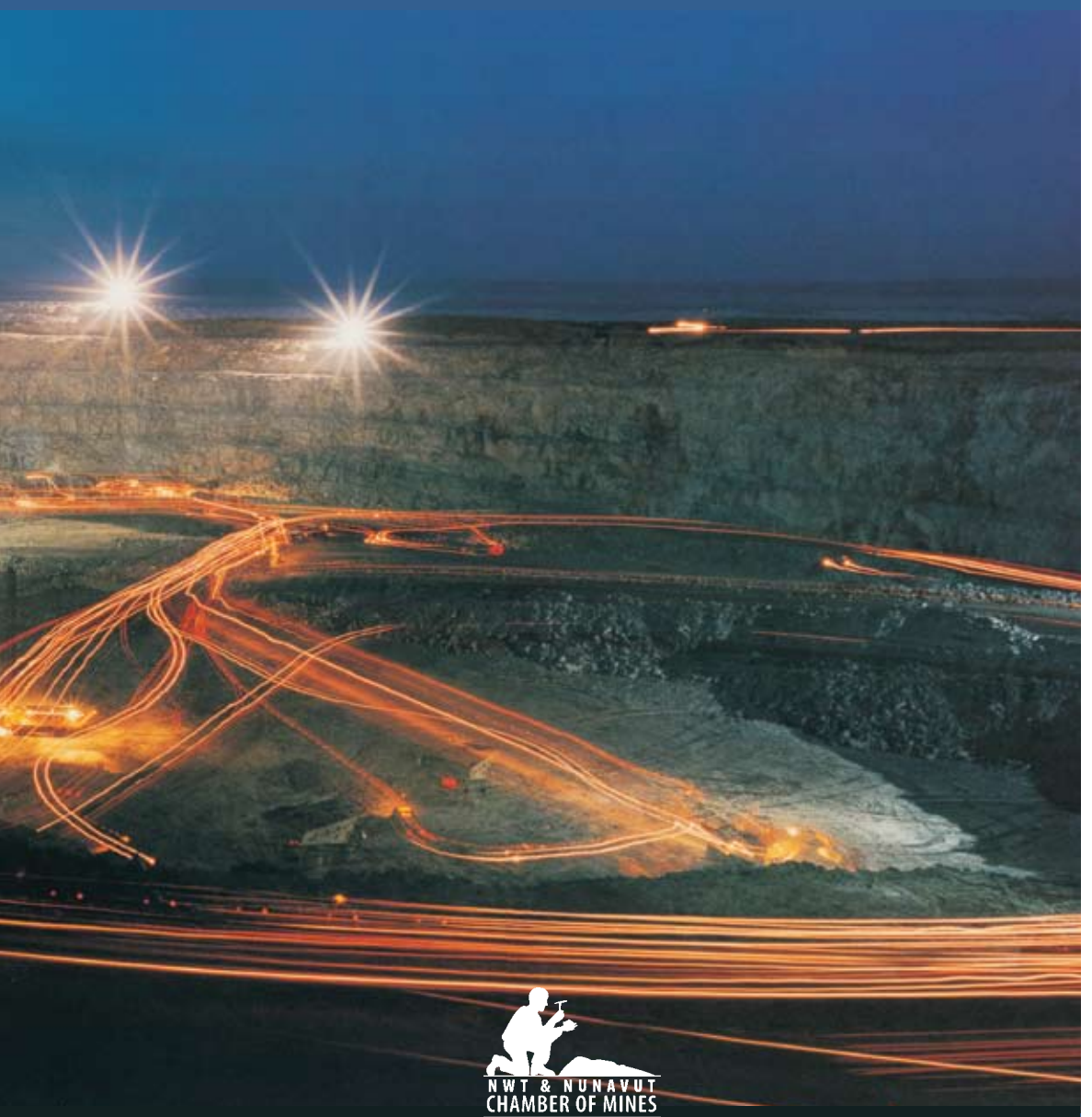
MINING

[*makes a difference*]



NWT & NUNAVUT
CHAMBER OF MINES

Minerals are very important to us

Few people realize just how important mining is in our civilization, but just about everything around us comes from minerals or was built using tools made from minerals. Many of the things we need to live, and most of those that make life more comfortable, depend directly or indirectly on minerals taken from the earth. Food and water supply, shelter, clothing, health aids, transportation and communication, and a wide variety of products that we use every day all depend on the mining industry.

To grow most of our foods we need fertilizer made from minerals such as potash. Fertilizers help the growth of plants such as cotton and linen which we use to make clothing.

In the north where many of us hunt and trap, we need guns and bullets made from metals. To transport food to our table we need trains, trucks, airplanes, and boats – all made from metals such as aluminum, steel, copper, and zinc. To cook our food, we need metal pots and pans, knives, and forks.

We watch television sets and play on computers made from cables, wires, and electrical components, all made from metals such as copper and gold. Our cell phones contain a host of minerals including rare earth metals such as beryllium and lithium. The rockets, and the satellites they carry into space for telephone and television service, are made from metals.

Water is pumped into our homes through copper pipes. The wiring in our homes and offices is copper and aluminum, and the walls are made of gypsum. Steel construction beams are made from iron, carbon, and chromium, and the lumber may have been treated with chemicals made from minerals. Our homes sit on gravel or concrete foundations that are built from materials taken from the ground.

All of our machinery is made from metals or relies on metals in indirect ways. Oil and gas is tapped by wells drilled by large metal rigs, and pumped through metals pipes to market and into our vehicles. Coal and uranium also have to be mined before they can be converted into useable energy. Metals make the moulds needed to produce plastics which are so common today. Glass in our windows and the ceramics in our sinks, toilets, and bathtubs are all produced from minerals. Lead, zinc and now lithium are used in batteries to power all of our gadgets and vehicles. Gold and diamonds have important industrial applications; gold is very conductive and has uses in electronics, while diamonds as the hardest known substance is a cutting tool.

Photo courtesy of S. Krasemann

If it can't be grown, it has to be mined!

Few people realize that if we need something that cannot be grown on our farms, taken from the sea or the forests, then it has to be mined.

