



A PARTNER FOR NORTHERN BC

# Kemess

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# North



## Northgate Minerals and the Kemess Mine

The Kemess Mine is a gold and copper mine and mill complex located in northern British Columbia roughly 400 kilometres northwest of Prince George. The mine is in an area designated for resource development under the Mackenzie Land Resource Management Plan, which protects more than 800,000 hectares of wilderness – more than 400 times the area in which the mine operates.

Northgate is proposing to expand the mine with a new site located approximately five kilometres north of the existing mine. The expansion project is known as Kemess North.

More than three-quarters of Kemess' employees are from BC, and nearly half live in northern communities such as Prince George, Mackenzie and the Bulkley Valley.

Kemess North would extend the life of the mine until 2020 and preserve jobs for the 475 permanent and contract employees of the mine.





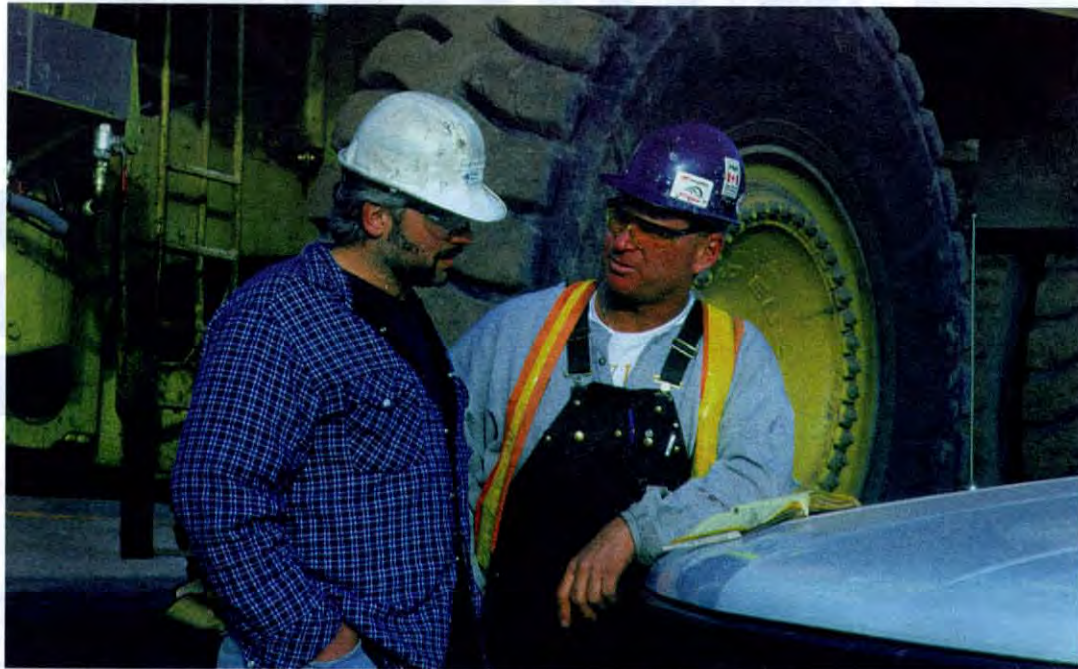
# An economic engine for the North

It's 4:30 am when the chartered airplane takes off from Vancouver and begins the journey north to the Kemess Mine. It's an early start, but the mine's employees on board are used to it. The plane will stop to pick up more employees in Kamloops, Williams Lake, Kelowna, Prince George and Smithers before landing on the Kemess airstrip at roughly 8:30 am. Most employees live and work on site for two weeks at a time, with shifts scheduled around the clock, every day of the year.

The Kemess Mine provides direct jobs for 350 families, many of whom live in northern BC. Hundreds more throughout the province are employed indirectly through supplier companies and contracts at the mine.

"It's our people that make this place what it is," says General Manager Maurice Ethier. "They take pride in their jobs, and that shows."

