erect a wind monitoring tower.

In September 2008, a wind monitoring station was installed in Norman Wells. Monitoring will end in 2010 and a pre-feasibility report will be produced.

Arctic Energy Alliance (AEA) Core Support - 2009/2010:

ENR provided \$150,000 to the AEA for additional core support in 2009/2010 to assist with administrative support and office space requirements. ENR also provided an additional \$210,000 to the AEA to deliver an Energy Management Program to provide expert advice to residents and businesses regarding energy efficiency (two person years (PYs) with Operation and Maintenance), as well as \$50,000 for core membership fees.

EnerGuide for Houses - 2009/2010:

EnerGuide for Houses is delivered by the AEA. ENR funding has permitted the AEA to make this service available to all homeowners in the NWT at the same cost. The results for the year are shown in the following table:

Community	"D" Evaluations	"E" Evaluations	"P" Evaluations	"N" Evaluations	Totals
Behchokò	3				3
Fort Good Hope	1				1
Fort Providence	3				3
Fort Resolution	2				2
Fort Simpson	11	3			14
Fort Smith	14	2			16
Hay River	25	4	1		30
Inuvik	15				15
Lutsel'k'e	1				1
Norman Wells	2				2
Tulita	3				3
Yellow knife	108	40			148
Totals	188	49	1	0	238

2. Commitment to provide a report of forest inventories.

Please see the attached document entitled "Status of Forest Resource Inventories and Sustainability Assessments in the NWT".

Should you have any other questions or require more information, please do not hesitate to contact me.



J. Michael Miltenberger

Attachment

- c. **Mr. Tim Mercer, Clerk of the Legislative Assembly**
Mr. Kevin O'Keefe, Legislative Coordinator
Mr. Dave Ramsden, Secretary to Cabinet
Mrs. Margaret Melhorn, Secretary of the FMB
Mr. Gary Bohnet, Deputy Minister, ENR
Members of the Legislative Assembly

Status of Forest Resource Inventories and Sustainability Assessments in the NWT

**Forest Management Division
Department of Environment and Natural Resources**

Status of Forest Resource Inventories and Sustainability Assessments in the NWT

This document is intended to provide an overview of forest inventories and the different types of assessments that Forest Management Division does to evaluate forest quantity, quality and sustainability around communities and over the broad landscape.

Forest Inventories

Forest inventory refers to several types of products including forest cover maps, satellite vegetation classifications, and field data collection programs. Forest inventories provide base information about forest types, quantities and growth that is displayed as maps, tables or graphs. Forest inventories can be created at different levels of detail, using **satellite imagery**, **aerial photography** or **field measurements** to determine species, height, age, volume, biomass, forest structure, and many other attributes. Usually a combination of approaches is utilized.

Detailed, management level inventories typically involve interpretation of aerial photography to create **forest cover maps**. Once the mapping is complete, a field program is required to determine volumes for the different forest types. The tree measurements obtained in the field can be used to create **yield curves** which demonstrate, on an average basis, growth of the stand type.

