

ReSDA Atlas: Summary of Yukon Mines



2016

Compilation of summary information of mines
past and present for the Yukon

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COMPILATION OF SUMMARY INFORMATION OF MINES PAST AND PRESENT FOR THE YUKON

Bellekeno Silver Mine

Brewery Creek Mine

Casino Project

Clinton Creek Mine

Coffee Gold Project

Eagle Gold Mine

Elsa Mine

Faro Mine

Historic Keno Hill Mine District

Ketza River Mine

Mactung Project

Minto Mine

Mount Nansen Mine (Yukon)

Tagish Lake/Mount Skukum Gold Project

Sa Dena Hes (Mt. Hundere) Mine

Tantalus Coal Mine

Whitehorse Copper Belt Mines 1900-1920

Whitehorse Copper Belt Mines 1967-1982

Wolverine Mine



BELLEKENO Silver Mine

Description of the mine

The Bellekeno mine is a former silver mine located 330 kilometres north of Whitehorse in Yukon's Keno Hill, which is classified as a polymetallic silver-lead-zinc vein district. It is one of the world's highest-grade silver mines and during its latest production phase from 2011-2013 it was Canada's only primary silver mine. Bellekeno is the first mine, among more than 35 mine sites, to be reopened in the historic Keno Hill district, which has not seen any production since 1989. United Keno Hill Mine Ltd. originally operated the Bellekeno mine during peak silver production in the Keno Hill district in the mid-1900s. Alexco Resources purchased the Keno Hill Silver District in 2006. It reclaimed Bellekeno and in 2011 began production at the mine. Operations were suspended in the fall of 2013 due to low silver price. Despite a halt in production Alexco Resources remains actively engaged in the Keno Hill district and plans to resume operations once prices recover.

Photograph

Various photographs of the mine site are available on the Alexo Website at http://www.alexcoresource.com/s/photo_gallery.asp

General Information

Location: Keno Hill Silver District, Klondike, Yukon

Type of mine and ore: Underground (long hole mining), silver

Owner(s): Alexco Resource Corp. (2006 - present), United Keno Hill Mine Ltd. (past)

Time of operation: January 2011 to September 2013

Average number of employees: up to 280 employees and contractors during operations; approximately 150 employed directly at the mine or mill

Estimated size of ore body: Indicated 224,100 tonnes; Inferred 111, 1000 tonnes

Average production value: Indicate 4,927,000 ounces of Ag; Inferred 3,344,000 ounces of Ag

Local employment figures: 50-65% of the workforce were Yukon residents

Percentage of Indigenous employees: 12% First Nations; approximately half are from the local band

Mining activities conducted: year round; fly in fly out operation

Nearby communities:

- Keno City (2 km/1.5 miles)
- Village of Mayo/First Nation of Na-Cho Nyak (48 km/30 miles)
- Whitehorse (330 km/205 miles)

Access to mine: By road

Impact and Benefit Agreement (IBA): Yes, Alexco Resource Corp. has signed a Comprehensive Cooperation and Benefits Agreement with the First Nation of Nacho Nyak Dun
<http://www.alexcoresource.com/s/news.asp?ReportID=510292>

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> • The purchase of Bellekeno and surrounding sites included an agreement for major environmental remediation of the area. Over 17\$ million has been spent on remediation and zinc releases from a historic mine have been reduced by 99.5%. • Contributed \$53 million to the region by employing regional businesses and donating to community organizations • Reinvigorated local businesses, population of Keno City has doubled • Extensive environmental monitoring • Provides work for over 180 Canadian employees, 50% of which are Yukon residents 	<ul style="list-style-type: none"> • Approximately 100 employees were affected by the shut down in 2013 • Mine draws heavily on an energy-strapped grid. Use of diesel increased from a normal 120,000 L a year to 550, 000 L when Bellekeno came on to the grid. Difficult to determine if this is costing consumers. • Concerns that Alexco Resources did not sufficiently incorporate comments from community members when selecting the mine site (see Pétrin 2012)