Kemess has earned a reputation for being one of the most productive



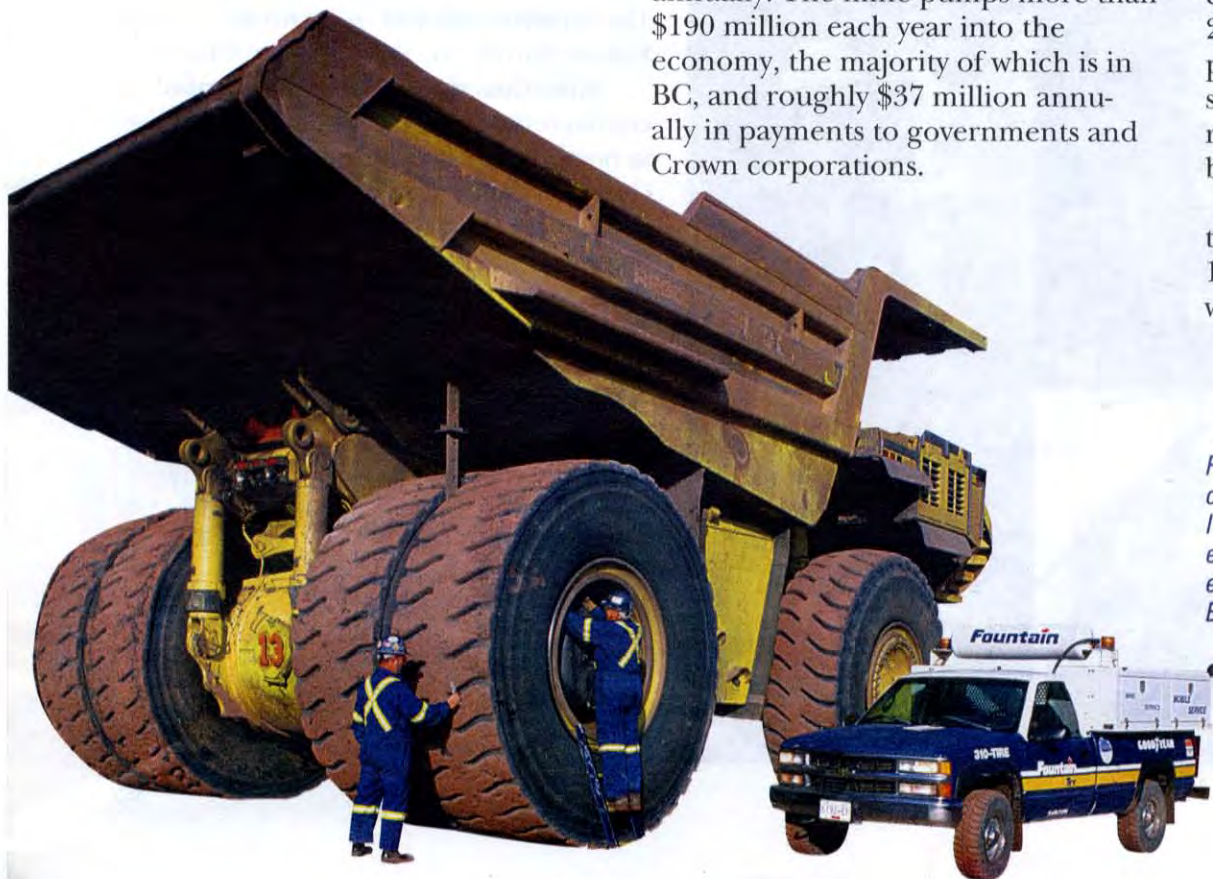
*Kemess Mine employees Sean Walmsley and Dan Ofukany. Most employees fly in for two weeks at a time, working shifts around the clock to produce more than 300,000 ounces of gold and 75 million pounds of copper every year.*

and efficient mines in the province, producing 300,000 ounces of gold and 75 million pounds of copper annually. The mine pumps more than \$190 million each year into the economy, the majority of which is in BC, and roughly \$37 million annually in payments to governments and Crown corporations.

Although ore reserves at Kemess are expected to last until 2009, waste rock stripping, or removal, will significantly slow down at the mine during 2006. Ethier hopes the Kemess North project will be given the green light soon, so any employees no longer required at the existing mine can begin work at the new site.

"The expansion is about keeping this place going for another 12 or 14 years," says Ethier. "Keeping that workforce employed."

*Fountain Tire crew perform maintenance work on a massive Euclid truck at the Kemess Mine. In addition to the 475 permanent and contract employees, an estimated 950 people are employed indirectly by the mine throughout BC and Canada.*





# Opportunity knocks for First Nations

**W**hen Mel Campbell heard about the First Nations training program at the Kemess Mine, he signed up right away. Campbell, a member of the Gitksan First Nation from Hazelton, BC, is one of 23 trainees to complete the program since it began in the spring of 2004.