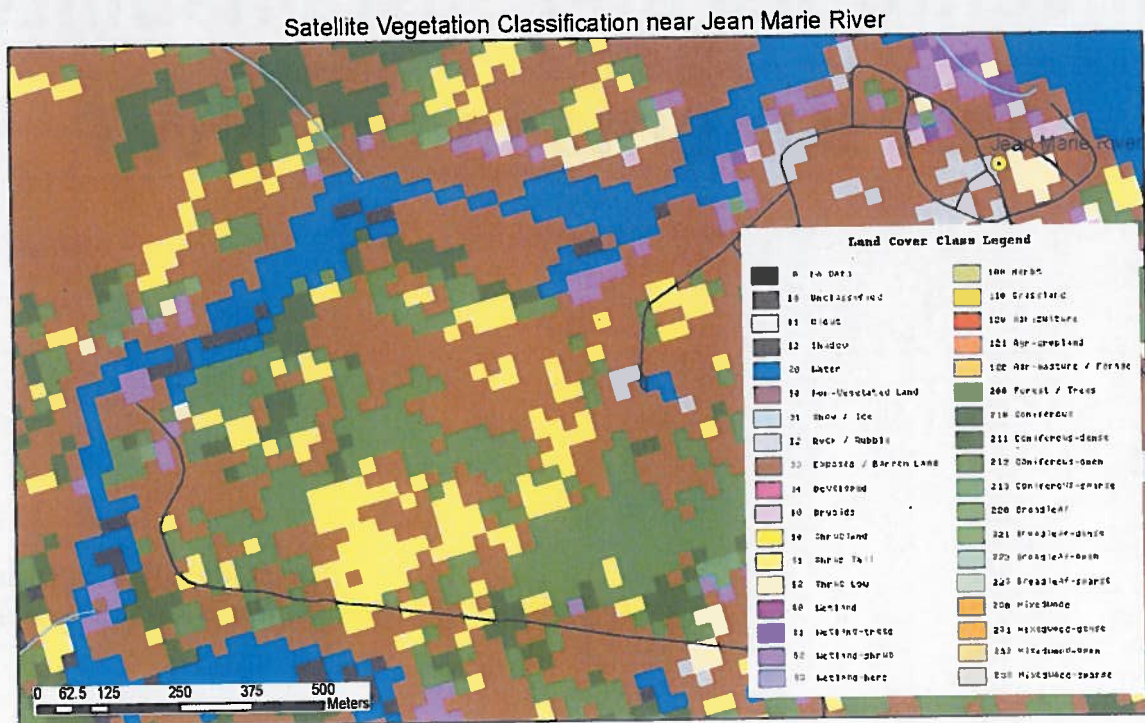


Figure 1: Each pixel, or color square represents about 25m² on the ground.

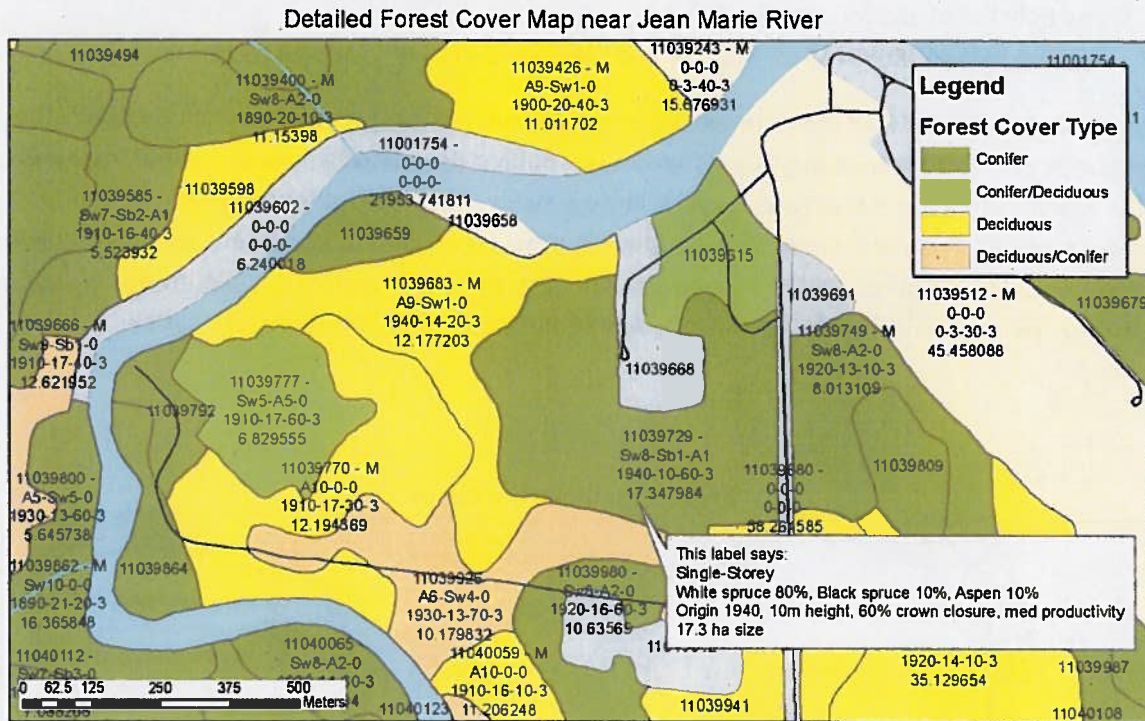


Figure 2: There are many more attributes in the database than shown on the map.