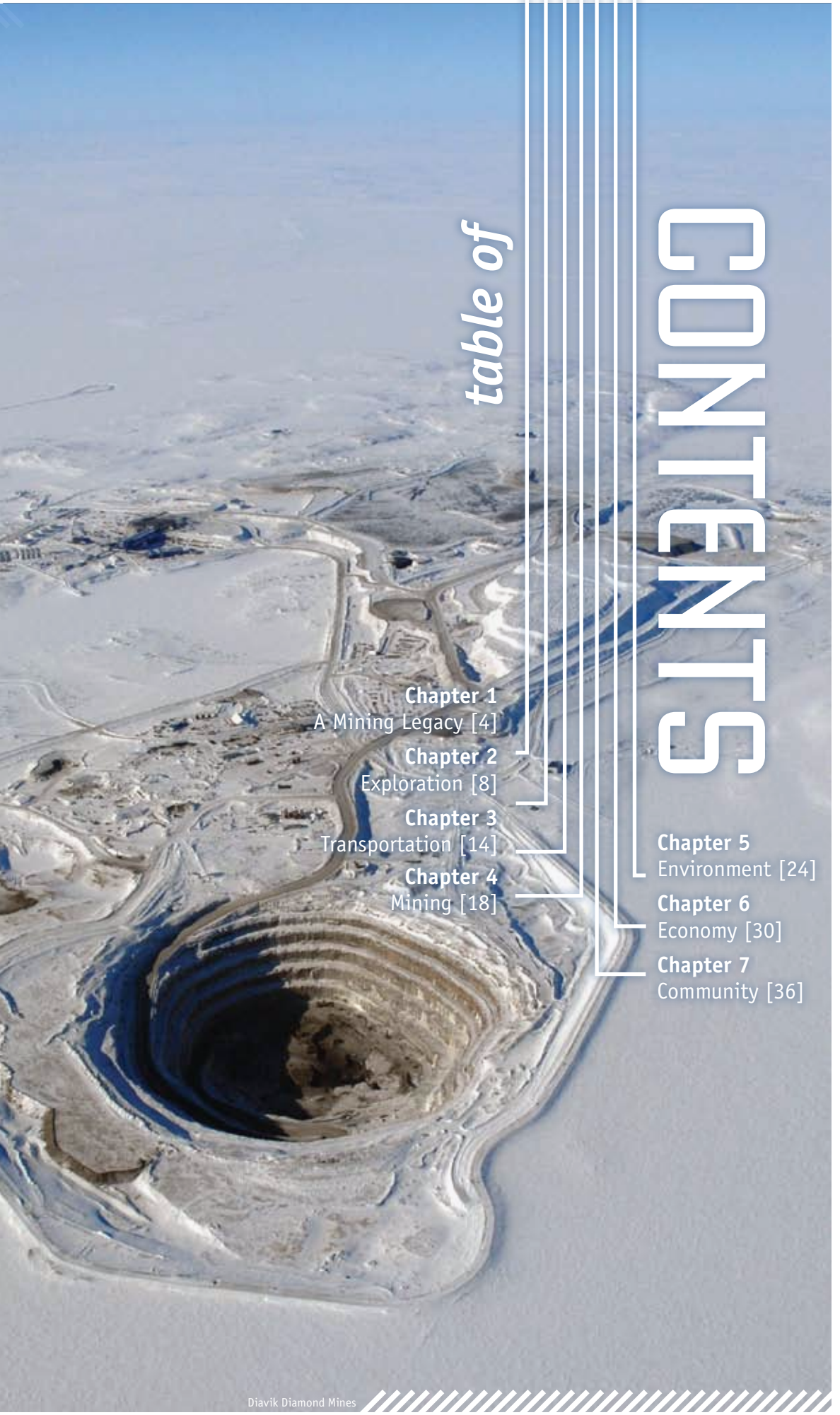


table of CONTENTS

Preface:
A Potential Barely Tapped!

Mining contributes many millions of dollars every day to the economies of the Northwest Territories and Nunavut. In 2006, the total value of mineral production was over $1.6 billion. Mineral exploration companies expended over $335,000,000 in NWT and Nunavut projects. The mines themselves employed over 3,000 people and the exploration industry and other spin-off employment had another 1,000 people on payroll. The northern GDP has risen more than two billion dollars in value since 1998 when the first diamond mine went into operation. Mining investments have far surpassed all other northern industry and business capital investments and our unemployment rates have dropped below the national average. In ten years the major diamond mining companies alone have spent over seven billion dollars in the Canadian economy, five billion of which has been spent on northern and aboriginal business. Mining is the north's most important industry and as new mineral deposits are developed these statistics will only rise.

Our mining industry provides substantial additional benefits to the northern economy. Royalty payments, and both corporate and personal taxes are paid to government. These return as transfer payments, which are used to pay for the basic services we require. As well, for every mine worker, it is estimated that four more jobs are created in the service sector to support the mine's and the employee's purchases. These jobs provide considerable wage and tax benefits to our economy.

The discovery of diamonds in 1991 and the start of commercial production in 1998 have led to the greatest changes in the northern economy. Prior to diamonds, the mineral industry, while being a substantial contribution to the economy, was smaller than the government sector. In 2004, diamond mining contributed over 40% to our GDP while government contributed 17%.

De Beers Canada Inc.

Mining companies are working hand in hand with local and territorial governments and community groups to make the industry sustainable, economically and otherwise. They spend millions of dollars to ensure that water quality is controlled and that regional flora and fauna are not negatively impacted by mine operations. At the end of the mining cycle, the companies have committed the necessary funds to return the sites back to nature. Their attitude and commitments reflect the growing value mining companies are placing on the NWT's ecological resource.

In ever increasing amounts, northerners are taking advantage of employment in the mining industry. Today mining companies sign impact benefit agreements with aboriginal communities if the mine lies within a land claim settlement area. In addition, the companies sign socio-economic agreements with the government. These agreements provide for numerous economic benefits in terms of jobs, business opportunities, education, and community development that might otherwise not exist for northerners.

Mining has marched side-by-side with northern development since the 1930s when Gilbert LaBine discovered valuable uranium and silver minerals at Great Bear Lake. His prospecting brought the aeroplane into the northern skies and his mine created the Northern Transportation Company, and also provided a market for Norman Wells oil. The gold mines at Yellowknife brought serious federal attention and eventually it sparked the creation of a territorial government. It also brought a major Canadian highway north; at the same time, the lead and zinc mine at Pine Point brought in a rail system to Great Slave Lake. In the 1980s, the Nanisivik and Polaris lead and zinc mines commissioned huge ice-breaker transport ships which helped to maintain Canadian arctic sovereignty. The diamond industry in Canada represents the first diamond production in North America and continues to set important milestones today.

This booklet was prepared by the NWT and Nunavut Chamber of Mines with the assistance of Indian and Northern Affairs Canada. It tells the story of mining in the north today, and the opportunities it can offer to all northerners.

It's a story every northerner should know.

S. Krasemann

A few simple wooden posts standing at perfect right angles to one another mark the beginning of the mining process. In some ways, they also mark the beginning of the mining story of the Northwest Territories. These subtle markers were used to stake claims late in the 19th century when a large influx of southern prospectors flooded north looking to find their fortune.

Chapter 1
A MINING LEGACY

A lot at stake

In 1898, the Northwest Territories was still a largely unknown and unexplored area. When the Klondike Gold Rush was happening in the Yukon, few people considered the NWT as an area worth exploring for minerals. Who could imagine that there were deposits of gold in both territories of the time?

To get to the Klondike, there were two main paths that a prospector could take. Up the coast of British Columbia, or taking lake and river routes north to the Great Slave Lake, and west over the Mackenzie Mountains. A man named E.A. Blakeney took the latter route, staking claims along the way. Not much is known about him, but as he traveled he sent a sample from a claim at Yellowknife Bay to Ottawa, a sample that was assayed at two ounces of gold per tonne. This was an astounding grade of ore, but it was an isolated gold find and was practically forgotten in the rush to claim Klondike riches.

In the 1920's oil was discovered at Norman Wells on the Mackenzie River. At the same time, exploration companies were using modified WWI fighter planes to chart and service distant northern areas.

The introduction of aircraft technology in the NWT opened up the entire territory for mineral exploration. Our mineral deposits were suddenly not so isolated, and prospectors slowly realized an untapped potential.

Gilbert LaBine was one of these prospectors. In 1930, he discovered rich silver, cobalt, copper, and uranium ores at Great Bear Lake. The find sparked a staking rush in 1932-1933

and the NWT's first mining settlement at Cameron Bay was founded. While silver was obviously a target of interest, it was actually the radium in the uranium ores that caught everybody's attention.

Radium, a valuable tool for cancer treatment, was very rare and LaBine's discovery was the first in North America. In 1933, the first mine in the Northwest Territories, Eldorado Mine, began operations producing radium, copper, and silver.

Shortly thereafter, gold was discovered in the Northwest Territories in economic and mineable quantities. During 1933-1934, prospector Johnny Baker made a number of gold discoveries along the Yellowknife River and Yellowknife Bay area on Great Slave Lake. In 1935, Baker's most interesting gold find, the Burwash Mine located on the east side of Yellowknife Bay, began development but it did not enter full production. At that time the only permanent inhabitants of the region were the Tlicho Dene who were not used to seeing foreign visitors on their traditional territory.

The Burwash Mine was short lived but it fueled prospecting activity in the region. In the fall of 1935, a Geological Survey of Canada geologist named Norman Jennejohn found visible gold on the west side of Yellowknife Bay, triggering a frantic rush to get claims staked before freeze-up. This led to the discovery and development of the Con Mine, which entered gold production in 1938, the first gold mine in the NWT. Many other mines followed, including Negus Mine in 1939, Ptarmigan Mine in 1941, Thompson-Lundmark Mine in 1941, Giant Mine in 1948, and Discovery Mine in 1950. The city of Yellowknife was settled in the late 1930s in response to all the mining developments and continued to expand after World War II.

Prospectors continued to show up to stake their claims, and while some were successful, and several smaller mines were built, others turned back or found employment at the mines.

