



# WUSKWATIM

Power Limited Partnership

## Monitoring Overview

2012–13



# Monitoring Overview for the period ending March 31, 2013

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**WUSKWATIM**  
Power Limited Partnership







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## Message from the chair of the general partner of WPLP



Wuskwatim Power Limited Partnership (WPLP) is pleased to present the 2012–13 Monitoring Overview for the period ending March 31, 2013, a year which experienced the transition from construction to operations. The Wuskwatim Generation Project’s monitoring activities were performed in accordance with prescribed government legislation, permits and authorizations, as well as the Wuskwatim Project Development Agreement signed between Manitoba Hydro, the Nisichawayasihk Cree Nation (NCN) and the Taskinigahp Power Corporation, partners in WPLP. This Monitoring Overview is a public document

summarizing the results of ongoing monitoring programs being undertaken as part of the development of Wuskwatim. Separate technical reports are filed annually with regulators under terms and conditions of the Wuskwatim Environmental Protection Program and are available for review on the public registry.

The most significant milestone this year was the completion of construction at Wuskwatim and the transition to operations, with all three turbine generators going into service. The first unit went into service on June 22, 2012 and the remaining two units were brought into service at approximately two-month intervals thereafter. First power was marked by cultural ceremonies as well as a news conference attended by senior government, Manitoba Hydro and NCN representatives. It has been over 20 years since Manitoba has added new hydro electric generating capacity to the provincial power grid so Wuskwatim’s in-service was a significant event.

Most construction activities from the beginning of the fiscal year focused on completing the electrical and mechanical installations and commissioning within the station needed to make plant operations possible. The final river-related activity completed in summer 2012 was removal of the rock plug at the upstream end of the Wuskwatim Falls channel excavation after confirmation the concrete and earth-fill structures were performing satisfactorily. With construction complete, the focus has shifted to decommissioning all construction areas, including most of the camp, and restoring them to a more natural state.

One of the legacies of the Wuskwatim Project was inclusion of *Ethinesewin* – the traditional knowledge and collective wisdom of *Nisichawayasi Nehethowuk*. This is a unique and important component of the monitoring programs for the Wuskwatim Generation Project and the approach has provided for generational knowledge transfer within the community.

Manitoba Hydro manages the project on behalf of WPLP, ensuring consistency with its Corporate Environmental Management Policy and Sustainable Development Guiding Principles. The following overview was developed by NCN and Manitoba Hydro on behalf of WPLP.

Sincerely,

A handwritten signature in black ink, appearing to read 'Ken R.F. Adams', with a long horizontal flourish extending to the right.

Ken R.F. Adams, P. Eng  
Chair of the general partner of Wuskwatim Power Limited Partnership  
(5022649 Manitoba Ltd.)





## Introduction

For over 100 years, Manitoba has primarily relied on water power to meet the electrical energy needs of the province. The Wuskwatim Generating Station, completed in 2012, was developed to harness some of that power, and now provides 200 megawatts of clean, self-renewing hydroelectricity to the Manitoba power grid.

Wuskwatim was developed by the Wuskwatim Power Limited Partnership (WPLP), an entity consisting of Manitoba Hydro, the Nisichawayasihk Cree Nation (NCN), and the Taskinigahp Power Corporation (TPC). The generating station is located in NCN's traditional territory in northern Manitoba, on the Burntwood River at Taskinigup Falls, near the outlet of Wuskwatim Lake. Wuskwatim marks the first time in Canada an electric utility has partnered with a First Nation to develop a major hydroelectric project.

As a low-head, run-of-river plant, Wuskwatim created less than one-half of one square kilometre of flooding, minimizing local environmental impacts.

The Wuskwatim Project Development Agreement, signed in June 2006, provided the option for NCN to own up to one-third of the Wuskwatim Generating Station through its wholly-owned Taskinigahp Power Corporation. At first power, in June 2012, NCN confirmed its intent to maintain its 33% ownership position in the Wuskwatim Project.





An essential part of the Wuskwatim planning and monitoring process was the use of *Ethinesewin* — the traditional knowledge and collective wisdom of *Nisichawayasi Nehethowuk* — which helped reduce adverse effects of the generating station. It was used in establishing locations for the construction camp, access road and transmission lines. To ensure minimum disruption to the local environment as the project moved through various construction phases and into operation, traditional knowledge and conventional science continued to be used equally as part of project monitoring activities. Traditional ceremonies, led by NCN Citizens, were undertaken to express respect for the land and resources, which helped to mitigate project effects on culture and heritage.

The Monitoring Advisory Committee (MAC), made up of NCN Citizens and Manitoba Hydro staff involved in the various monitoring programs, oversaw all monitoring activities during project construction. The committee will continue to oversee monitoring activities throughout operation to compare post-construction impacts with pre-construction baseline measurements and predicted impacts. The MAC is also responsible for overseeing production of this Monitoring Overview.

Manitoba Hydro operates the generating station for WPLP and continues to provide related management services to the partnership as required.

# Project Status

Construction of the Wuskwatim Generation Project that began in August 2006 is now complete and the station was fully operational as of October 2012. The construction focus in 2012 was to complete installation of the remaining monitoring, electrical, mechanical, communications and safety equipment. The three turbine generators were commissioned at approximate two-month intervals beginning in June 2012. Unit 1 went online on June 22, Unit 3 on August 22 and Unit 2 on October 6.

The station was connected to Manitoba Hydro's transmission grid, built as a separate construction initiative under the Wuskwatim Transmission Project. This allows Wuskwatim's power to flow to southern markets.

Decommissioning various infrastructure needed during construction, but not operation, is ongoing. One major portion of the decommissioning initiative is the construction camp. Most of the modular housing units have been removed from the site, except for those needed until a permanent staff house is built. The recreation building will remain for use by staff, as well as the water treatment plant and wastewater lagoon.

Rehabilitation will take place in areas not needed during operations to restore them to a more natural state. In 2012, rehabilitation activities included planting tree seedlings at disturbed sites around the generating station, construction camp and in borrow areas along the access road. Future rehabilitation activities will consist of additional tree planting, as well as seeding with other types of low-lying vegetation to control erosion, weeds and improve aesthetics.

Various programs that started prior to construction will continue into the operational phase, to measure any long-term effect the project might have on the environment.

Key environmental programs undertaken during this past year included:

- > assessment of benthic invertebrates;
- > mapping invasive plants (weeds) around the construction site;
- > planting aquatic vegetation to enhance fish habitat;
- > completing soil bioengineering to stabilize shorelines at selected sites on Wuskwatim Lake;
- > planting white spruce and jack pine trees as part of rehabilitation efforts;
- > monitoring turbidity, sediment, bed load and erosion during in-water construction and into generating station operation;
- > collecting water samples from the Burntwood River to measure water quality;
- > conducting archeological monitoring along the shore of the Wuskwatim forebay; and
- > carrying out *Ethinesewin* monitoring, by NCN, at the project site and surrounding areas.





Monitoring activities specific to project construction are now complete and will no longer be carried out; however, monitoring associated with Wuskwatim Generating Station operation has just begun. During operations, results will continue to be compared to pre-construction data to determine the effects of the station on the surrounding environment.

As construction neared completion, the number of workers employed on the project declined. Total construction project hires were 6,043 from August 2006 to December 2012. Approximately 37 per cent were Aboriginal and 65 per cent were from Manitoba. With Wuskwatim Generating Station now fully operational, more than 20 positions have been assigned to the station.

From the start of the project to March 31, 2013, Wuskwatim Power Limited Partnership spent more than \$167 million on goods and services purchased from northern Manitoba Aboriginal businesses, including several contracts with entities owned by NCN. NCN provided cross-cultural training sessions, cultural ceremonies and counseling services to all employees throughout the seven years of construction.



## Wuskwatim Monitoring

Monitoring for the construction phase of the project is complete; however, operational monitoring and reporting will continue into the future. All monitoring conducted in the 2012-2013 fiscal year was in accordance with the limits, terms and conditions of regulatory approvals issued by the Province of Manitoba and Government of Canada. These licences include an *Environment Act* Licence, an interim *Water Power Act* Licence and *Fisheries Act* Authorizations.