Relevant Links

- Keevil, M. (2015). [“Site visit: Alexco finds silver lining at Keno with Flame & Month”](#) *The Northern Miner*
- CBC News (Dec. 6, 2013). [“Alexco wants to head back to work at Keno Silver Mine”](#)
- Seeking Alpha (Oct 21, 2013). [“What it really costs to mine silver: the second quarter Alexco silver edition”](#)
- CBC News (July 17, 2013). [“Yukon’s Bellekeno silver mine to shut down for winter”](#)
- Alexco Resources (July 17, 2013). [“Alexco Reports Increased Silver Production in Second Quarter 2013; Low Silver Prices Prompt Plans for Suspension of Winter Operations”](#)
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- Jickling, P. (2012). [“Ready or not: The impact of a single Yukon Mine”](#) *Up Here Business*
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- CBC News (Aug. 23, 2010). [“Yukon silver mine near production”](#)
- Munson, J. (Dec 17, 2010). [“Bellekeno burns up diesel”](#) *Yukon News*
- Nauman, C. (Dec. 11, 2009). [“Alexco a peaceful neighbour”](#) *Yukon News*
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- Alexco Resources (2009). [“Bellekeno Project – Updated Preliminary Economic Assessment Technical Report”](#)
- Alexco Resources (2009). [“Corporate Report”](#)
- Alexco Resources (2008). [“Bellekeno Preliminary Economic Assessment Technical Report”](#)

Link to Environmental Impact Statement/Review Board Decision: <http://www.emr.gov.yk.ca/mining/bellekeno.html>

List of relevant research:

Castro, R.J. (August 21, 2006). "[Great Mining Camps of Canada 1. The History and Geology of the Keno Hill Silver Camp, Yukon Territory](#)". *Journal of the Geological Association of Canada*, 33(3): 103-134. <https://journals.lib.unb.ca/index.php/GC/article/view/2686/3103>

Rébecca, P. (2012). [Protection de L'Environnement Par L'Acceptabilité Social? Le cas des mines au Yukon](#) (Master's Thesis) University of Sherbrooke: Sherbrooke, Quebec.

Zobaidul Kabir, S.M., Rabbi, F., Chowdhury, M.B., and Akbar, D. (2015), "[A Review of Mine Closure Planning and Practice in Canada and Australia](#)". *World Review of Business Research*, 5(3): 140-159. 21 pages

Training programs:

- Underground mine training program (8 in 2010, all First Nation)
- Scholarship program with First Nation of Nacho Nyak Dun

Impact Benefit Agreement: Agreement is private



BREWERY CREEK Mine

Description of the mine

Brewery Creek mine was Canada's first large scale heap leach gold mine and the largest leach gold mine to operate in the Yukon. The mine was projected to last 8 years but low commodity processes pushed the mine to close after only 5 years of production. The mine operated from 1997-2002 and the majority of the reclamation for the mine site is complete. Brewery Creek mine was the last mine in operation before the Yukon experienced a 6-year period with no active mining operations. The Brewery Creek mine property has passed through several hands over the last two decades and is presently owned by Golden Predator Corporation. Golden Predator is considering restarting mining operations and completed a Preliminary Economic Assessment in 2014. Next steps for the company include feasibility studies, completing permitting and finding a qualified operator to be a joint venture partner.

Photograph

General Information

Location: Dawson Creek Mining District, northwestern region of the Yukon

Type of mine and ore: Open-pit heap leach, carbon adsorption/desorption/recovery; gold

Owner(s): Golden Predator Canada Corp (since 2012), Alexco Resource Corp. (2005-2012), Quest Mortgage Corp/Spectrum Gold (2003-2005), Viceroy Minerals Corporation (1996-2003), Loki Gold Corporation (1993-1996)

Time of operation: 1997 to 2001

Average number of employees: peak production periods 145 workers; winter 45 workers

Percentage of Indigenous employees: Percentage of indigenous employees is unknown. During mine construction 45 members of the Tr'ondek Hwech'in First Nation were employed by the mining company or hired by sub-contractors

Estimated size of ore body: 1.4-2.6 million tonnes mined; indicated resources 3.976 millions tones; inferred resources 2.214 tonnes

Average production value: 280,000 ounces of gold produced; remaining indicated 577,000 troy ounces of gold; remaining inferred troy 279,000 troy ounces of gold

Local employment figures: 58% from Dawson City, 31% Whitehorse (Average 85%-100% Yukon Based)

Mining activities conducted: year round; seasonal (April-October) open-pit mining