Gold was not the only mineral of interest in the NWT. The mines at Great Bear Lake continued to produce silver into the 1980s, while uranium became a strategic war metal during WWII and the Cold War. Lead and zinc ores were staked and developed at the Pine Point, Nanisivik, and Polaris Mines. Nickel and copper were produced on the coast of Hudson's

DPW&S/NWT Archives/G-1995-001:6429

The North was a difficult area of Canada to reach until the 20th century when improved transportation technology including airplanes made it a more attractive area for exploration and resource development.

Bay at Rankin Inlet, while tungsten ores were mined at Cantung high in the Nahanni mountains near the Yukon border. Massive gold projects were pushed to production all over the territory including the Colomac, Tundra, Salmita, Cullaton Lake, and Lupin Mines.

As the old mines approached the end of their lives, modern-day prospectors continued their search for future mines to replace them. In the early 1990s, Chuck Fipke reached Point Lake deep in the sub-arctic after a decade long search for what many never had dreamt of in the NWT - diamonds. After an exhaustive season of till sampling, his crews had been just about ready to give up. Why were they searching for diamonds in the middle of nowhere? The previous generation of prospectors and geologists had passed over this ground and deemed it truly 'barren'. But Fipke was resolute, and the work continued.

Finally they hit 'paydirt', washing down high quality diamonds from the sands. The find sparked the largest and most interesting staking rush in NWT history. In 1998, Fipke's original diamond claims began production as BHP Billiton's Ekati Mine; Rio Tinto and Harry Winston owned Diavik Mine followed in 2003, Tahera's Jericho Mine in 2006, and De Beers' Snap Lake in 2007. Another diamond mine, Gahcho Kue owned by diamond magnate De Beers is on the horizon. For over 70 years, mining has been the economic base of the NWT and its legacy carries on with even greater importance today. We pay homage and respect to the old mines - their discoverers and dedicated workers - while we look ahead to a great future full of vast mineral potential, profit for all northerners and a sustainable outlook on the economy, environment and society.

Opening up and developing frontiers is the history of mining, and of the NWT, in whose development mining continues to play a crucial role.

Summer comes quickly in the North. The summer of 1994 was certainly no exception. Lac de Gras groaned and creaked as the ice began to break up. And water flowed over the boots of Aber geologists as they worked to move their rig. They weren't heading home though. As the last few hours of the winter exploration season dwindled, the crew drilled the A154.

Chapter 2
EXPLORATION

INAC/AINC

It begins with a treasure hunt

For ten days Aber geologists Eira Thomas and Robin Hopkins drilled the site. Not once did they hit kimberlite. The water was now knee deep, and the ice was turning into soft butter. With time and budget running out, the team decided to drill one last hole. As they pulled up the cores, they saw it: dark and crumbly. They had hit kimberlite.

Later that night, Thomas and Hopkins inspected the kimberlite samples they had recovered from the day's drill. Hopkins picked up one of the slender cylinders of rock, snapping it in half along a natural break. A rare sight was set in the rock – a 2-carat clear mackle diamond.

Thomas flew back to Vancouver with the sample in her pocket. When she presented Gren Thomas, her father and founder of Aber Resources, with the discovery, he thought it was a practical joke. It was no joke. Aber and partner Rio Tinto had discovered their diamond mine – Diavik.

Behind the incredible discovery of Diavik's diamonds, or the discovery of any other mineral, is a lot of science. To find mineral deposits, it is necessary to look at and sample the rocks themselves. However, the rocks themselves are often hidden beneath soil cover, heavy plant growth or even water. In the past, this presented a problem. However, it is today

INAC/AINC

possible for explorationists to learn much about what is under the ground, often without even setting foot on it, thanks to technology.

FLYING LIKE A "BIRD"

Aircraft flying over the land collect a great deal of information using sensitive airborne geophysical instruments. While some types of airborne sensors can be mounted in the aircraft itself, others must be towed some distance from it in a long, missle-like container known as a "bird". Towing the equipment reduces chances that electrical equipment and machinery will interfere with the detection instruments.

Airborne geophysical equipment produces computer-compatible data on the land over which the aircraft flies. Depending on the type of survey being conducted, detection equipment can include a radiometer, which picks up radioactive emissions from, say, uranium or potassium; an electromagnetic system which will record the electrical conductivity of the ground below (metallic ores are good conductors of electricity); or a magnetometer, which measures the magnetic character of the rocks. Anomalies in the data indicate the presence of valuable mineral deposits in the rocks below.

Once the geophysical data have been gathered, computers are used to create various geophysical maps. Geologists and geophysicists study the maps to find anomalies most likely to represent mineral deposits, and to help them understand the geology of the unexposed rocks.

An eye in the heavens

While still an important tool, aerial photographs are being complemented with satellite images taken from space. Several American and European satellites continuously circle the earth taking images in much the same way as a video camera. Imaged data can be manipulated and enhanced by computers, and in this way provide much more information than can be gained from a photograph with the naked eye. Satellite imaging is a valuable tool for explorationists.

ANOTHER TOOL: GEOCHEMISTRY

Even using geophysics, many mineral deposits are still invisible, especially if they are covered with overburden. To find these deposits, geologists use another tool called geochemistry.

Many ore bodies are surrounded by a faint halo of mineralization, created when the deposit was formed, or sometime later by metamorphic processes, groundwaters, surface erosion, or even by plant uptake. As these halos are larger than the ore body, they are easier to find.

Not many years ago, chemical analyses were only precise enough to detect the presence of one part of an element in one thousand (called "parts per thousand"). Now, however, assaying can determine the presence of elements in parts per trillion!

Detecting ore body halos is now a practical reality, making geochemistry increasingly valuable in mineral exploration. By comparing the findings of geophysical and geochemical surveying on a combined map, geologists have a pretty good idea of the extent of mineralization – and where to start drilling if the indications are good enough.

DIAMOND DRILLING

While geophysics and geochemistry can help identify ore bodies worth exploring, without samples of rock from below the surface there is no proof that minerals are really there. To sample anomalies at depth, a diamond drill is used to retrieve samples.

The diamond drill uses a cutting head, or bit, covered with diamond fragments, screwed onto a hollow stem.

Arctic Star Diamond Corp.

P. Gertzbein/Mining N orth

The prospector's toolbox

The old stereotype of a prospector with a wide-brimmed felt hat, a pickaxe over his shoulder and a pan in his hand is far from the current reality. Modern prospectors must be up to speed on the latest technology. Scientific journals help the contemporary prospector stay abreast of geophysical and mineralogical studies to direct the focus of exploration efforts. Binocular microscopes and chemical tests are used to examine the concentrations of indicator minerals in soil samples, and the prospector plots these concentrations on a map to track them back to source areas. When a plot looks promising, the prospector can use the Internet to stake his or her mineral claim online.

Diamonds, because of their great hardness, create the keenest cutting tools known. As the bit turns, it cuts a continuous cylinder, or core, of rock. The core is pulled from the drill pipe periodically, and carefully arranged in wooden core boxes, in the order in which it has been recovered.

From drilling results a company will decide either to develop a mine or write off all the money it has already spent – a typical drill program can cost thousands of dollars.

The odds against succeeding are overwhelming: less than one in a thousand. So even when the return is exciting, drillers and geologists can't always be sure what they've found will become a mine.

INAC/AINC

Prospectors and geologists have discovered everything from precious and base metals to tungsten, coal, rare earth metals, and diamonds. However, geologists have just barely scratched the surface in the north. It is estimated that only 99% of the Earth's surface as been adequately explored.

Oldest Rock

In 1989, an outcropping of rock known as tonalite gneiss was discovered on an island in the Acasta River, 320 kilometers north of Yellowknife. After much analyzing, the specimen was proved to be 3.962 billion years old...the oldest piece of intact rock yet found anywhere in the world!

David Watt Photography

David Watt Photography

We Want You!

Mineral exploration workers are in high demand. Dave White, 30, is a Geologist with Aurora Geosciences in Yellowknife, whose clients are exploration companies looking for hard rock resources: base metals, precious metals and diamonds. All through the summer, Dave travels to remote locations around Northern Canada – fieldwork includes mapping, prospecting and running drill programs.

With a Bachelor of Science degree in Geology from the University of Alberta, Dave uses physics to look beneath the surface of the rocks he stands on. “The great thing about my job is being outside all the time – I like to hike and camp,” he says. “The geology itself is also very interesting, especially in the Northwest Territories where the rocks are so old and complex.”