The *Environment Act* Licence for Wuskwatim, issued by Manitoba Conservation on June 21, 2006, prescribes monitoring for specific elements of the project and required the development and approval of the following documents:

- > Environmental Protection Plan for construction and operation of the access road
- > Environmental Protection Plan for construction and operation of the construction camp
- > Environmental Protection Plan for construction of the generating station
- > Aquatic Effects Monitoring Plan
- > Heritage Resources Protection Plan
- > No Net Loss Plan (compensation plan for fish habitat loss)
- > Physical Environment Monitoring Program
- > Resource Use Monitoring Plan
- > Road Access Management Plan
- > Sediment Management Plan
- > Socio-economic Monitoring Plan
- > Terrestrial Effects Monitoring Plan

Since the beginning of construction in August 2006, these plans and programs have been implemented and the results of monitoring activities have been summarized in annual Monitoring Overviews.

The technical monitoring reports on which the overview is based are submitted annually to Manitoba Conservation and Water Stewardship. This will continue into the operational phase of the project.

The last piece of major in-stream construction in 2012 was the removal of the rock plug at the channel improvement area at Wuskwatim Falls. Monitoring activities undertaken during that time included measurement of total suspended solids (TSS) concentrations in the water, as outlined in the Sediment Management Plan. Construction-related increases in TSS associated with this activity were not observed.

Aquatic monitoring carried out in 2012 was limited to examining benthic invertebrates up and downstream from the station to determine if suspended sediments caused by construction are having an effect on them. It was observed that suspended sediments were not having an effect on benthic invertebrates.

Physical environment monitoring during the open water season of 2012 included collecting greenhouse gas measurements following reservoir impoundment. Yearly turbidity and TSS monitoring done in conjunction with the Physical Environment Monitoring Program also took place during the construction period in the summer of 2012.

After seven years of construction activities, socio-economic monitoring continues to provide information on the economic and social impacts resulting from the project. Wuskwatim continues to contribute significantly to Manitoba's economy in terms of employment, labour income and tax revenues.







## Environmental Protection Plans

The Environmental Inspector, also known as *Aski Kihche O'nanakachechikew* (AKO), conducts compliance monitoring to ensure mitigation measures outlined in the Environmental Protection Plans, licences, permits and authorizations are followed during construction. Environmental Protection Plans were prepared for construction of the access road, camp and generating station. The plans outline measures to be implemented to minimize adverse environmental effects of construction.

Daily field inspections include review actions by contractors, environmental protection plan conformance of completed works and success of areas where rehabilitation efforts have occurred. Typically, these inspections show that environmental requirements are being met; however, on occasion an issue arises and is addressed quickly. The AKO attends regular contractor meetings to discuss specific environmental issues requiring attention. Corrective action reports are used to track and document non-compliance issues or concerns that require specific remediation or mitigation measures to be implemented by the contractor. Key work carried out by the site AKO in 2012 is provided below.

Manitoba Hydro hired four high school students from NCN to work on environmental projects during the summer of 2012. Activities included tree planting at the decommissioned construction camp, along the access road and at a borrow area that was no longer needed for construction. The students participated during joint environmental/safety inspections with the contractors and assisted with water quality monitoring during completion of two boat launches.

## Construction

Temporary erosion and sediment control works, specifically sediment fencing, installed during construction of the access road stream crossings, were removed in 2012. As vegetation has grown around the stream crossings and filters out sediment naturally, the sediment fences are no longer required. As part of *Ethinesewin*, NCN Elders noted that the water clarity at the stream crossings was good.

During blasting and removal of the rock plug at the channel improvement area at Wuskwatim Falls, the AKO monitored total suspended solids (TSS) in the water, according to the Sediment Management Plan. All TSS information was recorded daily during in-stream work and reported to the federal Department of Fisheries and Oceans.

A second boat launch was constructed to the south of the water treatment plant intake groin and primary upstream boat launch that was completed in August 2012. This decision was made in consultation with NCN Elders as a safety measure to allow boat access to Wuskwatim Lake when winds from the north are strong. TSS monitoring was completed during the work and no sediment increases were observed.

The downstream boat launch, which was partially constructed in 2010, was also completed in 2012. During placement of the concrete pads and rock, TSS monitoring was conducted. No detected increases in TSS were observed. This boat launch will allow users to access the Burntwood River, downstream of the generating station.



## **Site maintenance and remediation**

Joint field inspections between Manitoba Hydro's Wuskwatim Construction Department and the general contractor began in 2010 when housekeeping and construction waste became problematic.

These inspections have proved beneficial regarding non-conformance issues. The area included in these inspections covers all of the contractor's work areas. The AKO was vigilant about site tidiness and made a point of educating site personnel about the importance of proper disposal and recycling of wastes.

Amongst various decommissioning activities at site, two spills, due to mechanical failure, were reported by contractors to Manitoba Hydro during the 2012 – 2013 field season. All releases were less than the provincially reportable 100-litre limit for petroleum products. All spill sites were cleaned-up and monitored by the AKO. As a result, there were no remaining effects on the surrounding environment from spills.

An example of a spill that occurred this year was during the excavation of blast rock at the channel improvement area at Wuskwatim Falls. A hydraulic hose broke and approximately 75 litres of hydraulic fluid was released onto the blast rock above the water line. The rock was transported to the quarry area where it was disposed of in hazardous materials containers. The equipment was removed from site, repaired and cleaned. Due to the sensitive nature of the spill and its close proximity to the watercourse, it was reported to Manitoba Conservation and Water Stewardship.

## **Wildlife**

A wildlife awareness training session was delivered in the spring to personnel remaining on site in an effort to continue to curtail staff from feeding wildlife. Bear sightings along the road were numerous in 2012 and one came into camp. One bear was successfully live trapped and relocated by Manitoba Conservation and Water Stewardship. Additional garbage receptacles were installed in an effort to reduce littering and deter wildlife from the camp.

## **Decommissioning**

Decommissioning the construction camp and contractor work areas began in 2011 and continued in 2012. The AKO monitored the activities of the contractors as they removed their equipment from site.

The water intake used during construction by the general contractor was decommissioned. The AKO monitored the removal of the perforated culvert and housing from the installed rock groin to ensure care was taken to not cause any sediment suspension. Removal of the steel culvert and the above water portion of the rock groin involved no disturbance to the sediment/banks, therefore no water quality monitoring was undertaken. The rock removed was placed on the downstream side from the groin, on the shoreline, above the high water mark, to stabilize some eroding portions of the bank.





## Ethinesewin

*Ethinesewin* is the traditional knowledge and collective wisdom of *Nisichawayasi Nehethowuk* (the people from where the three rivers meet and who speak the language of the four winds) that has been transmitted orally for generations.

Like the traditional knowledge systems of other Aboriginal peoples, *Ethinesewin* includes observation, classification, description and recording of observations and results. The central focus of *Ethinesewin* is on relationships: relationships with the land, with nature, with people and between nature, the land and people.

*Nisichawayasi Nehethowuk* have been sharing *Ethinesewin* with the Wuskwatim Power Limited Partnership, Manitoba Hydro and Aski'otutoskeo Ltd. as part of the environmental monitoring activities that are being undertaken during the construction phase of the Wuskwatim Generation Project and will continue during the operational phase. It is an integral component of the monitoring. *Ethinesewin* shared by *Nisichawayasihk Cree Nation (NCN)* Elders is vital to ensuring the project achieves *Kistethichikewin*, which means that the conduct of a person must be based on the sacred responsibility to treat all things with respect and honour, according to *Kihche'othasowewin* (the Great Law of the Creator).

In 2012, two observational tours of the Wuskwatim Generating Station construction site and area were conducted by Elders, youth and support personnel. Tour # 10, the summer tour of 2012, was conducted from July 9th – July 20th. Tour # 11, the fall tour of 2012, was undertaken from September 9th – 20th. At each inspection site, the work was begun with an orientation and completed with a meeting of the participants so that observations and notes could be put together.