Figures 1 and 2 show different inventory products for the same area. Figure 2 is much more detailed.

These maps and data products are the foundation for assessing sustainability, economic opportunities and landscape change, and for developing management plans.

Approximately 99% of the forested area of the NWT has basic satellite classification like shown in Figure 1. By the end of 2011, approximately 10% of the NWT will have an “enhanced” satellite product that provides additional information on height class, crown closure class, and basic volume and biomass estimates. Only 5% of the forested area of the NWT is covered by air photo based detailed inventories as shown in Figure 2. Figure 3 shows the distribution of the different inventory types.

Examples of forest inventories include:

- Satellite based vegetation classification of the NWT (joint NRCan/GNWT product).
- Enhanced satellite based products using high resolution imagery to provide additional forest attributes (NRCan/GNWT product).
- Air photo based forest inventories.

- Community assessments to determine volumes of trees in specific areas (Tulita, Aklavik, Whati and Behchoko) and for specific uses.
- Various field programs to collect tree and site data that cannot be obtained from maps.

Many provinces have detailed forest inventory information for the entire province. In the NWT, the cost has not been justified because the forests have been subject to relatively little industrial pressure. The satellite based vegetation classification was built to provide a high level overview of the entire territory. The other types of inventory products have been built to meet various needs at a community level as required. Detailed air photo based inventories continue to be the most valuable inventory type, and may become more essential as forest industry and other forest pressures continue to grow.