The mineral exploration team usually flies into the area with a Twin Otter plane. They load whatever they can and set up a kitchen tent and sleep tents. Often a helicopter will support the team, along with a pilot and engineer. In the winter, Dave writes reports about his findings, discusses business and contracts with clients and prepares maps using specialized computer software.

It takes equal parts money, brains, courage, patience and faith to build a mine in the Northwest Territories. And you can't be short of any of them. First, the engineers have to decide on the most efficient and economic way of reaching and mining the ore body. If the ore body is close to the surface, they may opt for an open pit mine. If that isn't possible, they'll have to mine underground. In some cases, they do both.

Chapter 3
TRANSPORTATION

J. Hermann

Journey to the Mine

There's also the question of access to the property, and how to move supplies, employees and equipment in. Where a mine produces very large volumes of minerals too expensive to fly out, there's also the question of how to ship the product out.

Transportation systems are limited in the North. The NWT has only a rudimentary highway system. There's a four, sometimes five, month navigation season on the Mackenzie River and four to five months in which Arctic waters are open to shipping. Unless a company is lucky enough to be developing a mine near one of those existing transportation routes, it will have to construct a winter road to its property. Besides flying, which is a costly proposition, it has no other way to move bulky, heavy equipment or the enormous quantities of fuel and other bulk supplies it needs.

Once a company is committed to construction, April 1st often becomes the most important date on the calendar. It can't count on ice roads holding up after that date, and if its heavy machinery, fuel and other bulk supplies aren't on site by then, its schedule has been set back by a full year.

BUILD IT AND THEY WILL COME

Winter roads mean operating vehicles under severe winter conditions. At 40 or 50 degrees below zero, steel snaps like an icicle.

With howling winds, a plowed road can disappear in a matter of minutes and with weak ice, a truckload of important machinery can end up on the bottom of a frozen lake; unlike moving equipment over land roads, on an ice road the drivers must be wary of the road itself disappearing.

A name synonymous with Northern ice roads is John Denison. He began building ice roads to northern mining projects in 1960 with Byers Transport. At that time the gold mines at Discovery and Tundra were looking for economical alternatives to expensive air transportation of supplies and equipment. Denison and his road crew worked through the darkest, coldest days of winter building ice roads to some of the harshest and isolated arctic regions in the world.

In those days building the roads were often as dangerous, if not more dangerous, than hauling freight on them. Using rudimentary equipment, crews would clear and flood the trails – often having to spend as much time hauling equipment out of the water as they did building the roads.

Today, building ice roads is a high tech adventure. Using gadgets like ground penetrating radars (GPR) and global positioning systems (GPS), builders are able to find the weak spots in ice roads much more quickly and accurately. This allows them not only to work in a more efficient manner, but also to build a safer ice road.

Ice roads are used today as the main supply route for the diamond mines of the Northwest Territories and Nunavut. Fuel, tires, construction equipment and more are shipped along the frozen lakes during a short 9 to 12 week window each winter.

We need the cold

The perfect temperature for an ice road is around minus 28 degrees Celcius. Mining workers hope Spring won't come too soon, but in March 2006 there was an early thaw after a warm winter, and the 500 kilometer long Tibbit-to-Contwoyto winter road was forced to close down after only 42 days in operation – compared to an average of 70 days. Many of the supplies – fuel and explosives, for example – needed by the diamond mines were still waiting for their turn to cross the ice. In the end, large cargo aircraft came to the rescue and flew up the remaining provisions.

I love my job!

Kelsey Ball, 29, had wanted to be a pilot since she was a little girl. The Buffalo Airways aviator grew up in Northern Manitoba where her family had a small private plane. By age 21, Kelsey earned her own license.

Kelsey runs supplies and staff to far-flung mining exploration camps. A typical flying day starts bright and early at 5 am. Kelsey comes into work, checks the weather and draws up a flight plan. Then she warms up the DC-3 plane and prepares the load. "In the wintertime, we often land at the smaller camps on ice strips, but a lot of the larger exploration camps now have gravel landing strips," she says.

Kelsey loves her job. "It's hard to describe, but I just enjoy the feeling of flying in the air, the freedom of it. I also like visiting other places and meeting people from other communities," she says.

HIGHWAY IN THE AIR

Planes and helicopters are crucial in providing support for mines from the first day of construction to the maintenance of its everyday operations. Workers fly in and out of mining camps at the beginning and end of every shift – generally working two weeks at a time – and any supplies that don't make it into the mine on the ice road must be flown up. In 2006 when the Tibbett to Contwoyto ice road closed early, it was air support that filled in the supply gaps.

Among Diavik mine's stranded freight was a huge, heavy excavator, or production shovel, which no commercial airplane could transport. The shovel was cut into pieces and airlifted by a Russian MI-26 helicopter – the world's largest cargo chopper – which can lift 22 tonnes of cargo over 300 kilometers in about an hour. Once all the pieces were delivered to the mine, they were welded together, and the shovel was put into production. For construction of a dike, Diavik flew cement and bentonite on a Russian Antonov AN12 aircraft, brought to Canada with the permission of the Federal Government.

First Air's Hercules aircraft, the largest cargo hauler based in the North, was pressed into overtime service, and the Russian 124 Antonov – the largest airplane ever mass-produced – was brought up North to aid in the effort. Buffalo Airways, Air Tindi, and other companies regularly carry fuel and parts into exploration camps where the landing strip is sometimes only a cleared patch of frozen lake.

DPW&S/NWT Archives/G-1995-001:2408

Breaking new ice

Necessity is the mother of invention, and mines often have unusual needs. Given the resources to solve a problem, engineers solving logistical mining puzzles often come up with new technology. The icebreaker MV Arctic is an example of leading edge design developed in response to Nanisivik mine's need for fuel, and for a way to transport concentrate to market. Icebreakers must be very powerful to push their bows up onto the ice, they must have a strengthened hull so that the ice cracks underneath the weight of the ship without the hull being punctured and they have an ice-clearing shape that directs broken ice away from its path. The MV Arctic pushes the boundaries of innovation in all three areas. Designed to carry both oil and ore, the MV Arctic is the highest ice class commercial cargo vessel in the world, serving mines in the Canadian High Arctic throughout the winter – a task that would be impossible for a weaker ship.

There are generally two ways to mine an ore deposit; either from the surface or from underground tunnels. Surface mining is called open pitting and it's performed using quarry techniques with drills, excavators, and large ore trucks. Underground mining is much more complex and there are dozens of different ways to mine an orebody, depending on the extent, grade, and nature of the ore deposit.

Chapter 4
MINING

Ekati Diamond Mine™

Start with a big hole

Building an open pit sounds relatively easy: dig a great big hole in the ground. Well, it isn't quite so simple. Just designing the shape of the pit itself takes many calculations, since it costs just as much to mine waste rock as it does to mine ore. So engineers have to work to reach as much of the profitable ore body as possible, while removing the least amount of the worthless waste rock.

When an open pit is built, it looks like there are steps leading down. These steps are called "benches." Roads lead down from one bench to the next to give access to the drills and loaders, and the huge rock-hauling trucks. The grade, or incline, of those roads has to be gradual enough for the equipment to handle as the pit grows deeper and deeper.

TAKE IT UNDERGROUND

Some ore deposits can only be mined economically by underground tunnels. This is usually because they occur at greater depths, or the waste stripping ratio for open pitting is too high. Underground mines occupy a much smaller footprint on the landscape since all of the workings are beneath the surface.

Even after the decision has been made to use underground mining instead of open pits, the mine is faced with more decisions as to which method of underground mining will work best for the ore deposit. Getting the ore to surface is a big consideration, and two methods of transportation have been developed. The traditional method is a tracked mine

with vertical shafts. A shaft provides quick access to the mine workings from surface, and is equipped with a headframe and hoist, a man-carrying cage and a bucket called a skip, for transporting the ore. Tracked mining machinery operates on a rail-road in the underground tunnels. The orebody is developed by intersecting it at various levels blasted out and away from the shaft at different depths. From the levels, miners blast various tunnels called drifts and crosscuts through the rock to access the ore body at several locations. Drifts run parallel to the ore body, while crosscuts cut across the ore body. Additional tunnels, called raises, are blasted up to adjacent levels and are used for access by miners and equipment, for ventilation, and for moving rock to lower levels.