The 2012 inspection of the Wuskwatim Lake area took the group to two tributaries of the lake which were significantly affected by the Churchill River Diversion (CRD) project in the 1970s. During their inspection, the Elders observed woody debris and erosion related to that earlier project. They noted that the area has many possibilities: as a







camp ground, as a site for repatriation of human remains found in the Wuskwatim Lake area, as a site for application of fish habitat enhancement techniques, and possibly as a transplant site for medicines whose original locations may have been, or may be, adversely impacted by construction projects.

Blasting of rock as part of the Wuskwatim Falls channel improvement work was observed by the Elders, many of whom had known the site well for a long time, it being a stopping point along a traditional river transportation route of the *Nisichawayasi Nehethowuk*. This was an emotional experience for the group. The Elders concluded that the fish habitat development work being undertaken in the forebay area would be helpful in balancing the destructive changes to the falls and forebay area. The rip rap placed along the north shoreline would limit further damage to the shoreline, while the boulder gardens should benefit the spawning that could take place there.

The Elders also looked at the area of the tree removal that took place, and the erosion that was occurring, on the south shore of the Generating Station's forebay near Wuskwatim Falls. They recommended constant monitoring of the erosional area and that further action be taken to control the erosion, if necessary. Overall, the possible impact of moving waters along the new forebay's shorelines was noted as a concern to watch.

The Wuskwatim Lake gravesites were revisited and prayers and tobacco offerings were made to honour ancestors. It is important to the Elders that work continues there to protect the existing gravesites, and that repatriation of ancestors' remains exposed by erosion along the CRD waterways happen as quickly as possible. They recommended yearly maintenance at the gravesites so travellers would see that the area is respected and should continue to be treated with respect by all.

The soil bioengineering and fish habitat enhancement sites developed as part of the Wuskwatim Project were once again visited. The group discussed the debris that accumulates year after year; debris continues to be a hazard on the lake for travellers and needs to be cleaned regularly at the habitat enhancement sites to ensure they continue to be effective. An artefact that was found at one of the soil bioengineering sites during work in fall 2011 was returned to the NCN archaeologist for processing. The Elders recommended that the protocol for this type of occurrence should include both conducting a ceremony to honour the find (in this case, this was done by the group) and further investigation of the area led by the NCN archaeologist.



At the borrow pits, it was concluded that the replanting works will need to continue, with regular inspections and replanting as necessary. There was some berry growth located near the pits which the Elders thought could be developed as an alternative source for berry harvesting where lake shores have become less accessible.

The *Ethinesewin* team respected the continuing work on maintaining the access road and the stream crossings. The Elders indicated they have no concerns about the culverts because there is animal activity at all the crossings. They would like to see some dust control implemented near the crossings if the dust begins to impact the streams. The Elders also would like to see some remediation work done on stream crossing 9, near the Wuskwatim Generating Station site. Where the power line crosses the stream, it was noted that bank erosion was happening and trees were falling into the stream.

Berry and plant health sites were sourced on the tours, specifically the shoreline medicine, wikis. This plant is one of the most used plants that has been partly lost due to the newly permanent high water level. There were some areas along the shore where it was found, yet it was difficult to harvest because of the high water level. Floating bogs were inspected for wikis and some was found, but it was considered dangerous to attempt to harvest it there.

With NCN's medicinal Elder speaking about the uses of many of the plants known to him, the group discussed, in Cree and English, the names of traditional medicines and other plant species identified as being present in the Wuskwatim Lake area. Some were located by the group during the inspection tours. The area has many traditional resources: non-medicinal, technical and medicinal.

Birch trees have resources that were an important part of the culture of the *Nisichawayasi Nehethowuk*. The bark was used to make baskets and for making boats and shelters. The tinder fungus on the tree, known to the Cree as posakan, is stored in a birch bark cup and used as a fire starter: it lights easily and stays as a slow-burning ember.

The heritage inspection task of the 2012 tours was to revisit and name the cultural/heritage and archaeological sites. The Elders visited the archaeological sites, most of



which had been affected by the earlier Churchill River Diversion project which raised water levels in the area. Where the sites have been inundated, it was agreed that further inspection of the shoreline would need to be conducted. The archaeological sites were given the Cree descriptions they were known as in the past. A list of families that had lived at Wuskwatim was reviewed and some names were added to the list. The cultural sites at Wuskwatim were explored by a small group. Those present offered tobacco and had a small ceremony to honour one of the sites. The ceremony included an honour song presented by a local drum singer. Everyone was then given a chance to speak with a talking stick, where thoughts on *Ethinesewin* were shared. The ceremony concluded with a feast.

The group concluded that the cultural/heritage and archaeological sites need to be honoured in some way that tells the history of people at Wuskwatim. That markers with monuments or storyboards be placed at the heritage sites or at the generating station was one of the suggestions. Another was that artefacts which were discovered at Wuskwatim should be returned as history tools and used to teach people about the history. Further, regular maintenance at the sites should be done; for example, the burial sites and trails could use some annual grass and shrub cutting.

The Wuskwatim Lake south shore breakwater along with the upstream and downstream boat launches were again visited by the group in 2012. The Elders saw that further work was being done on the upstream boat launch so that anyone using it could launch safely, weather permitting. They suggested that some means of shelter be developed near the boat launches to provide safe refuge during times of unfavourable weather and lake conditions.

The Elders toured the Wuskwatim Generating Station again in 2012 and indicated they would like to come back once it is fully operational.

The Elders also visited the long-term lake erosion monitoring sites in 2012 and are interested in looking at the record of the erosion that has occurred at the sites since monitoring began. They would like to see fast eroding sites mitigated somehow, possibly with soil bioengineering work. They agreed that the erosion monitoring is important and should continue.

An *Ethinesewin* team did some off-system sourcing of medicinal plants at Bison Lake. The team was successful in locating an alternative source of shoreline medicines, wikis and wekuskwa on the north and south areas of the lake.

Wuskwatim Village is an important historical site for the *Nisichawayasi Nehethowuk* and gatherings there need to continue. The Elders would like to see more octagon structures built into the plan of the Village. They see the Village being used more for teaching traditional practices and community gatherings.





## Aquatic Effects Monitoring

Monitoring completed as part of the Aquatic Effects Monitoring Plan, included benthic invertebrate sampling and wastewater quality monitoring in conjunction with two discharges of the wastewater lagoon.

### Benthic invertebrate monitoring

Benthic invertebrate monitoring was conducted in early September 2012 to document whether sediments released into the water as a result of in-stream construction affect benthic invertebrates living downstream. Samples were collected on the Burntwood River immediately downstream of the construction site, in Opegano Lake, and at reference locations on the Rat River and Threepoint Lake. Invertebrates found included aquatic worms, freshwater shrimp, fingernail clams, and a variety of insect larvae. Although the numbers and types of invertebrates varied among sites, there was no observed change as a result of in-stream sediment caused by construction. Higher numbers of freshwater shrimp and mayfly insect larvae were noted in 2012 in comparison to earlier years in an area where treated sewage is released. This increase is attributed to exposure to nutrients in the treated sewage.



## Wastewater quality monitoring

The wastewater lagoon was discharged on two occasions in 2012. All water quality parameters measured in the backwater bay where the lagoon discharges were within the Manitoba Water Quality Standards, Objectives and Guidelines during the discharge periods with the exception of ammonia in June, and total phosphorus in June and September. No effects from the discharge were observed on water quality in the Burntwood River.

The wastewater lagoon was tested prior to each discharge and met the limits listed in *Environment Act* Licence No. 2699.





## No Net Loss Plan

The No Net Loss Plan was developed to compensate for fish habitat that was affected by the construction of the generating station and associated features. The plan was first proposed to Fisheries and Oceans Canada in 2004, with an addendum proposed in 2010.

Compensation completed for the project included armouring a peninsula, constructing spawning reefs, constructing boulder gardens, removing woody debris from stream mouths, and planting aquatic vegetation at various locations around the generating station, as well as on Wuskwatim, Threepoint and Wapisu lakes.

The soil bioengineering project, which spanned three years, concluded in 2012. Soil bioengineering involved using various techniques and materials such as plants and plant parts to stabilize the shoreline and encourage fish use at key locations around Wuskwatim Lake.