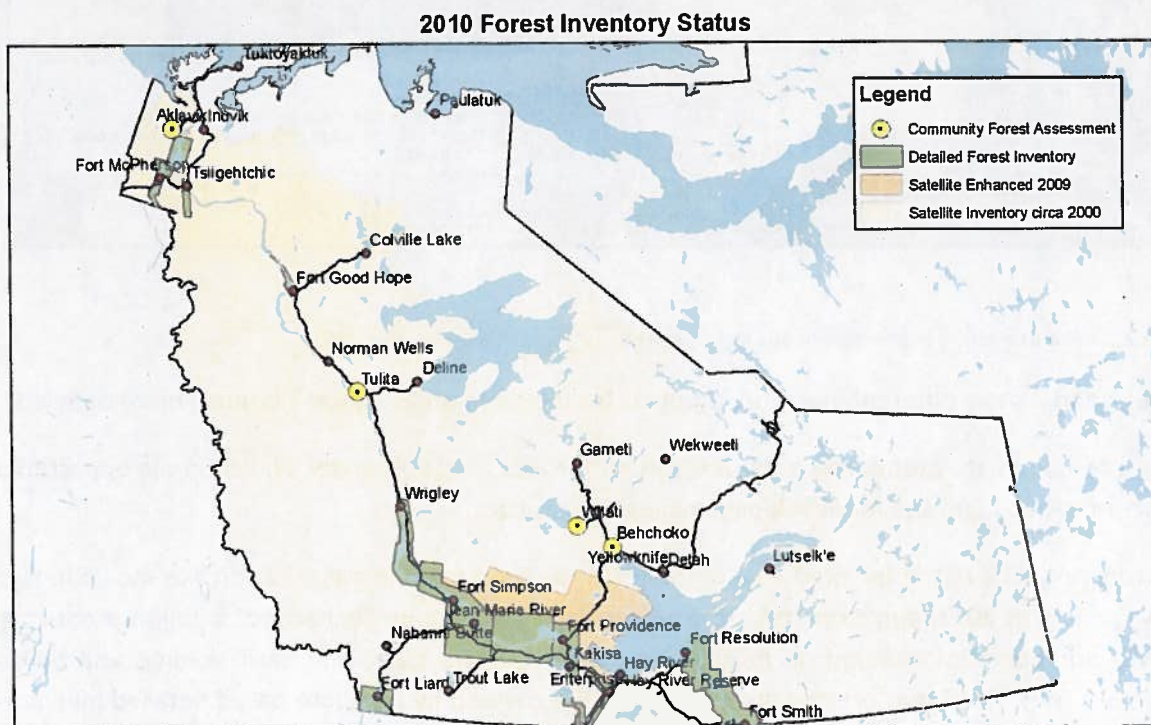


Figure 3: Forest Inventory Status

Sustainability Assessments

Also called **Forest Resource Assessment**, **Timber Supply Analysis**, or **sustainable harvest level determination**, these products provide information on how much resource could be extracted from the forest over a long time period without causing a depletion of the forest. It takes into account how much is there now (the forest inventory), how fast it's growing (yield curves), and where harvesting is allowed. Areas are not considered if they are not productive, have special environmental considerations (such as riparian areas), or do not allow harvesting for other reasons.

Using modeling software, the forest is projected into the future under various scenarios. Communities, timber harvesters and forest managers are consulted to develop an accurate picture of current and potential forest use. Important information to consider is the size and species of forest products in demand, accessibility of the resource, and community initiatives or plans. The objective is to understand where and what is likely going to be harvested in the foreseeable future.

It is NWT practice to produce a suite of results showing **sustainable harvest levels**. Managers can then apply a scenario that best fits current and planned harvest practices. For example, if operators are interested only in sawlogs, the sustainable harvest level is restricted by the landbase that can produce sawlog sized trees. If an operator can utilize both sawlog sized and smaller trees, much more land area can be considered in the assessment, and the sustainable harvest level will be larger. It is very important that the activities on the landbase match the assumptions used in the model to ensure validity. ENR is working on audit processes to track actual harvest and relate it back to projections.

Most work has focussed on determining sustainable harvest levels for sawlogs and fuelwood, since this has been the focus of forest industry to date. Interest in biomass has increased in the last couple of years, and it is being considered in current assessments.

Sustainability Assessments have been completed, and sustainable harvest levels are available, for the following areas:

- **Cameron Hills 2000** – calculated sustainable harvest levels for sawlog and fuelwood, conifer and deciduous;
- **Buffalo River Area 2002** – calculated sustainable harvest levels for spruce and pine sawlogs;
- **Slave River Lowlands North 2004** – calculated sustainable harvest levels for conifer and deciduous, sawlog only; and
- **Slave River Lowlands South 2006** – calculated sustainable harvest levels for spruce, pine and deciduous, sawlog only.