*First Nations training program graduate Mel Campbell prepares mineral samples for testing.*

General Manager Maurice Ethier says because the mine operates in some areas traditionally used by First Nations, it is important to involve band members in the development and ongoing operation of the mine.

"When we began meeting with First Nations we were immediately impressed by two things," says Ethier. "The desire to gain new knowledge and experience, and the inventory of skills that already existed."

The program can accommodate four or five trainees from the area bands including the Gitksan House of Nii Kyap, Kwadacha, Takla Lake and Tsay Keh Dene First Nations.

Trainees in the program spend the equivalent of three months learning operations or maintenance procedures as well as the day-to-day tasks that keep the mine and the mill running efficiently.

"I learned a lot (on the maintenance crew)," says Campbell. "The

guys took me in right away and took care of me. They showed me around the mill, how it works. It was great."

After completing the training program, Campbell was hired on full-time and has recently been promoted to sample bucker, responsible for collecting and preparing mineral samples for laboratory testing.

Campbell's initial training has spurred his interest in becoming a millwright. He's on a waiting list for an apprenticeship program in Prince George, and credits the staff at Kemess for encouraging him.

"The guys on the crew helped me learn," he says. "They made me want to go back to school."



*Tsay Keh Dene member George Davies (above) and Trevor Moore, a member of the Gitksan First Nation (below), drive Euclid trucks at the mine. Both are graduates of the Kemess First Nations training program.*



*Jason Waardenburg, a member of the Lower Similkameen Indian Band in southern BC, with Carl Edmunds, Northgate's Exploration Manager. Approximately 14 per cent of the mine's workforce is First Nations.*

*"I was assigned to the heavy-duty mechanic's shop as a trainee in Kemess' First Nations training program. The experience made me think about going back to school and working towards an apprenticeship in heavy mechanics. Working here has helped me dream about what I can do and make plans for my future."*

Linda Charlie, Kemess employee and member of the Takla Lake First Nation



# Mining in BC

**M**ining is making a comeback in BC. After a long downturn in the 1990s, the industry set new records in revenues and exploration investment in 2004, and forecasts even stronger growth in the coming years.



*Mining is a \$4.5 billion industry in BC, bringing much-needed economic activity to more remote corners of the province.*

New mines, such as Kemess North, are most important in keeping the industry moving forward, says Mining Association of BC President Michael McPhie.

“From exploration to permitting to development, it can take more than five years to open a mine,” says McPhie. “But the end result is an economic entity few can match.”

McPhie points to five coal mines in the Elk Valley, which generate \$1 billion in annual revenue.

“That’s more than the entire film industry in BC,” says McPhie. “Not to knock the film industry, but it puts it all in perspective.”

Mining generates more than \$4.5 billion in gross revenues and employs more than 19,000 people in BC, of which approximately 7,000 are direct jobs and 12,000 are indirect. Workers in the mining industry are the highest



*The mining industry employs more than 19,000 people in BC.*

***“Northgate Minerals has the strong support of the Council of the Town of Smithers for the development of the Kemess North site.”***

Mayor Jim Davidson  
Town of Smithers



*Environmental Coordinator Scott Davidson collects stream samples as part of Northgate’s ongoing water quality protection program.*

paid in the resource sector, earning an average annual salary of more than \$90,000.

Mining practices have evolved considerably since the industry’s early days. Mining operations occupy less than 0.03 per cent of the land base in BC, in areas designated for development. It is also the safest heavy industry in the province.

British Columbia is a leader in environmental sustainability, particularly in mine reclamation, says McPhie. The industry has made a commitment to sustainable development, recognizing that no business can be successful in the 21st century if it fails to be an environmental leader and a responsible corporate citizen.

“We rely on a public resource,” he says. “We must earn the right to put that resource into production.”



# Duncan Lake today and in the future

**D**ig a hole a metre deep and what do you get? A metre high pile of dirt, of course. Now dig that hole half a kilometre into the ground and a kilometre across and you are facing the same challenge that faces every open pit mine in the world.

Open pit mining involves digging up rock containing valuable minerals, such as the gold and copper mined by Northgate. The rock is then crushed and ground into a fine sand, making it possible to separate the minerals from the other materials.