## Fish habitat compensation

A large portion of the compensation work conducted in 2012 consisted of cleaning out woody debris and planting aquatic vegetation in three stream mouths to enhance the sites for fish. Two of the stream mouths are on Threepoint Lake and one is on Wapisi Lake. Different types of aquatic plants, such as cattails, pondweed and bulrushes, were taken from various locations around the lakes and transplanted by hand in each stream mouth. Local knowledge of the area by NCN Citizens facilitated locating aquatic vegetation used for this work. At the request of NCN, sweetflag (a medicinal plant) was also transplanted at the two sites on Threepoint Lake. This process included a cultural ceremony and tobacco offering by NCN Citizens working on site.

In 2011, an area downstream of the main dam was isolated from the tailrace by a weir that was initially constructed as an access road. The general contractor lined the inlet with rock and boulder gardens were placed to create diverse fish habitat. Additional work was conducted at the site in 2012, which included removing woody debris from a muddy area at one end and transplanting aquatic vegetation in the same area to encourage fish use. Additional work is planned for this area in 2013 to modify flows in and out of the impounded area and allow fish to pass in and out of it.





**Soil bioengineering**

Soil bioengineering uses locally available live plants, primarily live cut branches (from willows found along the Wuskwatim access road), together with other materials, such as wooden stakes and coir (blankets made from coconut fibre), to hold stream banks in place and prevent erosion. Over time, the willows develop roots that further reinforce the soil.

A crew from NCN finished the last two soil bioengineering sites in fall of 2012. Work included grading slopes, harvesting willows, and installing materials — all by hand. In all, five sites were completed since starting the work in 2010.









*Soil bioengineering sites*



# Terrestrial Effects Monitoring

Several terrestrial environment programs took place in 2012, including mapping areas cleared during construction, site rehabilitation involving native grass surveys, white spruce planting, and invasive plant surveys.

## Terrestrial habitat and vegetation monitoring

Project related clearing during construction was mapped using a combination of aerial photography, aerial surveys, and ground surveys. This mapping was used to show the total amount of clearing and disturbance to land. The Wuskwatim Environmental Impact Statement (EIS) outlined the amount of habitat that would be cleared during construction. The total disturbed area is less than 750 hectares, which is considerably lower than the 1,605 hectares predicted in the EIS.

## Non-native and invasive plants

Non-native plants, (specifically alfalfa), were unintentionally included in the grass seed mix used to vegetate access road ditches. Surveys were conducted in early June and mid-September 2012, along the access road to document the growth in the ditches. Alfalfa was present along most of the road from PR 391 up to, and including, areas around the generating station site. In fall 2012, mowing was conducted to reduce growth along the access road ditches. Monitoring for non-native and invasive plants will continue in 2013.

Foot-based ground surveys were conducted in late June to early July 2012 in areas around the generating station site. Invasive species such as common dandelion, perennial sow thistle, and alsike clover were found.

To determine whether the alfalfa on the access road was attracting wildlife species such as moose, a tracking and trail camera survey was conducted from July to October 2012. Trail cameras photographed animals such as black bear, gray wolf, lynx and the snowshoe hare. Results showed that predators were using the roadside ditches to move and a fairly abundant number were observed. Tracking transect surveys along transects with and without alfalfa indicated that moose, caribou and white tailed deer were not actively eating the alfalfa or crossing the Wuskwatim access road.





## Site Rehabilitation

Areas not required for project operation as well as some permanent features such as roadside ditches are being rehabilitated with native vegetation. To help determine seed mixtures for re-vegetation, surveys were conducted along the access road to record the native grass species that were successfully colonizing the ditches. The sixteen native species observed in these surveys included six grasses, six sedges, one herb and three grass-like species. Marsh reed-grass, sand sedge, and common horsetail were the most commonly recorded species.

Balsam fir (*Napakasiht* in Cree) and white spruce (*Wapiskimnahtik* in Cree) are culturally and ecologically important tree species in the Wuskwatim area. In the EIS it was predicted the loss of balsam fir and white spruce forest would be approximately 80 hectares and a commitment was made to overcompensate rehabilitation at 1.5 times that amount of the total loss (120 hectares if 80 hectares was cleared). Actual construction clearing was only 34 hectares, substantially less than the conservative prediction. The Wuskwatim Power Limited Partnership will regenerate 51 hectares, 1.5 times the 34 hectares cleared.

In 2012, approximately 9,600 jack pine trees were planted in decommissioned areas, such as borrow pits, along the Wuskwatim access road. To date, approximately 28,000 jack pine have been planted around the site, and access has been restricted to allow growth to occur without disruption, as per recommendations by NCN Elders during an *Ethinesewin* tour.

Planted seedlings will be monitored over the next few years to assess growth and confirm survival.

Finally, an area is going to be left as a berry patch at the recommendation of NCN Elders, as it became prolific with berries after clearing. Due to its accessibility, it will be a convenient location for berry picking by NCN harvesters.





*NCN Citizens planting white spruce*

In early September 2012, 20,000 white spruce seedlings were planted in forest stands surrounding the camp and construction site. Additional white spruce seedlings will be planted in 2013 and 2014. Foot and boat-based surveys were completed during the summer of 2012 to locate balsam fir trees with cones suitable for seed collection, which took place in the fall. Seedlings are currently growing in a nursery and will be planted in the Wuskwatim area in 2014.

## **Wapisiu Caribou Committee**

The Wapisiu Caribou Committee (WCC) provides advice and recommendations regarding caribou monitoring and research undertaken as part of the project's Environmental Protection Program. The committee membership currently includes representatives from Manitoba Hydro, NCN, Manitoba Conservation and Water Stewardship and Wildlife Resources Consulting Services MB Inc. The WCC was established as a specific condition of *Environment Act* Licence No. 2699.

In 2012, the WCC met to discuss caribou monitoring conducted for the project as well as to evaluate a Boreal Woodland Caribou teaching module that could be used in NCN's high school. The role of the committee during the operational phase of the project will be determined in 2013.



## Sediment Management

Major in-stream construction in 2012 consisted of blasting a rock plug and removing blasted rock from the Wuskwatim Falls channel improvement area at the outlet of Wuskwatim Lake.

Total suspended solids (TSS) concentrations were measured during in-water blast rock removal. The Wuskwatim Sediment Management Plan indicates that TSS levels up to 25 mg/L above background conditions in the fully mixed portion of the Burntwood River, which is measured at the inlet to Opegano Lake, are not expected to cause change to aquatic life in the river.

Instantaneous analysis of TSS is not possible. Therefore, a numerical correlation between turbidity and TSS was developed for the Wuskwatim environment, which allowed the use of real-time turbidity measurements to estimate TSS. Turbidity loggers were placed directly upstream and downstream of the construction site and at the inlet to Opegano Lake. These loggers transmitted readings to the construction site every five minutes, allowing assessment of the data in real-time. TSS levels immediately downstream of the station provided an initial indication of whether or not construction activities were affecting TSS. This allowed site personnel to take action to prevent levels from exceeding the proposed limit at Opegano Lake, if required. All monitoring results during in-stream construction were sent to Fisheries and Oceans Canada for review on a daily basis.

Blasting the rock plug in the channel improvement area took place on July 15, 2012. Excavation of the blast rock took place above the water line until July 25, followed by removal of blast rock from the water until August 31, 2012. During work in the water, real-time monitoring showed TSS levels associated with construction remained within the proposed limit at Opegano Lake at all times.



## Heritage Resources Protection

In April 2012, archaeological monitoring was carried out along the south shore of the Wuskwatim forebay. Monitoring was conducted because unanticipated erosion was taking place along the shore during impoundment, in an area that is close to a known archaeological burial site discovered in 2011. Clearing crews removed standing trees within the affected area to reduce the debris entering the forebay. Afterward, archaeological monitoring was conducted in the cleared area at locations where it was safe to do so. No heritage resources were recovered.





## Physical Environment

The Physical Environment Monitoring Program (PEMP) is an adaptive program designed to measure various components of the physical environment that may experience some form of change from the construction and operation of the Wuskwatim Generating Station.

Components of the physical environment addressed in the PEMP include:

- > climate
- > water regime
- > physiography
- > erosion
- > sediment transport
- > woody debris

The PEMP monitoring area includes a section of the Burntwood River upstream of Wuskwatim Generating Station to the foot of Early Morning Rapids — including Wuskwatim Lake — and downstream of the generating station to Birch Tree Lake.