Nearby communities:

- Dawson Creek (55 km, 34 miles)

Access to mine: Paved and gravel roads from the junction of the North Klondike and Dempster Highways

Impact and Benefit Agreement (IBA): Yes, 2012 and 1996 Socio Economic Accord with the Tr’ondek Hwech’in First Nation

<http://www.prnewswire.com/news-releases/golden-predator-and-trondek-hwechin-first-nation-update-brewery-creek-project-socio-economic-accord-162574596.html>

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> • Reclamation process was well regarded; 1999 and 2002 recipient of the Robert E. Leckie Award for Outstanding Mining Reclamation Practices • Viceroy Resource recognized as an environmental leader in the Canadian mining industry (1997) • Large portion of employees were Yukon based • Agreement, support, and collaboration with Tr’ondek Hwech’in First Nation continued post-closure and was renewed in 2012 • Original agreement provided for employment, subcontracting, scholarship and apprenticeship funds, finder’s fee, First Nation representation at management meetings and a framework for joint venture activities • In 2011 Gold Predator spent over 16\$ Million at local Yukon Vendors 	<ul style="list-style-type: none"> • Early closure of the mine due to low commodity prices • Alexco Resources was “non-compliant” with its water license in 2006

Relevant Links

- Ronson, Jacqueline (2013), [Tr’ondek Hwech’in supports Brewery Creek](#), *Yukon News*
- Ronson, Jacqueline (2013), [YESAB denies low-level assessment for Brewery Creek](#), *Yukon News*
- Winter, Jesse (2013), [Hungry for action at Brewery Creek](#), *Yukon News*
- CBC News (2012), [Tr’ondek Hwech’in First Nation update deal with Brewery Creek gold mine](#)
- Golden Predator Corp. (2012), [Brewery Creek Bulletin News, 1, Issue 1, March 2012](#)
- Golden Predator Copr. (2012), [Brewery Creek News Volume 1, Issue 2, April 2012](#)
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- Government of Yukon Energy Mines and Resources (2011), [Case Study Of Brewery Creek](#)
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- Canadian Centre for Community Renewal, Tr’ondek Hwech’in First Nation, and the Canadian Northern Economic Development Agency (2009), [Aboriginal Mining Guide](#)
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- Querengesser, Tim (2006), [Alexco in 'non-compliance' at Brewery Creek](#), *Yukon News*
- Hodge, R Anthony and Rick Killam (2003), [Post-Mining Regeneration Best Practice Review: North American Perspective](#)
- Viceroy Resource Corp. (1998), [Going for Gold Annual Report](#)
- Sawa, Timothy (1996/1997), [Yukon alchemy: a mine raises environmental concerns](#), *Maclean's* 109(53): 92-93. Abstract: Viceroy Resources Corp's Brewery Creek gold mine, located near Dawson City, Yukon, is the first Canadian mine to try large-scale heap-leach mining. The process uses cyanide to extract the gold from the ore. Environmentalists are concerned that the cyanide could leak into the water supply. 323 pages.
- Horan, Mark, James Barr, Marvin Silva, Nick Michael, Donald E. Hulse, M. Claiborne Newton, Joseph M. Keane, Michael Lechner. Nov 19, 2014. [Preliminary Economic Assessment for the Brewery Creek Property, Yukon Territory, Canada. National Instrument 43-101 Technical Report](#). Tetra Tech EBA.

Link to Environmental Impact Statement/Review Board Decision: http://www.emr.gov.yk.ca/mining/brewery_creek.html

List of relevant research:

Wilson, Gary (1996), "Anatomy of a Joint Venture: One First Nation's determination has sent a benchmark in northern mining". *Making Waves*, 7(4): 9-13. Republished: <http://communityrenewal.ca/sites/all/files/resource/MW070409.pdf>

Training programs:

- Scholarship Fund
- Apprenticeship Fund

Impact Benefit Agreement: Agreement is not publicly available



CASINO Project Mine

Description of the mine

The Casino project is a proposed copper and gold mine located in southwestern Yukon, 300 kilometers north of Whitehorse. This Western Copper and Gold Corporation project has been under YESAB environmental review since 2008. The Yukon Environmental Review board (YESAB) has recently requested more information from the project proponent, delaying the final assessment review decision. If accepted, the Casino mine would provide employment for 1000 people during the construction phase and 600 workers during the mine's operation. It is estimated that the mine would produce 120 000 tonnes of ore per day, with an estimated total ore body of 965 million tonnes. The mine would most likely operate for 22 years.