If the excess rock and sand left behind – called waste rock and tailings – contain sulphides, they have the potential to rust if exposed to the air. We see this happening naturally in mineral-rich areas throughout BC where the burnt-orange of oxidization can be seen alongside our highways. If this process is not controlled, there is the potential for dissolved metals and acidic drainage to contaminate natural waterways.

Northgate has carefully studied more than a dozen alternatives for storing tailings sand and waste rock from the Kemess North pit, and has determined that underwater storage is the safest option that will prevent acidic drainage and protect the environment over the long term. It is a proven method that is used successfully at other mines in Canada, including the man-made tailings pond at the existing Kemess site.

“If these materials are left on the ground’s surface and exposed to oxygen in the air, then essentially they rust,” says Harvey McLeod, an environmental consultant with Klohn Crippen. “The best way to handle these materials is to put them underwater where oxygen cannot get at them.”

The location chosen is Duncan Lake, a remote lake about five kilometres from the Kemess Mine in



*One of three fish ladders built as part of the company’s fish habitat management program, which will be the model for the programs at Kemess North. A new population of Bull trout has been established upstream of the ladders, and the number of Bull trout fry has exceeded the average recorded in the past 10 years.*

***“From a number of perspectives, including potential geotechnical and geochemical advantages, underwater disposal in natural water bodies may be the best, long-term, least risk waste disposal option.”***

William A. Price and John C. Errington  
BC Ministry of Energy and Mines

northcentral BC. With few areas for spawning and low levels of nutrients, Duncan Lake has a small population of rainbow trout, mountain whitefish and Dolly Varden char – all indigenous throughout BC – and is not currently used as a fishery.

Plans for managing Duncan Lake and its fish stock before, during and after the Kemess North operations are detailed and comprehensive. The plans begin with carefully relocating

the fish from Duncan Lake to other suitable fish habitats in the area.

During mining, the tailings sand and waste rock will be stored in the lake as sediment that will turn the water a silvery blue colour and somewhat increase the pH levels. The water will be contained, and the downstream quality protected and maintained. It will remain safe for wildlife to drink, just as it is at Northgate’s existing Kemess Mine.

At the end of the mine’s life, Duncan Lake will be 90 metres higher and will have a larger surface area. The sediment will settle, returning the water to crystal-clear blue. Wetland areas will be established at the northern and southern ends of the lake. The slopes and bottom of the lake will be contoured to rehabilitate aquatic habitat. Once proven suitable, the natural flow of water to and from Duncan Lake will be restored.



# Environmental stewardship

**M**inimizing environmental impacts on the land is one of the cornerstones of modern mining. Mining operations now create new fish and wildlife habitat to replace any of those that may be disturbed by the mine. When a mine closes, the site is dismantled and the lands rehabilitated and returned to nature.

Northgate has set aside \$15 million in trust to cover costs related to the closure of the existing Kemess Mine. Reclamation work is already underway, with more than 10,000 tree cuttings and seedlings planted since 2001.

When reclamation work is finished, the tailings pond will be rehabilitated. The land will be a mosaic of meadows and light forest, which is even now beginning to take shape.

“We’re certainly seeing more bears and caribou around Kemess these days,” says Harold Bent, Northgate’s Environmental Manager. “They graze in the grasslands we’ve created.”

Northgate is proud that its work to date restoring land affected by the Kemess Mine has been recognized by the BC Technical and Research Committee on Reclamation, and is also proud of its successes achieved in another priority area – managing fish habitat.



*Mining operations create new habitat for fish and wildlife to replace any that may be disturbed by the mine.*



*A former exploration camp on the shores of Kemess Lake has been reclaimed. A moose grazes next to a hydroseeder used to restore the land.*

Northgate collected fish from creeks affected by the mine and relocated them to other existing habitats nearby. Then Northgate built fish ladders, spawning platforms and winter sheltering areas.

The efforts are paying off. Populations of Bull trout and Dolly Varden have been established in new areas, including upstream of the fish ladders where no fish previously lived.

Small fry, or juvenile fish, now take shelter in the winter habitats that protect them during the colder months, and the number of fry observed in recent years has exceeded the average on record since fish monitoring studies began at Kemess more than 10 years ago.