### Climate, water regime and reservoir greenhouse gas monitoring

To characterize the climate in the Wuskwatim monitoring area, weather data was analyzed at six meteorological stations within the region. The 2012-2013 annual average temperature was warmer than the 1971 - 2000 historical normal recorded at Thompson while total annual precipitation was below normal. Based on data collected at Thompson, no new extreme temperature or precipitation events were recorded during this monitoring period.

Flows at the Notigi Control Structure were maintained fairly consistent throughout the monitoring period. Flows in May 2012 were increased and held until November at which point a small decrease in flows occurred and remained steady for the remainder of the monitoring period. Wuskwatim Lake rose above the licensing limit of 234.0 metres from May 30 until August 14, 2012. Generating station forebay levels were below 230.0 metres during the same period. The difference in level



between the lake and the forebay was attributed to a hydraulic restriction at the outlet to Wuskwatim Lake. Channel improvements completed in August 2012 addressed this issue.

Monitoring results from 2012, the first year following reservoir impoundment, indicate that greenhouse gas (GHG) concentrations within the Wuskwatim Generating Station forebay are in the same range as pre-impoundment conditions.

Pre-impoundment aquatic concentrations of CO<sub>2</sub> and CH<sub>4</sub> were monitored from 2008 to 2011 as part of Manitoba Hydro’s reservoir GHG program. Sampling was conducted during open water, within the site of the proposed Wuskwatim Generating Station forebay, upstream in Wuskwatim Lake and downstream along the Burntwood River to observe GHG concentrations at multiple locations over time. Post impoundment monitoring commenced in 2012 at corresponding sampling locations. In addition, a continuous monitor was installed in the generating station to measure gas concentrations within the forebay.

### Physiography

The final component of major project earthworks was completed during the 2012-2013 season with the removal of the rock-plug at the channel improvement area at Wuskwatim Falls. Blasting of the rock-plug occurred in mid-July and the channel improvement was fully operational by the end of August.



## Shoreline erosion

Erosion monitoring activities consist of surveying the shape of the bank and comparing the position of the bank and nearshore underwater slope from year to year. The program has 35 erosion monitoring sites, all of which were surveyed in 2012. Annual bank recession rates for 2012-2013 were similar to those observed for the 2009-2011 period.

Of the 27 lake monitoring sites surveyed, 18 had negligible average bluff recession rates since 2011 (less than 0.25 metres per year), eight had moderate recession rates (0.25 to 0.99 metres per year), and one had a recession rate greater than one metre per year. Downstream of the Wuskwatim Generating Station, seven of the eight riverbank erosion sites had no bluff recession and one had a moderate recession rate (0.25 to 0.99 metres per year).

The south shore immediately downstream of Wuskwatim Falls had experienced greater than expected erosion since forebay levels were raised during impoundment. The new shoreline was exposed to greater than expected flow velocities because the Wuskwatim Falls channel improvement on the north side of the falls was not opened up immediately after impoundment. Completion of the channel improvement in August 2012 addressed this issue. As recommended by NCN Elders, bluff recession at this location will be monitored over the next few years to confirm that the erosion is not continuing.

## Sediment transport

Sediment transport data were collected at 31 locations upstream and downstream of the Wuskwatim Generating Station in summer 2012, including bed-load sampling at nine locations. Total suspended solids (TSS), turbidity and sediment grain size data were collected at each site. With 2012 flow conditions slightly above average, average TSS concentrations and turbidity levels observed were generally lower than observed in previous years. Results from sediment grain size analyses were consistent with past observations within the monitoring area. The results do not indicate changes in sediment transport conditions due to the transition from construction to operation activities at the generating station site.

## Woody debris

Data collected through Manitoba Hydro's Waterways Management Program includes types and quantities of debris removed upstream and downstream of the Wuskwatim Generating Station following forebay impoundment. This information can be used along with data collected during construction to determine if the debris environment changes as a result of operating the generating station.



## Socio-economic Monitoring

### Construction-related economic monitoring

The Wuskwatim Generation Project influences the economy of Manitoba in many ways. This includes providing employment (creating labour income) and purchasing the goods and services required to build the project. In turn, these expenditures result in incremental provincial tax revenues and contributions to provincial gross domestic product (GDP).

Job and labour income creation continues as long as some portion of spending on the project occurs in Manitoba. Influences are categorized as direct, indirect or induced impacts. Direct impacts result from project expenditures and refer to employment, purchases and income generated by the project itself. Indirect impacts refer to the employment, purchases and income created in other industries as the effects of project expenditures work their way through the economy. For example, there will be indirect impacts on businesses supplying materials and equipment to companies in the direct impact segment. Induced impacts result from the spending and re-spending of direct and indirect income generated by the project, increasing sales for consumer goods and the businesses that supply them. These are the impacts that are created by the additional income and profits earned by workers and businesses that are associated with the project either directly or indirectly. The sum of the direct, indirect and induced impacts is the total economic impact of the project. Data is available to provide estimates of direct employment, labour income, tax revenue impacts and purchases associated with the project from the start of construction to November 2012 (hires data is available to end of December 2012). While data is not available to calculate GDP specifically for the project, the economic impacts provide a positive contribution to provincial GDP.



## Direct economic impacts

These are impacts of the initial project expenditures made to suppliers of labour, equipment and services required for the construction of the project. Major direct economic impacts of the project from start of construction to November 2012 include:

Person-years of direct employment	2,859
Direct project purchases (\$ Millions)	\$931.5
Direct labour income (\$ Millions)	\$215.3
Direct federal & provincial taxes (\$ Millions)	\$133.5

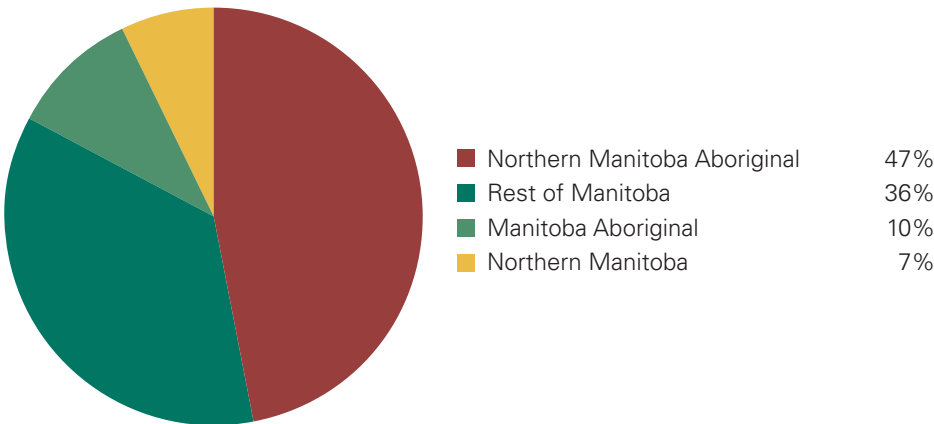
## Employment

Employment can be measured in different ways, including hires and person-years. Hires refer to the number of people hired for any duration at the project site. One individual may be hired more than once (for example, for different contracts) and each hire is recorded separately. However, when part-time and/or seasonal workers are used, or when there is turnover at the work site, it is useful to standardize the hires in terms of person-years of employment. A person-year of employment is defined as one full-time job for one year. This typically represents about 2,000 hours of work. Information on both hires and person-years is provided in this report.

### Person-years of employment

From the start of construction to November 30, 2012, direct employment created on the project amounted to 2,859 person-years. Of this, 70 per cent, or 2,001 person-years represent Manitoba employment. Total northern Manitoba and northern Manitoba Aboriginal employment represents approximately 54 per cent (1,089 person-years) and 47 per cent (944 person-years), respectively, of Manitoba employment.