Photograph

<http://www.cbc.ca/news/canada/north/yesab-casino-mine-panel-review-1.3454129>

General Information

Location: 300 km north of Whitehorse, Yukon Territory

Type of mine and ore: open-pit copper, gold, molybdenum, and silver mine

Owner: Western Copper and Gold Corporation

Date opened: Project is currently under environmental review

Estimated mine life: 22 years

Average number of employees: 600 workers expected

Estimated size of ore body: 965 million tonnes

Estimated production value: 120 000 tonnes/day

Local employment figures: Unknown

Percentage of Indigenous employees: Has yet to be determined

Mining activities conducted: year-round

Nearby communities:

- Pelly Crossing (138 km, 86 miles)
- Carmacks (176 km, 109 miles)
- Mayo (252 km, 157 miles)
- Whitehorse (300 km, 186 miles)

Access to mine: road

Impact and Benefit Agreement (IBA): Has yet to be negotiated

Impacts of Mine - Anticipated

Positive	Negative
<ul style="list-style-type: none"> • Provide employment to locals during the construction and operation phase of the mine. • Impact and benefit agreement will be signed between the Casino mine company, the Government of Yukon, the Little Salmon/Carmacks First Nation, and the Selkirk First Nation. • The project is expected to generate \$6.4 billion in benefits for Yukon from construction through to the end of the initial 22 years of operations, and an additional \$1.8 billion in tax and royalty revenue. 	<ul style="list-style-type: none"> • Environmental and wildlife concerns over the proposed earth-filled dam that would be the largest tailings dam in the world. • Concerns over mine remediation and reclamation due to its enormous size (larger than Faro mine) and the potential for the tailings dam to fail. • Road to the Casino mine could have a potential negative impact on the Klaza caribou herd. • The liquefied natural gas (LNG) used to power the plant would significantly contribute to the Yukon's greenhouse gas emissions.

Relevant Links

- Western Copper and Gold Corporation website: <http://casinomining.com/>
- Yukon Conservation Society stance on project: <http://yukonconservation.org/programs/mining/proposed-upcoming/casino-mine>
Casino Mine: The Biggest Gamble with the Yukon's Environment Yet
- CBC News (April 11, 2016). [Environmentalists questions Yukon gov't charter with mine company.](#)
- CBC News (Feb 18, 2016). [Yukon's massive Casino Mine project sent for highest level of review](#)
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- Keevil, M. (2016). [Site visit: Western Copper sees Casino as an economic driver in the Yukon](#), *The Northern Miner*
- Forrest, M. (Feb. 18, 2016). [Casino's massive mine proposal sent to highest level of assessment](#), *Yukon News*
- The Whitehorse Star (2016). [Concerned about Casino](#)
- CBC News (Feb. 24, 2016). [Yukoners want information about Casino mining project](#)
- Topf, A. (2016). [Huge Yukon copper-gold mine heads to environmental review](#), *Mining.com*
- Kwantes, J. (2015). [Charging into Yukon's new gold rush](#), *Vancouver Sun*
- DELCommInc (2015). [Digging Deep – One billion tonnes of ore at Western Copper and Gold Corporation's Casino project](#), *North of 60*
- Mathisen, H., Edwards, T., and Quenneville, G. (2015). [Mineral Pursuit: Yukon](#), *Up Here Business*
- McCrae, M.A. (2015). [The importance of low cost LNG for driving Western Copper and Gold's Casino project](#), *Mining.com*
- CBC News (2015). [Casino mine proposal still lacks info, say Yukon gov't, First Nations](#)
- CBC News (2015). [Casino Mine project unaffected by weak metal prices, says president](#)
- CBC News (2014). [Yukon Casino mine 'large in all aspects'](#)

Panel Review – Proposed Casino Mine Project. <http://casinomine.panelreview.ca/> Yukon Environmental and Socio-economic Assessment Board.