The more modern method is trackless mining using rubber-tired load, haul, dump (L.H.D.) machines. These machines, which are much larger than the traditional track-machinery, require larger underground tunnels and inclined service ramps called declines. Trackless mining and vertical shaft access can sometimes be combined, but typically a trackless mine's primary access to the underground will be through a decline ramp collared at the surface.

To the Rescue

Each mine trains an emergency response team, also known as a mine rescue team. The teams consist entirely of volunteers who practice on their time off. Since most of our mines are located in isolated areas, it is very important to have a good team of men and women trained in the art of first aid and rescue skills. Every year the mines send teams to compete in the NWT & Nunavut Mine Rescue Competition in Yellowknife. Underground and surface (open pit) trophies are awarded to the best teams who then go on to compete in the Western Regional Finals in Fernie, B.C. every two years.

Mining methods, or the way in which ore is broken from the mineral deposits, varies a great deal. The important thing to know is that the area being directly mined is called a stope. The sole purpose of all other underground workings is to access the stoping area, where the productive ore is obtained. An important consideration is safety. If the rock is weak, then bulk-tonnage methods may not work because the stopes will collapse. Luckily for some of the NWT's more northern mines such as Polaris and Lupin, permafrost made the rock very solid and safe for mining. No matter what form of mining is chosen, safety is always the top priority.

RECOVERING THE MINERALS

A miner's job is to bring the mineral-bearing ores to the surface; it is now the duty of the mill operator to break down the ore to separate the minerals from the rock.

The first step in the treatment of ore is to reduce its size. This is accomplished by various stages of crushing which breaks down the rock into smaller more manageable sizes. Conveyor belts carry the crushed ore to huge rotating steel drums, called grinding mills, where it is mixed with water and sometimes chemicals. Grinding breaks the smaller ore mineral grains free from the waste rock. The resulting product is wet, muddy slurry. Depending on the type of mineral being mined, the next steps vary somewhat.

Diamond ore processing does not require chemicals to separate the diamonds from the kimberlite host rock. Diamonds have unique properties of high density, hardness, and luminescence that enable their separation from the ores. In the recovery building, the diamonds are separated from the waste using X-rays to trigger a unique characteristic of diamonds – diamonds glow under this kind of light.

Diavik Diamond Mines Inc.

Safety Milestones

Diamond mines in the NWT have set world standards in the category of industrial safety. BHP Billiton has a Zero Harm policy that adopts sound principles to govern safety, business conduct, social, environmental and economic activities to the way they do business. Both BHP Billiton and Diavik Diamond Mines were awarded the national J.T. Ryan Safety Awards on numerous occasions, and the mine rescue teams from the NWT have historically performed very well at national competitions.

Ore is a mixture of valuable minerals and waste rock called gangue, which must be separated or concentrated in a facility called a mill, concentrator, or process plant.

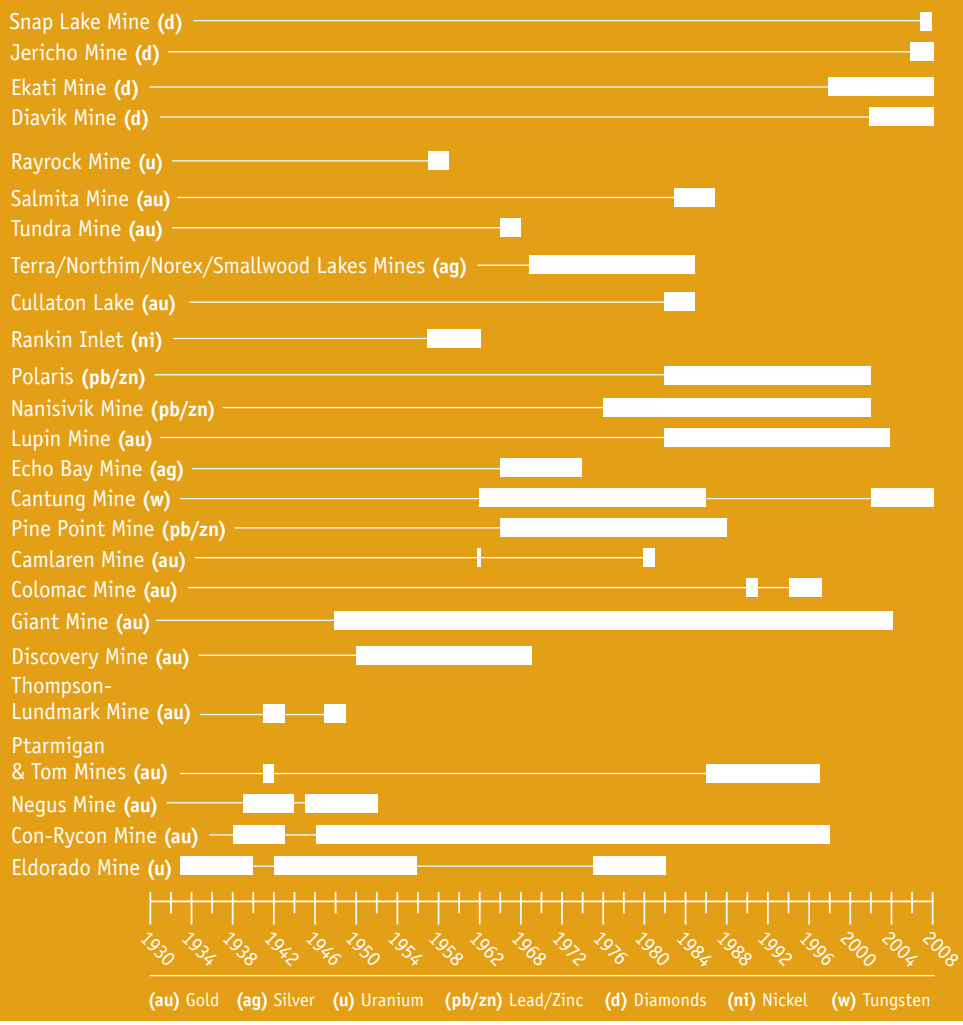
Photo-electric sensors then direct strategically-placed air blasts to blow the diamonds off the conveyor belt into diamond collection receptacles.

With gold and silver, the cheapest method for recovering is to separate the previous metals from the gangue by making use of their chemical and weight differences.

If the minerals and ore can't be separated by gravity, then chemicals such as cyanide are used that dissolve the minerals. Carbon leaching can also be used to collect the precious metals.

Recovering base metals, such as copper, lead, zinc or nickel, is also quite different from diamonds or gold. The ground ore is fed into large tanks, or flotation cells, filled with a soapy chemical solution that is whipped into a froth through blowing air.