### Person-years of employment — breakdown of Manitobans



## Hires on the project

From the start of construction to December 31, 2012, there were 6,043 hires on the work site, including Aboriginal hires. Of the total hires, 3,945 or approximately 65 per cent were Manitobans. Total northern Manitoba and northern Manitoba Aboriginal hires represent approximately 51 per cent (2,003 hires) and 43 per cent (1,707 hires), respectively, of Manitoba hires. There were a total of 2,247 Aboriginal hires including 1,683 Status, 512 Métis, and 52 other (Inuit and non-Status). There were a total of 650 Nisichawayasihk Cree Nation (NCN) hires on the project. This reflects 11% of total hires or 29% of Aboriginal hires. Included in the total NCN hires are 25 apprentices including carpenters, electricians, millwrights, painters, pipefitters and plumbers.

	Total Hires	Aboriginal	Non-Aboriginal	NCN
Labourer	815	471	344	221
Security Guard	109	76	33	15
Crane Operator	100	15	85	
Equipment Operator	571	277	294	44
Teamster	343	238	105	79
Carpenter	836	112	724	29
Millwright	147	16	131	3
Painter	36	10	26	2
Glass Worker	5	0	5	
Floor Coverer	8	0	8	
Insulator	24	0	24	
Lather	18	11	7	
Plasterer & Cement Mason	86	6	80	
Sheet Metal Worker	22	3	19	
Roofer	26	8	18	
Sheeter, Decker & Cladder	27	7	20	
Boilermaker	26	4	22	
Ironworker	395	122	273	
Rodmen	17	6	11	
Electrician	368	66	302	14
Pipefitter & Plumber	169	34	135	9
Office Worker	272	75	197	30
Caterer	605	567	38	154
Elevator Constructor	2	0	2	
Other*	1001	123	878	50
<b>Total Hires</b>	<b>6,043</b>	<b>2,247</b>	<b>3,796</b>	<b>650</b>
<b>Total Person-Years</b>	<b>2,859</b>	<b>1,137</b>	<b>1,722</b>	<b>**</b>

\*The "Other" category refers to hires in job classifications not covered by the Burntwood Nelson Agreement. This would include managerial and supervisory staff (both contractor and Manitoba Hydro), other Manitoba Hydro site staff and certain technical staff (engineers and technicians). Note that person years data is to end of November 30, 2012; hires data is to end of December 31, 2012.

\*\*Note that person years data is not available for NCN.

### Employee turnover

From project inception to December 31, 2012, there have been 1,712 occurrences where employees were discharged or resigned. This represents a rate of turnover of 29 per cent of total hires<sup>1</sup>. Of the 1,712 occurrences where employees were discharged or resigned, 846 reported being of Aboriginal descent. This represents a 38 per cent rate of turnover among Aboriginal hires. The majority of turnover (73 per cent) on the job site comprised resignations as opposed to discharges. A resignation represents an individual choosing to leave a job and does not include layoffs.

To date there have been a number of instances where individuals have resigned or been discharged from the job site, but have later returned to work on the project. Since project inception to December 31, 2012 this has occurred 292 times — approximately 17 per cent of total resignations and discharges. Of these returns to the work site, approximately 182 reported to be of Aboriginal descent, representing about 22 per cent of all Aboriginal resignations and discharges.

### Purchasing

To the end of March 31, 2013, a total of \$931.5 million was spent on goods and services for the project. Of this, \$256.4 million were Manitoba purchases. Total northern Manitoba (Aboriginal and non-Aboriginal) purchases represent \$173.2 million or 68 per cent of total Manitoba purchases. Total northern Manitoba Aboriginal purchases represent \$167.3 million or 65 per cent of total Manitoba purchases. Another \$4.7 million was spent on other purchases where there is no definitive way to confirm whether the vendor is a northern, Aboriginal, Manitoba or non-Manitoba business.

The information provided represents direct purchases of the project from contractors. Secondary purchases by contractors, in turn, would include purchases of goods and services from Manitoba based businesses.

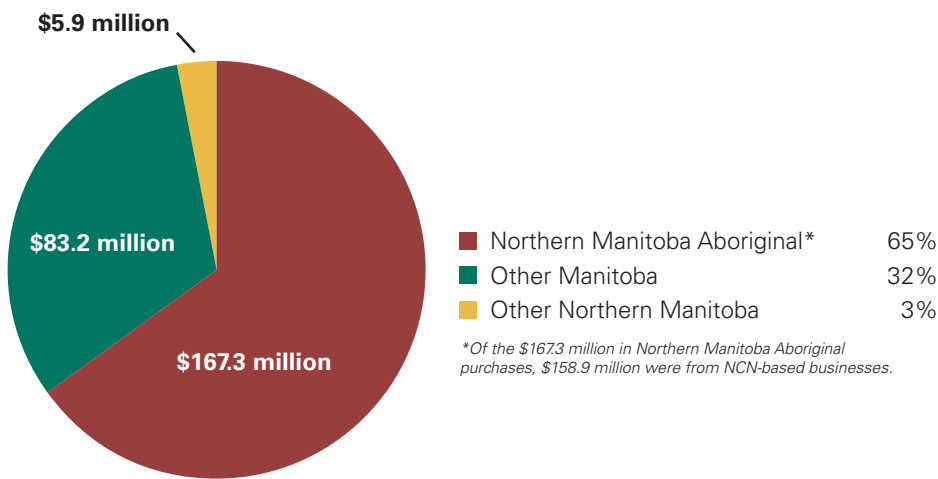
The table below summarizes total purchases to date while the accompanying pie chart provides a further breakdown of the Manitoba purchases.

Purchases to end of March 2013	\$Millions	% of Total
Manitoba	\$256.4	27.5%
Outside of Manitoba	\$670.4	72%
Other	\$4.7	0.5%
Total	\$931.5	100%

<sup>1</sup> Turnover is calculated as the total incidences of discharges and resignations divided by total hires. The total number of resignations has been corrected to exclude circumstances where an individual left a position but was rehired to improve their job level on-site.



Breakdown of Manitoba Purchases

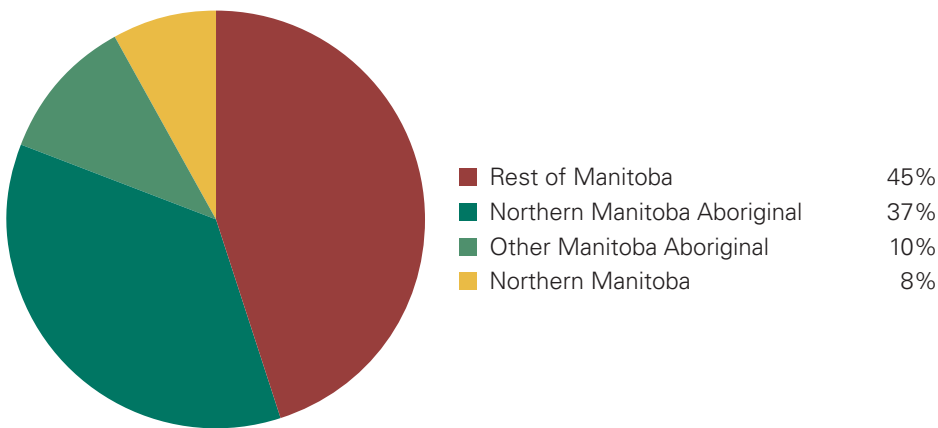


Labour income

Labour income is an important indicator of the direct economic impact of a project. The estimate of labour income reflects the direct income earned by workers from employment on the project. It is the sum of wages and salaries associated with direct person-years of employment. The total direct labour income impact of the project to the end of November 30, 2012 is approximately \$215.2 million<sup>2</sup>. Over 63 per cent or \$136.7 million represents labour income associated with direct Manitoba employment.

Total northern Manitoba and northern Manitoba Aboriginal direct labour income represent approximately 45 per cent (\$61.2 million) and 36 per cent (\$49.7 million), respectively, of the total Manitoba direct labour income. The chart below provides a breakdown of the estimated labour income in Manitoba.

Manitoba labour income breakdown



<sup>2</sup> Labour income is calculated based on information provided by contractors and Manitoba Hydro.

## Tax revenues

The Wuskwatim Generation Project also contributes to government revenues. This includes direct revenues received by federal and provincial governments such as payroll tax, personal income tax, fuel tax and provincial sales tax. Not all of these taxes are payable by the project; however, they are generated as a result of it. The estimate provided here does not include taxes received by local or municipal governments or taxes associated with indirect or induced employment.