The Executive Committee received a project proposal from Casino Mining Corporation (CMC) for the proposed Casino Mine on January 3, 2014. The Project includes the construction, operation, decommission and remediation of a copper, gold, silver and molybdenum mine 150 km northwest of Carmacks and 300 km from Whitehorse. The Project will process approximately 120 000 tonnes of ore per day, or 43.8 million tonnes per year, over a 22-year mine life. The Casino Mine would be the largest mine in Yukon history and one of the largest in Canada.

On February 18, 2016, after reviewing information submitted by the proponent and all comments submitted by participants, the Executive Committee has determined that the Casino Mine Project requires a Panel Review.

Link to Environmental Impact Process Statement: <http://www.yesab.ca/2015/05/executive-committee-releases-second-information-request-for-the-casino-mine-project/>

List of relevant research: No research has yet to be conducted

Review Board Decision: Has yet to decided

Training programs: Have yet to be determined

Impact Benefit Agreement: Has yet to be negotiated

Reports from Subprojects and Theme Coordinator work: None



CLINTON CREEK Mine

Description of the mine

Clinton Creek is an abandoned former asbestos mine located northwest of Dawson City and within the traditional territory of the Tr'ondëk Hwëch'in. It is currently under government care. The open pit mine was owned and operated by Cassiar Asbestos Corporation Limited for 10 years until it mined all the economically valuable asbestos in the area. Approximately 16 million tonnes of serpentinite rock containing 940,000 tonnes of white asbestos (known as chrysotile) was removed from three pits at the site, at a rate of 3,300 tonnes of ore per day. Cassiar also operated a townsite, which had a population of approximately 500 while the mine was in full operation. From 1978 to 1991, the company attempted to implement an abandonment plan and completed a few remedial activities at the site. In 1991, the company was purchased by Pinceton Mining Corporation. Over the following years, various weather events destabilized creek channels and caused erosion onsite, which increases the potential for flooding. In 2002, the federal government worked on stabilizing the site under the emergency section of the federal Yukon Waters Act. In 2003, the Devolution Transfer Agreement (DTA) was implemented. Under the DTA, the Government of Yukon became responsible for care and maintenance of the property along with leading the development and implementation of a remediation plan. The financial responsibility for the site continues to reside with the Government of Canada who provides 100 per cent of the funding for care and maintenance as well as for the development of a long-term remediation plan. These plans are meant to address short and long-term risks possibly posed to human health, safety and the environment at the site.

Warning: Access to the Abandoned Clinton Creek Mine Site Prohibited

May 2013 - The Government of Yukon would like to advise you that the abandoned Clinton Creek mine site is currently unstable and dangerous. In the interest of helping keep people safe, access is prohibited at the abandoned mine site, as there is a risk of serious injury or death.

Please note that the restricted access only applies to the abandoned Clinton Creek mine site.

Should the status of the abandoned Clinton Creek mine site change, the Government of Yukon will provide all notified agencies with updated information. Should you have any concerns, please contact our Assessment and Abandoned Mines office at (867) 667-3208 or by e-mail at Patricia.Randell@gov.yk.ca. We thank you for your cooperation.

Photograph

A photograph of the Clinton Creek mine is available on the Yukon Government website at

http://www.emr.gov.yk.ca/aam/clinton_creek.html

General Information

Location: 100 km northwest of Dawson City, YT within the traditional territory of the Tr'ondëk Hwëch'in.

Type of mine and ore: open pit asbestos mine

Owner(s): Cassiar Asbestos Corporation Limited

Time of operation: From 1967 to 1978

Average number of employees: 290
 Estimated size of ore body: 16 million tonnes
 Average production value: Tensile strengths of chrysotile fibre bundles between 1.1 and 4.4 million Pascal.

Local employment figures: unknown
 Percentage of Indigenous employees: unknown

Mining activities conducted: year-round
 Nearby communities:

- Eagle Village, YT (48 km, 30 miles)
- Jack Wade, AK (50 km, 31 miles)
- Dawson City, YT (100 km, 62 miles)

Access to mine: road access via 48 km road that joined with Yukon Highway 3. Mining product transported across Yukon River to Dawson City by ferry in summer, ice road in winter, and by a tram system in spring and fall. Airstrip constructed later on to bring supplies to residents of mining town.