Timeline of Mines Operating in the Northwest Territories



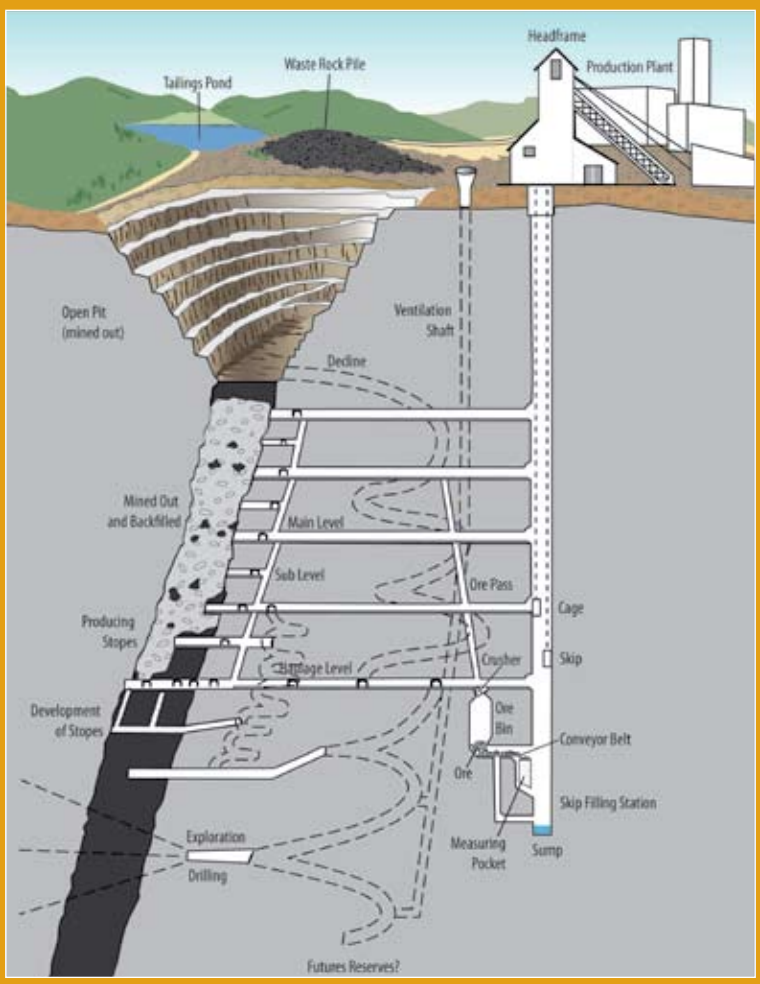
Ore minerals stick to the bubbles and are carried to the top of the tank where a continuously-skimming blade collects the ore-laden froth. Waste rock or tailing is left behind. The wet ore is separated from the solution using filters, and then dried in preparation for shipment to a smelter.

Base metal smelters are very expensive processing facilities that require a very large amount of energy and a large amount of concentrate. None exist, nor will likely be built in the near future, in the NWT.

Gold concentrate, on the other hand, is produced in much smaller quantities than base metals concentrate. Thus, it can be smelted at the mine itself.

Wherever possible, chemical solutions are recycled to be used several times before being pumped into disposal areas, along with the pulverized waste rock. These areas, known as tailings ponds, are carefully designed to prevent any materials from escaping and polluting nearby rivers or lakes.

Diagram of a Typical Mine



Not many people outside the mining industry are aware of the exhaustive process which is involved in constructing a mine and bringing it into production in the North today. In many ways, finding an orebody which can be economically developed, doing the exploration work which is needed, arranging the financing and constructing the mine itself are the relatively easy tasks – despite all of the risks, hard work and frustration involved in each of those phases of the process.

Chapter 5
ENVIRONMENT

INAC/AINC

You gotta have a plan

Meeting stringent environmental protection requirements before mining is allowed to begin is only half the story. Throughout the whole life of the mine, its operations will be continuously monitored to ensure that emissions of waste materials are kept within safe limits. And when the mining operation ceases, the mine must ensure it leaves behind a properly reclaimed site which will not become an environmental hazard in the future.

The approval process is a tough one. In the NWT, mining comes under the Mackenzie Valley Resources Management Act. In Nunavut, the Nunavut Waters Act applies. Through the permitting process, all interested parties are provided the opportunity to participate.

A detailed evaluation of projected environmental effects must be carried out and documented for submission to the Mackenzie Valley Land & Water Board, Nunavut Water Board, or one of the regional boards established under aboriginal claims. In addition, baseline studies to document, amongst other things, fisheries resources, wildlife, water quality, vegetation and stream and lake sediment, are mandatory. These will help identify any significant wildlife or fisheries resources, and rare, threatened or endangered plants or animals that could be affected by mine development.

PART OF THE PROCESS

Mining has been the engine of the Northern economy for more than 70 years. From the radium mined at Great Bear Lake in the 1930s, to first gold brick poured at Con Mine in 1938, and the first diamond found at Point Lake in 1991, mining has been preeminent.

The new mining projects in the NWT and Nunavut sit on a pedestal of sorts. They represent a new generation of environmental philosophy and management. The effort centres on minimizing the impact of mining. The depth of the detail that goes into the planning before permits and approvals are granted is evident in documents such as the environmental impact reports that must be prepared and then defended to the public.

But it's at the mines themselves where the thinking and philosophy become most tangible. Mines like the Diavik and Ekati diamond mines have set world-class standards in environmental policy and innovative technology. From wildlife management to water quality to energy conservation, these Northern mines are breaking new ground and setting the standard against which all Northern mining projects will be judged.

Keep it clean

Clean water is a vital resource for a healthy environment, especially in the North where lakes, rivers and ponds are plentiful. One third of the BHP Billiton claim block is made up of water. This amounts to more than 8,000 lakes within the area. The undisturbed lakes and streams around Ekati are generally very clean, soft and low in nutrients. BHP Billiton conducts a comprehensive aquatic effects monitoring program to ensure that the water around the mine remains clean. Environmental technicians and scientists take water samples, monitor fish populations and the number of microscopic water-borne animals and plants and measure stream flows to determine if mining at Ekati is affecting waters around the mine.

A GIANT PROBLEM

It's often been said about Yellowknife that "the gold is paved with streets." Tunnels and shafts from Con and Giant mines run deep underneath the town. So when 44 people walked off the job at Giant mine for the last time on July 7, 2004, it was not only the end of gold mining in Yellowknife, it was the end of an era.

There is no argument that gold mining was responsible for Yellowknife's birth and subsequent growth. However, the positive impact the industry has left behind also has a toxic flipside now being dealt with. The gold at Giant Mine was found in combination with arsenopyrite, whose principle element arsenic is a deadly poison. When the gold was roasted from the arsenopyrite ores, arsenic trioxide was left behind. In the 1950s the only solution was to bury the wastes in frozen underground caverns or stopes, but now concerns have been raised that it might find its way into the environment. Today, crews are working to freeze 237,000 tonnes of arsenic trioxide deep underground at Giant.

Up Here Publishing, Michael Ganley

Keeping tabs

Kim Horrocks first came North in 2002, armed with an environmental science degree from the University of Ottawa, a graduate degree in natural resource science from the University of Northern BC, and a strong environmental ethics. As environmental permitting coordinator for De Beers Canada's Snap Lake mine, she is responsible for ensuring that all samples for monitoring programs are submitted to the appropriate regulatory authority on time. "Mining still gets a bad rap," Horrocks says. "But it's one of the industries that's progressed hugely in the last decade, let alone in the last fifty years, in terms of environmental standards."

Kevin O'Reilly, Independent Environmental Monitoring Agency

Cold to the core

Mines in the North have to not only protect water around where they work, but also often have to take steps to keep water out of the areas they're working in. Frozen core dams are used to prevent water from flowing into pits and impoundment areas. These dams are similar to earth-fill dams, but utilize the natural Arctic temperatures to enhance their effect. The ground is kept frozen using thermosyphons.

A thermosyphon is a long pipe that is closed at both ends. One end of the pipe is buried in the ground in a frozen core dam and the top sticks out of the ground. The pipe is filled with liquid carbon dioxide (CO_2) that flows up and down the pipe. As the cold CO_2 liquid flows down the pipe, it helps keep the ground frozen. When it gets underground, the ground (which is warmer than the air) heats up the liquid and forms a vapour that rises to the top of the pipe, carrying heat from the ground with it. Once above ground, the CO_2 turns back into a cold liquid and whole process starts again. If enough thermosyphons are spaced close to together, the ground will be frozen year round, thus forming the frozen core dam.

Frozen core dam technology has proven to be a successful cost effective method of earth dam construction utilizing what is perhaps the most abundant natural resource in the Arctic: cold weather!

PUT IT BACK IN PLACE

All mining has an impact on the environment. Yet, with careful planning, and through consultation with all stakeholders and community partners, the environmental disturbance caused by mineral exploration and activity can be minimized. The application of environmental management practices helps protect the air, land and water during the active life of a mine. Modern rehabilitation techniques, aided by the knowledge of traditional land users, enable the restoration of the environmental health and productivity of the area.

Using progressive reclamation, mine sites are prepared throughout their life for eventual closure. Contouring of country rock piles to create smooth hills that allow caribou safe access, and the creation of new fish habitat are examples of such reclamation.