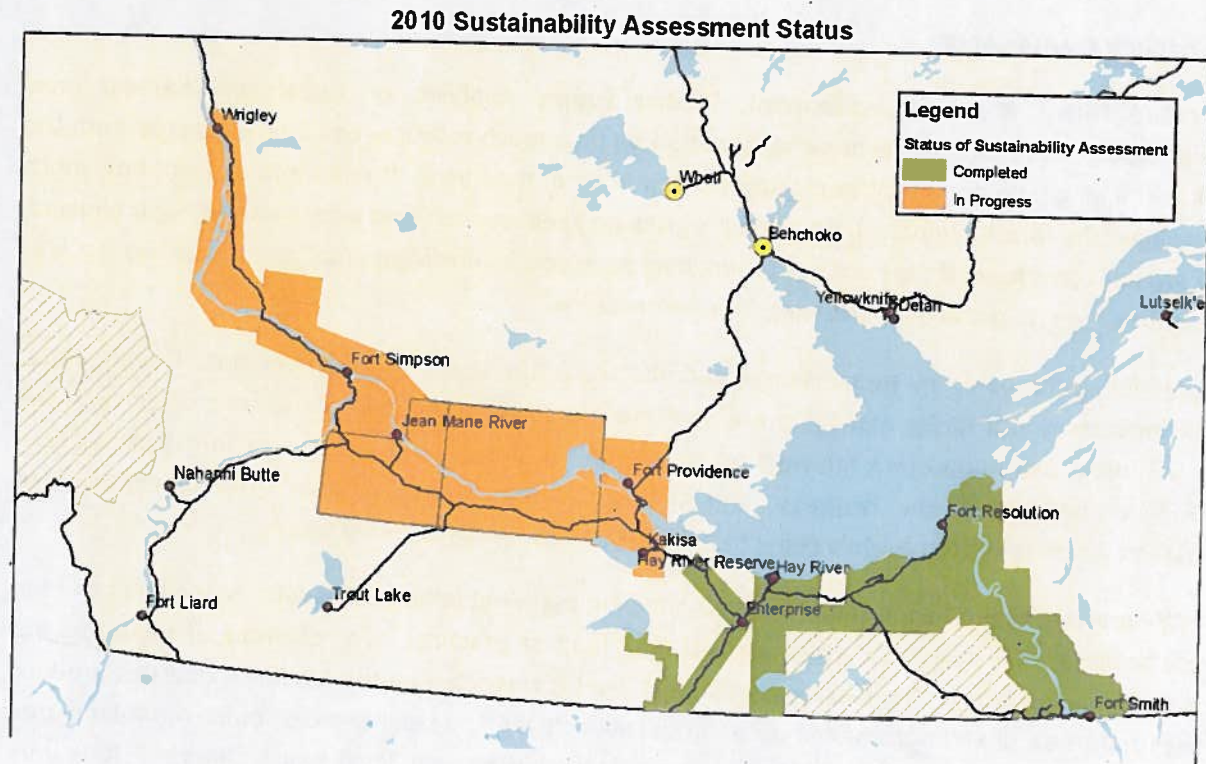


Figure 4: By 2010, sustainability assessments will be complete for all areas in the south where inventories exist.

A **Dehcho Forest Resource Assessment** is currently underway. Results will be available by summer 2010. This project covers 1.8 million hectares where detailed forest inventory is complete around the five communities of Kakisa, Fort Providence, Jean Marie River, Fort Simpson and Wrigley. This project aims to determine a sustainable harvest level for sawlogs and biomass/fuelwood sized timber for both coniferous and deciduous forest types.

The information will provide a powerful planning and management tool that will benefit all forest development activities in the Dehcho. The assessment is especially relevant in evaluating biomass opportunities and other potential that is developing in the forest industry. It will also enable accurate evaluation of forest impacts from industrial activities. The report will enable the government to make robust statements about opportunities and sustainability and will provide a strong foundation for decision making.