The estimate of tax impacts to the end of November 2012 is \$133.5 million and includes \$4.6 million in payroll taxes<sup>3</sup>, \$60.5 million in personal income taxes<sup>4</sup>, \$26.2 million in capital tax, \$2.5 million in fuel tax<sup>5</sup> and \$39.7 million in provincial retail sales tax<sup>6</sup>.

## Operations-related economic monitoring

The purpose of operational economic monitoring is to provide information on employment associated with operations of the Wuskwatim Generating Station.

As of March 2013, there were both full-time and part-time employees associated with the Wuskwatim Generating Station. Full time employees account for 22 positions, while there are several other positions where the employees' time is partially spent on Wuskwatim operations aside from other duties. The total portion of time attributable to operations for these employees equates to 2.3 equivalent full-time positions (EFTs). Therefore, in total there were 24.3 northern EFT's in occupations including operating technician, mechanical and electrical technician, labourer, utility worker, administrative, supervisors, planners, engineers and plant managers. Of these, 16 are self-declared Aboriginal employees.

<sup>3</sup> Health and Post-secondary Education Tax is calculated as 2.15 per cent of the estimated labour income of \$215.3 million.

<sup>4</sup> Personal income taxes are paid by individual employees to the federal and provincial governments. Each individual's personal tax situation (and therefore taxes payable) will vary. However, this estimate is based on a range of reasonable assumptions.

<sup>5</sup> The fuel tax estimate is based on provincial taxes of 14.0 cents/litre for both diesel and gasoline and federal taxes of 4.0 cents/litre for diesel fuel and 10.0 cents/litre for gasoline, provincial and federal taxes of 3.2 cents/litre and 4.0 cents/litre, respectively, for aviation fuel.

<sup>6</sup> PST is based on estimates of taxes paid directly by the project and PST on materials provided by suppliers under real property contracts.

## Social monitoring

### Cultural awareness activities and employee retention support programs

Numerous measures were in effect during the project to support the retention of northern and Aboriginal employees at the job site and to ensure that sensitivity and respect for local culture was established throughout construction. These measures included on-site cultural awareness training for employees, voluntary counseling services and cultural ceremonies prior to many key construction activities. NCN was responsible for providing cultural and retention support programming on-site under contract with WPLP.

#### Cultural awareness training

The purpose of cultural awareness training was to address the challenges that may have arisen from cultural differences experienced on the job site and as a result of interactions between employees and nearby communities. Training sessions consisted of facilitated face-to-face cultural awareness workshops delivered by a qualified NCN Coordinator with the assistance of NCN Elders.

Over the past fiscal year, seven cultural awareness workshops were held at the Wuskwatim Cultural Centre and attended by contractor employees, Manitoba Hydro employees and external guests. These sessions provided training for 62 individuals.

From April 2012 to the project end date of October 31, 2012, training sessions were held on a monthly basis. Workshops were delivered each month recognizing that as the Wuskwatim project neared its completion, the workforce numbers reduced significantly, therefore most of the remaining long-term workforce may have previously received the training. Since the project's inception in 2006, 1,575 employees participated in cultural awareness training.

#### On-site counselling

On-site counseling was available throughout the duration of the project. It was provided to any employee who voluntarily requested assistance to deal with any issues experienced while working at the project site. This may have included issues such as work adjustment problems, vocational/career issues, cultural adjustments, family stresses and money management, among other topics. Employees also had the option to involve other family members in counseling sessions and to meet with community Elders. On-site counselors were available for day and evening sessions and informational brochures were made available throughout the camp to publicize and highlight the available services.



## Cultural ceremonies

Site ceremonies were held at key construction milestones to help mitigate the effect of the project on culture and heritage and to demonstrate respect for the land. Ceremonies were organized by NCN spiritual leaders and attended by Wuskwatim workers and other NCN Citizens. To the end of September 2012, a total of 38 ceremonies were held at Wuskwatim, including 12 sweat lodge ceremonies and five pipe ceremonies.

A special three day ceremonial event was held in August 2012 at the Wuskwatim project site and the Wuskwatim Village commemorating completion of the project and Wuskwatim first power. These ceremonies were organized by NCN's Cultural Coordinator for the Wuskwatim Project with facilitation assistance provided by a cultural advisor to NCN. The events included camping at the Wuskwatim Village, pipe ceremonies, songs, and sweats. Participants included NCN Chief and Council, Elders, pipe and drum carriers and NCN Citizens. The Round Dance Team from Saskatchewan closed off the three-day event with a traditional dance performance that was enjoyed by all who attended.



# Population

## Community of Nelson House

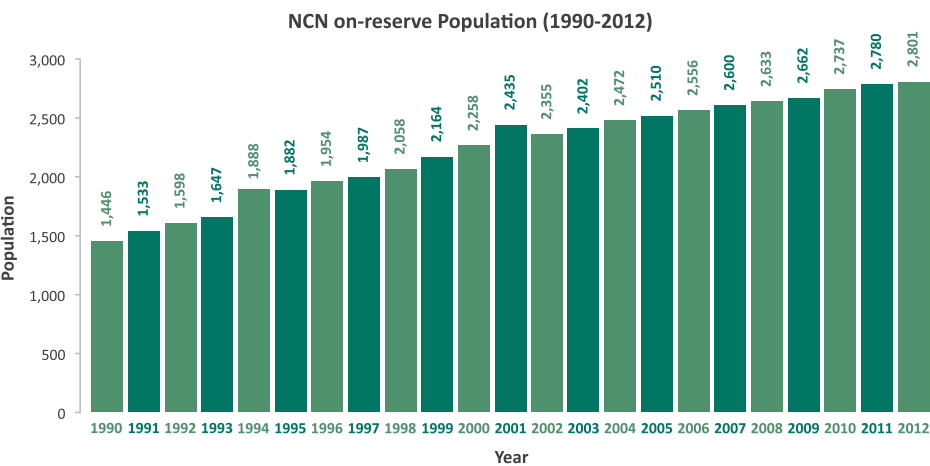
The *Wuskwatim Generation Project Environmental Impact Statement* predicted a moderate amount of immigration and emigration at Nelson House associated with construction of the project. The possibility of immigration is associated with the lure of well-paying construction jobs as well as community-based training opportunities. This type of migration may have been mitigated somewhat by the use of the Wuskwatim Job Referral Service for hiring on the project, which allowed individuals to register for employment without relocating closer to the project. Potential emigration could have occurred as families with new construction income choose to relocate to more urban centers, such as Thompson or Winnipeg, in order to access housing and other services less available in the community.

Data from Aboriginal Affairs and Northern Development Canada suggest that the population at Nelson House has continued to remain stable since the start of construction on Wuskwatim.

As shown below, the total population at Nelson House increased from 2,780 to 2,801 an increase of 21 people, between the 2011 and 2012 reporting periods. Since the start of construction, the population has increased from 2,510 at the end of 2005 to 2,801 at the end of 2012, an increase of 291 people.

This represents an average annual growth rate of 1.66% since 2005. This compares to an average annual growth rate of 2.4% in the Nelson House population from 2000 to 2004.

## NCN on-reserve Population (1990-2012)



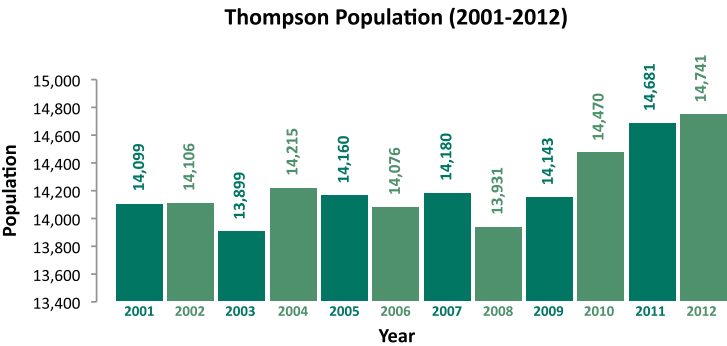
[http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND\\_NUMBER=313&lang=eng](http://pse5-esd5.ainc-inac.gc.ca/fnp/Main/Search/FNRegPopulation.aspx?BAND_NUMBER=313&lang=eng)

City of Thompson

Thompson is the nearest industrial and commercial centre to the project and is potentially a significant contributor to the project workforce. There is also the potential that workers may take up residence in the community and/or visit the community during off hours to take advantage of various services (restaurants, shopping). This type of migration can positively impact the local community economy, but can also place a temporary strain on existing infrastructure and services. Measures have been taken to minimize immigration and off-hour worker visits to Thompson, including the construction of a camp at site outfitted with various recreational facilities for workers.