At Diavik, for example, in constructing rockfill dikes to access the four ore bodies, the company temporarily borrows less than 0.5 percent of the area of Lac de Gras. This will remove some fish habitat during mining. But the coarse rockfill on the outside of the A154 dike forms new fish habitat that helps compensate for this loss. In addition, during mining, rock shoals will be built inside the dike area to create fish habitat upon eventual closure. At that time, the area behind the dikes will be flooded, the dikes will be breached, and the area returned as part of Lac de Gras. As per Canadian Fisheries Regulation, there will be no net loss of fish habitat.

Environmental protection has certainly added to the cost of Northern mining. But it pays a great deal of benefits too – to the NWT and Nunavut, their people and even the mining companies.

Northwest Territories Geoscience Office/Le Burea geoscientifique des Territoires du Nord-Ouest

Mining barely scratches the surface

Most people are very surprised to discover that mining occupies very little land area in the north. The total land area of all mining operations, including those mines no longer operating, is about 110 square kilometers. That is about 0.003% of the total area of the Northwest Territories and Nunavut. To further put this into perspective, the developed area of the City of Yellowknife takes up about 80 square kilometers of land, so all our mines put together could easily fit into the municipal boundaries of the city, which totals about 130 square kilometers.

As an industry, mining and exploration is the North's second-largest employer. Only government creates more jobs. Mining offers top wages, and employs a wide level of skills and trades – carpenters, diesel mechanics, electricians, heavy duty mechanics, machinists, millwrights, plumbers, pipefitters, and welders, just to name a few.

Chapter 6
ECONOMY

Jobs, jobs, jobs

In addition to miners and tradespeople, the industry relies on a full administrative staff, including managers, administrative assistants, computer technicians, safety and security staff, clerks and more. Then there are the people who keep the remote site itself running smoothly: nurses, cooks, housekeepers, transportation specialists, and even weather observers.

And, of course, who could forget the people who take a project from discovery to mine, the engineers, geologists, accountants and more. They determine the most cost-effective way of reaching the ore body, how to mine it economically and efficiently, and how to process the ore and recover the maximum mineral content at the lowest cost.

Mining exploration itself creates hundreds more jobs. You need prospectors, labourers, geophysicists, geochemists, drillers, assayers, surveyors, claim-stakers, road-builders, blasters, expediters, pilots and cooks to explore for minerals.

The economic benefits of the mining and exploration industry extend into the Northern community in other ways, too. Mining provides employment for many other support services, including local businesses ranging from the grocery store to the fuel company. When a mine orders its annual fuel supply, it usually does so in terms of millions of litres – and its food and other supplies by the tonne. Where possible, most mining and exploration companies try to buy locally and support Northern businesses.

DIAMONDS ARE OUR BEST FRIEND

Many longtime Northerners say the diamond industry came along at just the right time. With the Northwest Territories's gold mines in decline, people were wondering what would come next. They found their answer in diamonds. Now accounting for more than 50 percent of the territory's economy, the diamond industry has brought the NWT the highest yearly gross domestic product growth in Canada.

In addition to diamonds, the commodities boom of the 21st century has meant a new interest in base metals like lead, zinc, and nickel, together with uranium and rare earth metals and exploration for these minerals has boomed in the north. On top of this, the price of gold has slowly been rising in the last five years with the possibility to develop a strong new gold mining industry in the north.

Mines provide many direct economic benefits in the form of jobs. But at each stage – from exploration to final sale – the North's economy and communities are seeing a variety of economic and social benefits. Those benefits can include still-booming diamond exploration, the operation of cutting and polishing facilities, diamond tourism and employment and training skills which will hopefully stay with Northerners long after the mines close.

De Beers Canada Inc.

Engineered for success

Aboriginal Engineering Ltd. was formed in 1995 when a group of people from the Tlicho community of Rae-Edzo (now called Behchoko) approached Yellowknife engineer Bob Johnson about starting up an aboriginal-owned engineering company. They had noticed projects were taking place in their region, but that local people weren't always getting the jobs. They wanted that to change. "They knew their people could do the work, they just wanted the opportunity," Johnson says.

The company got that opportunity. The firm did quality control on the construction of Diavik's A154 dike, and also did production and placement of structural concrete on the site. They also provided underground surveying for the Snap Lake project. The company has grown to employ between 15 and 40 people, is 100 percent Aboriginal owned, and has a workforce that is 95 percent Aboriginal.

Diavik Diamond Mines Inc.

Diamonds make a difference

- The value of diamond exports from the NWT stood at more than $1.6-billion in 2005, almost twice the level of 2002 and more than three times the value exported during the first year of production.
- Over 90 per cent of Canada's diamond exports go to the United Kingdom and Belgium.
- Per capita GDP in the NWT increased at an annual average rate of 12.5 per cent from the first diamond exports in 1999 to the end of 2005, triple the national average of 4.2 per cent. From 1993 to 1998 the NWT's annual average was 1.7 percent.
- Between 1999 and 2005 manufacturing shipments in the NWT increased at an average annual rate of 38 per cent, far above the national average of 2.8 per cent.
- Between 1999 and 2004 the average annual increase in personal income per capita in the NWT was 4.8 per cent. In the rest of Canada it was 2.8 per cent.
- Between 1993 and 1998 the NWT registered a 4.5 per cent average annual increase in retail sales, just below the national average of 4.8 per cent. From 1999 to 2005 retail sales in the NWT grew at an annual average rate of 8.2 per cent, compared to the national average of 5.1 per cent.

Source: Diamonds: Still Shining Brightly for Canada's North, Statistics Canada, June 2006.

JOINING UP FOR SUCCESS

When BHP Billiton opened the Ekati diamond mine in 1998, the company was faced with a different business and political climate than mining companies had previously experienced in the North. Today, many aboriginal governments have either settled land claims or have made significant progress in their negotiations. Their leadership is determined to get the greatest benefit for their people out of the extraction of the North's riches.

Socio-economic agreements between the mining companies and aboriginal communities now creates opportunity – and lots of it. Aboriginal groups are cashing in on the business opportunities that abound with a strong mining and exploration industry, through the creation of joint venture companies.

The Dogrib Resources Development Corporation (DRDC) was one of these aboriginal companies that took advantage of construction projects available during Phase One of the building of the Snap Lake diamond mine. In a joint venture with Ledcor, DRDC built the bulk sample processing plant, its cold storage building, installed the fuel tanks on its fuel farm and installed water and wastewater distribution pipes.

The mining industry knows that it's a two-way street with aboriginal joint ventures, and both sides end up benefiting. The benefits range from developing a skilled Northern workforce and not having to rely on imported workers from southern Canada, to using companies that know how to work in the always-challenging NWT environment.

INAC/AINC

Up Here Publishing, Jasmine Budak

The benefits flow

Did you know that for every one mine worker in Canada, there are at least four other employees dependent on him or her for their livelihood? This translates to many more benefits than are seen by merely looking at mine employment figures.

The North's mining and exploration industry is committed to Northerners and Aboriginal people, and to establish and maintain long-term, mutually-beneficial relationships with customers, suppliers and partners. That's why, when taking a project through to the mine phase, many companies make commitments to hiring levels for Northerners and Aboriginal people.

Chapter 7
COMMUNITY

De Beers Canada Inc.

Building a Northern workforce

For example, the Diavik diamond mine committed to supporting a 40 percent northern workforce during construction – a level that it achieved, and even surpassed by 4 percent. It carried this over to its operations phase, committing to 66 percent northern employment and 40 percent Aboriginal employment. The same sort of agreements are in place at many of the other mining companies.

Similarly, the industry often commits to reaching certain levels of Northern purchasing. By so doing, the industry ensures the economic benefits of Northern mining and exploration reach throughout the community.

AGREEING ON BENEFITS

Amber Whitford is a shining example of what can happen when individual potential is supported and fostered. A graduate from Sir John Franklin High School in Yellowknife, she went on to enroll in medical school. But education costs kept escalating for her medical studies, making it difficult for her to focus on her schooling. Then Whitford received financial assistance from the North Slave Métis Alliance scholarship fund – a fund established through the impact benefit agreement between the North Slave Métis Alliance and BHP Billiton, operators of the Ekati diamond mine. Whitford went on to successfully complete her schooling.