Dehcho Forest Resource Assessment

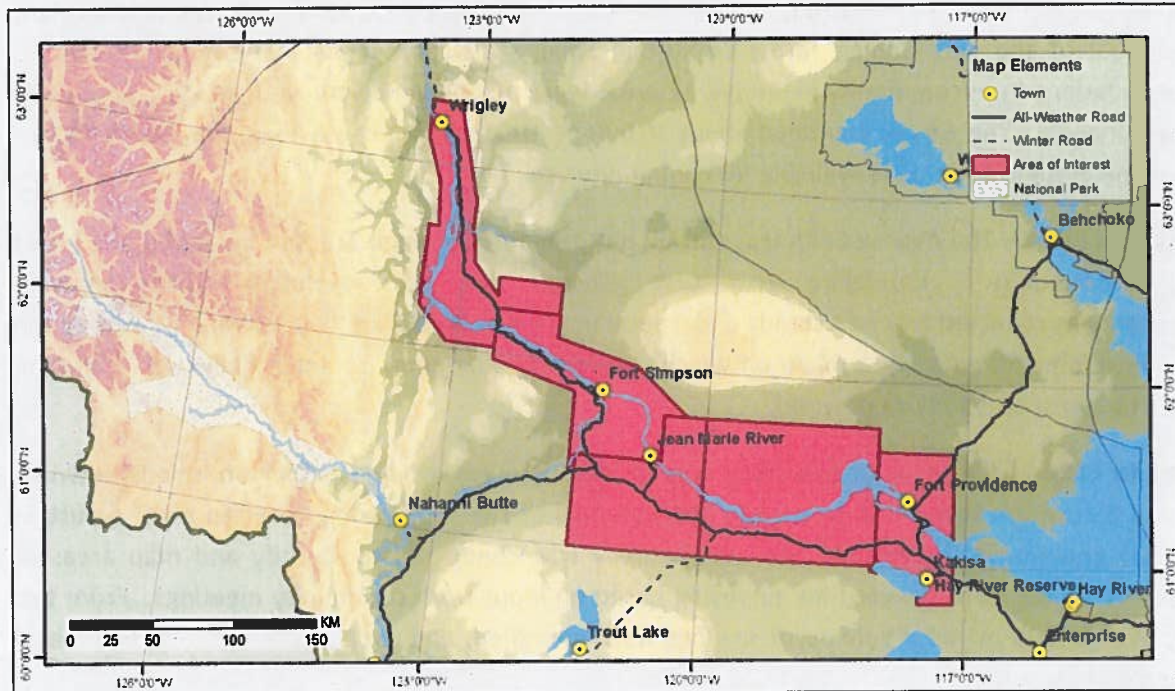


Figure 5: A detailed forest resource assessment can only be done where there is forest inventory.

Community Forest Resource Assessments (CFRAs)

CFRAs are being carried out for some communities where there are no detailed forest inventories and information on the forest resource is limited. Satellite information is being combined with an aerial assessment and limited ground sampling to determine potential sources of wood for community use and approximate forest resource volumes in limited areas. CFRAs will provide information to support woody biomass development objectives in community areas, and can also provide critical forest fuel type information to assist with community wildfire risk assessments.

CFRAs have been carried out in four communities. In each case the community expressed a need or interest in locating and quantifying wood resources for community use. Forest Management Division met with community members to determine needs, developed a customized field program, and prepared a report that was presented back to community members for their use.

*The reports provide information on current forest conditions in limited and specific areas, and were not assessments of sustainability. The volumes presented below are **total volume** assessed, and not a sustainable annual harvest level. A sustainability assessment cannot be conducted without an inventory base.*

2005 Whati Community Forest Resource Assessment (CFRA) – Whati residents were interested in identifying areas of large timber with potential to be used for local construction projects and to explore the potential of the surrounding forest to sustain small scale commercial harvesting. Based on recommendations from community meetings, 12 areas were mapped and surveyed. In total, about 686 ha were surveyed. The survey identified about 30,000 m³ total volume of sawlogs, and over 5,000 m³ total volume of fuelwood that is available for community use.

2006 Aklavik CFRA – The Aklavik CFRA was carried out primarily to locate areas of accessible fire wood near the community. Candidate areas were selected using high resolution satellite imagery. Information was collected from 42 stands and a total volume of 30,000 m³ was estimated from all the stands. Recommendations were made on which stands would be good potential fuelwood harvesting sites due to access and amount of wood.

2007 Tulita CFRA – The focus of this study was to identify areas of large timber on islands between Tulita and Blackwater River, and to explore the potential of the surrounding forested area to sustain small scale commercial harvesting. An aerial survey was conducted to identify and map areas of interest. 13 stands were selected for surveying based on input from community meetings. From this survey, over 50,000 m³ total volume of sawlogs were identified, and over 20,000 m³ total volume of fuelwood was identified.

2009 Yellowknife/Behchoko CFRA – The purpose of this assessment was to determine a good location for fuelwood harvesting for Yellowknife and Behchoko residents. Several areas were assessed including along the Tibbitt Lake Road, Quyta Lake and Whitebeach Point, but were not investigated in detail due to poor accessibility and/or scattered timber resources. Two sites along the highway south of Behchoko, where a large forest fire burned in 2008, were sampled in detail because of large volumes of accessible wood. The total volume assessed is over 55,000 m³ and represents a significant fuelwood harvesting resource for Yellowknife and Behchoko area residents. The report will be finalized by April 2010.

Future Plans for Forest Inventory

- New air photo based, detailed forest inventory is being planned for 1.8 million hectares in the Liard River Valley. The Liard Valley represents one of the largest and most productive forest areas in the NWT, and is a prime location for future developments in biomass or logging industries. The area planned for new photography will capture the majority of the productive, accessible and most heavily used forest areas in the Liard River Valley. A small portion of the planned area has inventory that is now 20 years old. Once the inventory is complete, a sustainability assessment would be carried out, and sustainable harvest levels would be calculated for the inventory area.