***“Kemess is a great example of how a company that is committed to the highest environmental and social practices can create a positive legacy for all of BC.”***

Michael McPhie, President  
Mining Association of BC



*Mother bear and her three cubs are frequent visitors at the mine.*



# Trojan Pond: an example we can look to

It may be hard to imagine a mine site as a scenic tourist attraction, but mining has evolved since its early days. Modern mining is all about sustainability, innovation and good practice.

Both Butchart Gardens in Victoria and Queen Elizabeth Park in Vancouver were once rock quarries, and Trojan Pond, a coveted spot for sport fishing near Kamloops, was once a tailings impoundment for one of the world's largest open pit copper mines.



Sport fishermen prepare for the annual Trojan Pond Fishing Derby.



Bob Hamaguchi, Senior Environmental Engineer at the Highland Valley Copper mine near Kamloops, holds a prized 13-pound rainbow trout caught in Trojan Pond, the former tailings impoundment at the mine.

Until 1989, Trojan Pond was a storage site for waste and tailings generated by the Highland Valley Copper mine. It is now home to more than 6,000 fish after reclamation efforts succeeded in establishing a productive ecosystem in the pond.

The first rainbow trout were introduced at Trojan Pond in 1991. By 1996, the fish had grown to as much as 27 inches and weighed more than 10 pounds. The mine now sponsors the annual Trojan Pond Fishing Derby, which attracts fly fishers from across the province every fall.

The reclamation of Trojan Pond is an example of what modern mining is all about.



The fishing derby underway at Highland Valley Copper.

## Environmental assessment ensures sustainable development

Preserving the environment while building a strong economy is a challenge Canadians face every day. Fish and wildlife need habitat and food sources, while our communities need income and jobs. Balancing the needs of the community with those of the environment is done through an environmental assessment, the formal process by which development projects are reviewed.

In March 2005, the provincial and federal governments agreed to conduct a joint review of the Kemess North project, an expansion of the

Kemess Mine proposed by Northgate. A three-person panel was appointed, whose members will draw on their expertise in mine reclamation, mining engineering and community development.

Early in October 2005, Northgate submitted its Environmental Impact Assessment report, which describes in detail the research and analysis Northgate has completed, and how the company plans to mitigate any impacts the project may have on the environment. The EIA can be viewed at [www.northgateminerals.com](http://www.northgateminerals.com) or [www.eao.gov.bc.ca](http://www.eao.gov.bc.ca)



Caribou wander the ridge of the open pit at the Kemess Mine.



# FACTS AND FIGURES

- Northgate Minerals Corporation assumed ownership of the Kemess Mine in 2000.
- The mine is located in north-central BC, roughly 400 kilometres northwest of Prince George.
- Kemess is an open-pit gold and copper mine.
- The proposed expansion of the mine, Kemess North, will be located five kilometres north of the existing open pit.
- Ore reserves are expected to run out in 2009, at which time the mine will close if Kemess North does not go forward.
- The expansion site is estimated to have enough ore reserves to continue operations until 2020.
- Kemess employs approximately 475 people through permanent and contract jobs. An estimated 950 additional people are employed indirectly by the mining operation throughout BC and Canada.
- The mine contributes more than \$190 million annually to the economy, the majority of which is in BC.
- In 2004, Kemess established a training program for First Nations. More than 20 trainees have completed the program since that time.
- First Nations comprise approximately 14 per cent of the workforce at Kemess.



*Paw prints in the tailings sand.*

- Northgate has set aside \$15 million in trust to cover costs relating to the closure of the Kemess Mine, including reclamation of the site.
- Kemess has planted more than 10,000 tree cuttings and seedlings at the site since 2001.
- Kemess spent more than \$4.5 million on its fisheries compensation program including fish ladders, spawning beds, a salvage and transplant program and \$90,000 annually for monitoring.
- The compensation program has successfully established new populations of fish in areas where no fish were previously seen.
- Northgate has carefully studied more than a dozen different options for storing excess rock and tailings sand from Kemess North. Storing the materials underwater in Duncan Lake has been determined to be the safest long-term option for the environment.

## WHAT YOU CAN DO

For more information on the joint review now underway, please visit [www.eao.gov.bc.ca](http://www.eao.gov.bc.ca) or [www.ceaa-acee.gc.ca](http://www.ceaa-acee.gc.ca).

Questions and comments on the Kemess North project may be directed to:

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We welcome your feedback and letters of support.



**Northgate Minerals Corporation**