Programs for high school, post-secondary and employee family scholarships, bursary awards, and through aboriginal organizations, are supported throughout the North by the mining and exploration industry. In 2004, for example, 109 recipients received over $180,000 in scholarship awards from the Diavik diamond mine. Scholarships are another way that the mining community supports the North, and continues to help Northerners grow along with the industry.

FROM FISHING DERBIES TO DIAMONDS

Mining companies support communities in many different ways: from employment and economic growth, to organizing and funding community events. Each spring, a couple dozen BHP Billiton employees donate their time on a weekend to help more than 500 kids learn about bike safety. The bike rodeo is one of about 50 community causes that the different mining companies sponsor. Others include the

Diavik Diamond Mines Inc.


Diavik Diamond Mines Inc.

Building for the community

In November 2004, Yellowknife celebrated the completion of Phase Two of the city's new Multiplex arena – the construction of a badly-needed second ice surface. Only a year earlier, it had seemed the project would not be completed until 2007, if at all, as a result of unforeseen cost overruns during the construction of Phase One. But that was before a medley of community-spirited people and companies.

Diavik Diamond Mines led the charge to complete the Multiplex construction. The company managed the construction of Phase Two, using its purchasing power and project management expertise to make the project more efficient. In the end, the diamond company reduced the cost of the project to $2.8-million, down from $4.5-million, and finished on schedule.

Open Sky festival, Kugluktuk family literacy project, Polar Bear Swim Club, Caribou Carnival and the SnowKing festival.

As seems fitting, diamond companies have also supported communities with their diamonds. At the Nunavut legislature in Iqaluit, a 2.2-carat diamond from the Jericho mine, and donated by Tahera Diamonds, decorates the mace. A 1.31-carat diamond mined in the Northwest Territories also crowns the mace of that territory.

And it isn't only mining companies that are helping to reinforce communities. Exploration companies operating throughout the North are also taking up the challenge. On north Baffin Island, Baffinland Iron Mines has conceived of an ambitious program to promote the use of safety helmets by people riding ATVs in Pond Inlet. Through a partnership with Toonoonik Sahoonik Co-op, the company spent almost $30,000 on helmets for children from the ages of four to 16 in the community. Mining and exploration companies today are an important part of the community landscape, improving the lives of all Northerners, as they are a part of the economic makeup of the North.

GOOD CORPORATE CITIZENS

In 2004, the Yellowknife Catholic School Board inaugurated a forward-thinking approach to education with the opening of the new Kimberlite Career and Technical Centre in Yellowknife. Designed to give students exposure to occupations in the trades, the centre features a multi-station lab, as well as training labs in welding, electronics, construction and small engine repair.

The project was made possible by a $500,000 investment by De Beers Canada Mining, and support from various companies in the community. Subsequently, support from the mining and exploration industry has helped to maintain and expand the centre.

The Kimberlite Centre is an example of the modern approach mining companies have adopted toward community development. In the early days of mining, companies often built communities, such as Pine Point or Nanisivik, to house and provide services to mine workers and their families.

Today, with the proliferation of fly in/fly out operations, most companies have adopted a different philosophy: Instead of building new communities, they now support existing communities. Corporate citizenship – the responsibility to contribute to the quality of life in communities affected by mining operations – is a key value for mining and exploration companies working in the NWT and Nunavut.

Is mining and exploration right for you?

The mining and exploration industry has always played a huge role in the success of the North. But the industry needs talented people to continue to succeed. Here's how you might know if a career in mining and exploration is a good choice:

1) Do you like to work with, and use, technology?

2) Do you like working together as part of a team?

3) If you're faced with a problem, do you keep working at it until it's solved?

4) Does the Northern environment, including its plants and animals matter to you?

5) Is it important to you that the healthy North continues to grow and prosper?

6) Are you looking for a career with a growing future?

J. Hermann

Fly-In Operations

"Fly-in, fly-out", or commuter mining operations have become an industry standard in the north. Miners and other staff work shifts ranging from two weeks "in" and two weeks "out" to nine weeks in and three weeks out. Senior management staff sometimes work four days in followed by three days off on a weekend. The mines accept responsibility for flying their workers in and out, to both northern and southern homes. In the early days of mining in the north, companies built entire townsites to house workers and their families. It was a necessity of attracting a stable workforce since most of our mines were isolated and people would only go there to work if the amenities of town life were available. Mining settlements such as Cantung, Pine Point, Nanisivik, and Discovery were townsite-based and are now a thing of the past. Townsites are expensive and when the mine closes they leave behind social challenges. Commuter mining, with camp accommodation for miners only, is the apparent solution. The mining companies spend millions of dollars to make their mining camps comfortable since they will be home to hundreds of people for many weeks. Satellite television, regular Internet access, gourmet food, and modern recreational facilities are among the amenities enjoyed by the modern miner.

Mines Operating in the NWT & Nunavut 2007

Four diamond mines and one tungsten mine were in production in the NWT and Nunavut during 2007, while several other types of mines were in advanced stages of exploration.

EKATI DIAMOND MINE

BHP Billiton's Ekati Diamond Mine has been in operation since 1998 when it became North America's first diamond producer. It was here that geologist Chuck Fipke discovered diamonds in 1991. Ekati is a combined open pit and underground mine. Currently, it operates the Fox open pit and is underground mining the Koala and Koala North kimberlite pipes. In 2006, the mine produced 1,034 person years of employment. 60% of these hours went to northern residents including 33% of the total hours being provided by aboriginal residents. In 2006, the mine processed 4.5 million metric tonnes of ore to produce 3.1 million carats of diamonds.

DIAVIK DIAMOND MINE

Diavik is a joint venture between the former Aber, now re-branded as Harry Winston Diamond Corporation (40%) and Diavik Diamond Mines Inc. (60%), a wholly-owned subsidiary of Rio Tinto plc. The mine has been in commercial production since early 2003 with all production coming from the A-154 pipes. Underground development has begun on the A-154 and A-418 pipes, and preparation work for open pitting the A-418 has also started. The mine employs about 760 people, of which 67% are northern residents, and 50% of these are aboriginal. In 2007, the mine produced 11.8 million carats of diamonds.

JERICHO DIAMOND MINE

The Jericho Diamond Mine started production in early 2006. It is owned by Tahera Diamond Corporation and is located in Nunavut. Jericho is the territory's only producing mine. Jericho is an open pit mine but compared to the other diamond mines it is quite small. In 2006, the mine processed 539,000 metric tonnes of ore to produce 296,000 carats of diamonds.

SNAP LAKE MINE

The Snap Lake Mine is Canada's newest producing mine, and its first fully underground diamond mine. The mine is owned by De Beers Canada, and began production in late 2007. It is expected to produce 1.4 million carats of diamonds each year. De Beers is also in the permitting process for another site, the Gahcho Kue project.

CANTUNG TUNGSTEN MINE

Cantung is the Canada's only tungsten producer and since entering production in 1962 has been the most important deposit of this mineral in the Western World. The mine is owned by North American Tungsten Corporation. Opened in 1962, the mine was forced to close in 1986. The current owners rehabilitated the mine in 2001 and commenced production the following year. After a year-long shutdown, the mine reopened in September 2005 and has been producing steadily since. The mine trucks high-grade tungsten concentrate to Watson Lake for smelting and employs about 170 people in a camp environment, whereas the original mine operated a townsite called 'Tungsten'. In its fiscal year-ending September 30, 2006, North American Tungsten processed 339,743 short tons of ore to produce 237,869 metric tonne units (MTU) of tungsten concentrates.

NWT & NUNAVUT
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Since 1967 the NWT & Nunavut Chamber of Mines has been a voice of the Mining and Mineral Exploration industry in the North. The Chamber is funded by membership companies, individuals, and organizations. It is governed by a Board of Directors and managed by a small staff.

The Chamber acts as an advocate for mineral development in the North and participates in initiatives and projects that involve or may impact mining. These include regulatory reforms, the Protected Areas Strategy, and mineral policy issues. The Chamber acts as a point of contact for any concerns or queries regarding land access, employment, economics, mining history, and infrastructure development.

The Chamber supports and helps to organize NWT Mining Week, the Geoscience Forum, and the Nunavut Mining Symposium.

Funding provided by Indian and Northern Affairs Canada / Affairs indiennes et du Nord Canada

Cover Photo: J. Hermann