- Thirteen forested communities have no forest inventory information. These communities are Inuvik, Aklavik, Colville Lake, Deline, Tulita, Norman Wells, Whati, Gameti, Wekweeti, Behchoko, Lutsel K'e, Yellowknife/N'Dilo and Trout Lake. To meet the needs around increased interest in biomass harvesting, plans are underway to acquire some level of information for each of these communities, either aerial photography or high resolution satellite imagery. This would enable a detailed assessment of biomass availability around the community and calculation of sustainable harvest levels within the inventory area.

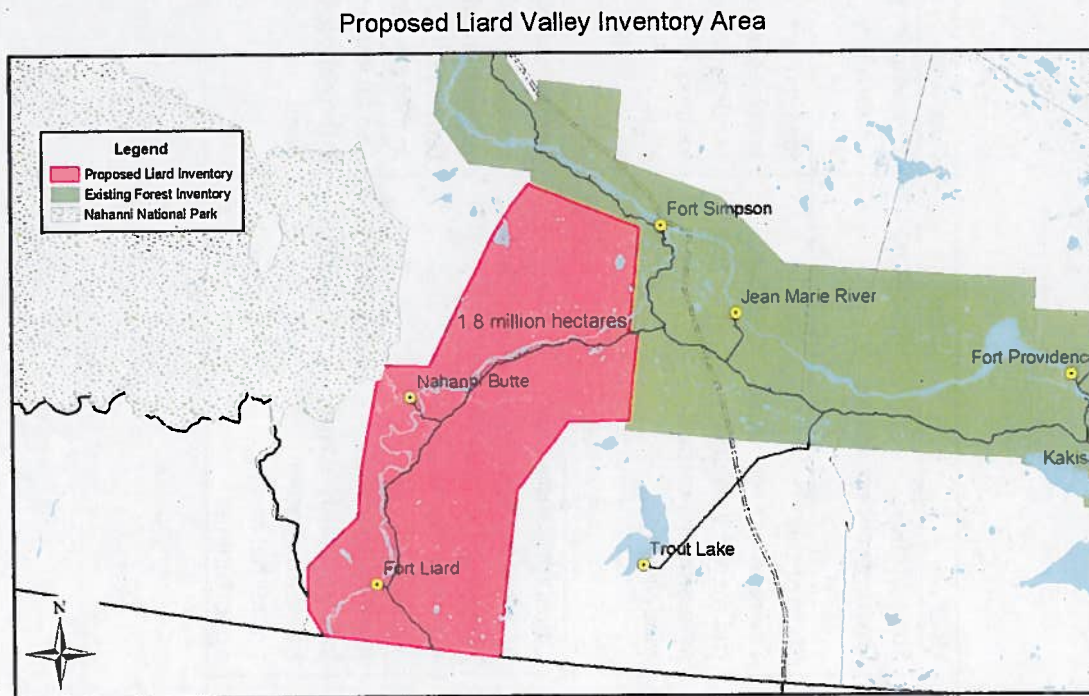


Figure 6: Proposed inventory is 1.8 million hectares.

Forest Inventory Summary

Inventory Type	Resolution	Uses	Cost	Pros	Cons
Landsat Satellite	25 m	State of the Environment reporting	\$1-2/km2	Inexpensive, provides a base for territory	Limited use, only provides broad vegetation type
Satellite Enhanced	25 m	State of the Environment reporting, rudimentary volume assessments, carbon modeling	\$10- \$15/km2	Inexpensive, vectorized, provides more attributes than Landsat classification such as volume, biomass, broad height class	Only looks at conifer, deciduous and mixedwood. No species differentiation, not detailed enough for sustainability assessments
Air Photo Based Inventory	50 cm	Calculating sustainable harvest levels, carbon modeling, economic assessments, impact assessment	\$150- \$250/km2	Very detailed, continuous coverage of all important vegetation information required for forest management	Most expensive, usually takes multiple years to complete large projects
Community assessments	Usually aerial survey and field work for specific areas	Identify potential locations for fuel wood harvesting, other timber harvesting opportunities	\$60,000- \$100,000 per community	Can fill immediate needs for information, fast, targeted to a need	Moderately expensive, limited to specific areas, will be based on needs expressed at the time