The annual data from Manitoba Health’s annual health statistics show a slight increase (of 60 people) from the previous reporting period. The Thompson population has not increased significantly during the construction of Wuskwatim (a cumulative increase of 665 people since the start of construction).

Thompson Population (2001-2012)



<http://www.gov.mb.ca/health/population/3/burntwood.pdf>

NCN impact management process

Manitoba Hydro and NCN continue to work together to monitor project impacts on NCN Citizens. An evaluation of training and employment related to the Wuskwatim Generation Project is ongoing.

Transportation monitoring

Traffic safety — Wuskwatim access road

The access road connects Provincial Road 391 to the construction site. It is a private road with access restricted to a list of authorized users. Access is controlled by means of a gate at the PR 391/access road intersection. The gate office is staffed 24 hours per day, seven days per week and security staff document all authorized vehicles entering and exiting the road.



The table below provides a summary of traffic use on the Wuskwatim access road during the reporting period. On average, 36 vehicles per day used the road from April to October 2012, when the project transitioned from the construction phase to operation. This is a decrease of 61 vehicles per day on average compared to the previous year and reflects the decrease in construction activity that continued during this reporting period due to the Wuskwatim Project nearing completion.

	2012							
	Apr	May	Jun	Jul	Aug	Sep	Oct	Total
Total	985	1108	1132	1213	1214	986	1057	7695
Daily Average	33	36	38	39	39	33	34	36

### Navigation safety

During construction and operation of the generating station, new access to the Wuskwatim Lake area was expected to bring more people in contact with Wuskwatim Lake and areas downstream of the station on the Burntwood River. NCN and Manitoba Hydro have implemented safety measures to mitigate potential effects associated with this new access and to assist resource users in reaching their traplines safely. There are currently two winter trails in operation around the Wuskwatim site. These trails were established and continue to be maintained as a result of the project. NCN Citizens were hired to construct safe haven cabins along these trails for use by resource users such as hunters, fishers, and berry pickers.

In 2007–08, two docks were installed on Wuskwatim Lake as part of the safety measures program. One dock is located near the Wuskwatim construction site and the other is located on the west side of Wuskwatim Lake at the old Wuskwatim village site. As planned, these docks were in place during the 2012 open water season.

During the 2012 open water season, a crew of two NCN Citizens were hired through Manitoba Hydro’s Waterways Management Program to patrol Wuskwatim Lake. The boat patrols were deployed to gather data on debris type and quantity. Crews travelled 3,853 km during the open water season, and a lot of shorelines were travelled more than once. Debris removal activities work toward addressing NCN’s concern about debris along shorelines on Wuskwatim Lake. Work will continue in the open water season of 2013.

There have been no safety incidents reported over the last year on Wuskwatim Lake or downstream on the Burntwood River in the project area.

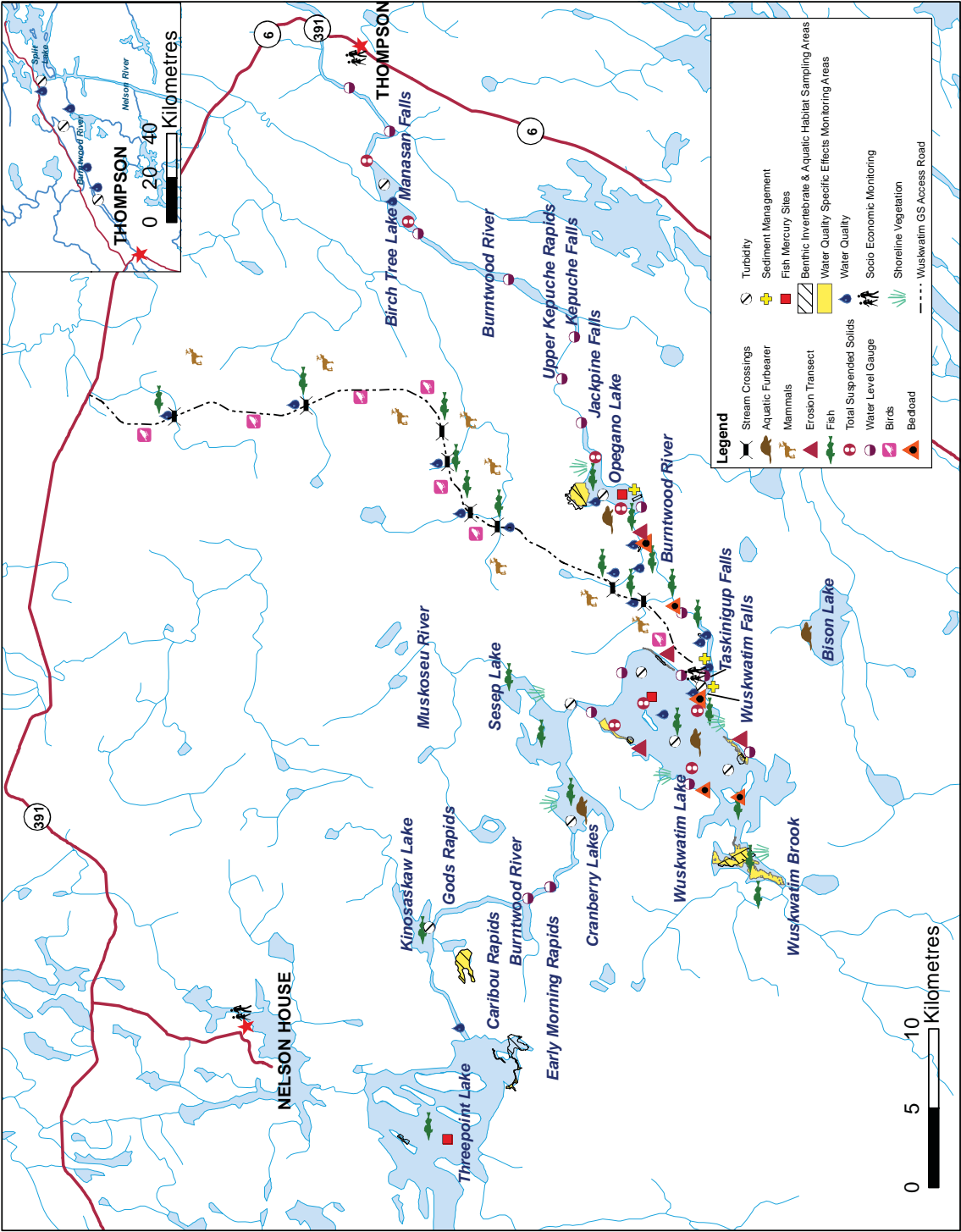
## Public Communication

Wuskwatim Power Limited Partnership (WPLP) is committed to providing the public with information about its monitoring activities and the results of monitoring studies undertaken each year. As part of its public communication activities, WPLP:

- > Annually develops this Monitoring Overview document to summarize key outcomes from the previous year. This document is distributed to NCN Citizens living both on and off reserve and to various other stakeholders. The document is also available at the Wuskwatim Implementation Office in Nelson House, in the Public Registry and on the WPLP website at [www.wuskwatim.ca](http://www.wuskwatim.ca). A summary of this document is translated verbally to Cree, recorded on compact disc and made available to NCN Citizens.
- > Annually schedules a Wuskwatim Monitoring Advisory Committee (MAC) open house in Nelson House to provide the community with up-to-date information on monitoring programs and to answer any related questions. This year, WPLP's Wuskwatim MAC held its open house on January 16, 2013 at the *Otetiskiwin Kiskinwamahtowekamik (O.K.) School*.



# WUSKWATIM MONITORING







WUSKWATIM  
Power Limited Partnership