Impact and Benefit Agreement (IBA): No

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> • The modern, well-equipped company-owned townsite of Clinton Creek served its 500 residents fairly well (telephone, television, community hall, school, recreational facilities, hospital) • Airstrip remains one of the largest in the Yukon • Mine historically understood as the “salvation” of Dawson City, giving Dawson some bridging economic activity since asbestos was shipped through the town. • Many old Clinton Creek buildings were moved to Dawson City following the mine’s closure to replace the town’s aging housing stock. Usable equipment was also shipped off the site. • Most of the reclamation work on the site has been carried out by First Nations contractor Han Construction. • A surprising benefit of the existing tailings pile is that a protective crust that has formed over top of it absorbs carbon dioxide. This in theory means it reduces greenhouse gases. • Clinton Creek was the location of the only 	<ul style="list-style-type: none"> • 60 million tonnes of waste rock was piled onto the south slope above the Clinton Creek valley. In 1974 the pile slid down the slope and blocked Clinton Creek. Water pooled in the valley behind the waste rock forming a lake, which killed vegetation. The decomposition process consumed the oxygen except within the top metre of the lake, meaning fish are unable to survive in the lower depths of the lake. The water flowing from the creek continued to erode and wash waste rock downstream. • The mill emptied 10 million tonnes of tailings onto the west slope above the Wolverine Creek valley. These tailings slid down the slope and partially blocked Wolverine Creek. The water flowing from the creek continued to erode and wash tailings downstream. In 1985, the north point of the tailings deposit slumped, restricting Wolverine Creek. • Both piles are unstable and in continual movement, which increases the amount of solids in these streams and increases the probability of a flood and blowout that could impact those living downstream. They have considerably reshaped the local landscape, and destroyed fish habitats. • The site poses a threat to human health and safety, both due to this as well as the health hazard

<p>Canadian Mine Workers Union local in the Yukon.</p> <ul style="list-style-type: none"> • Mine provided the impetus for further mineral exploration in the area. 	<p>associated with the inhalation of toxic airborne asbestos fibres.</p> <ul style="list-style-type: none"> • Various lung ailments arose from asbestos mining at the site, leading to lawsuits. • Canadian government has spent \$3 million on reclamation, and it is estimated the project will cost \$17-35 million in total. • While the project proved profitable to Cassiar, the returns to the Yukon were negligible, except insofar as they provided impetus for further exploration.
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Relevant Links

- Yukon Government – Department of Energy, Mines and Resources (2013), [Abandoned Mines: Clinton Creek Profile](#).
- Yukon Government – Department of Energy, Mines and Resources (2013), [Clinton Creek: Care and Maintenance](#).
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- McLaughlin, Les, [“Yukon Nuggets: Clinton Creek”](#), *Hougen Group of Companies*.
- Kneen, Jamie (2005), [“Abandoned mines in the Yukon: Background”](#), *Mining Watch Canada*.
- Lost Mines, Ghost towns and Graveyard, [“Clinton Creek Yukon”](#) (Mine Profile).
- [Inventory to the Canadian Mine Workers Union Fonds Held at the Yukon Archives](#), Amalgamated and reprinted in 2003 by the Yukon Government.
- Indigenous and Northern Affairs Canada (2008), [“What’s the Big Picture? Yukon’s Large Contaminated Sites”](#)
- Rifkind, Lewis (2015), [“Let’s consider the full cost of mining”](#), *Yukon News*.
- Campbell, Judy, Eileen Fletcher, and T. J. Hammer (2005), [“Forty Mile, Fort Cudahy, and Fort Constantine Historic Site Management Plan”](#), submitted to Tr’ondëk Hwëch’in and Government of the Yukon.

List of relevant research:

Sabina, A.P. (1971) [“Rocks & minerals for the collector: The Alaska Highway, Dawson Creek, British Columbia to Yukon/Alaska border”](#), Geological Survey of Canada Miscellaneous Report 50, 98-99.

Wilson, Siobhan et al. (2009), [“Carbon Dioxide Fixation within Mine Wastes of Ultramafic-Hosted Ore Deposits: Examples from the Clinton Creek and Cassiar Chrysotile Deposits, Canada”](#), *Economic Geology* 104: 95-112.

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Coates, Kenneth and William Morrison (2005), [“Land of the Midnight Sun: A History of the Yukon.”](#) Montreal-Kingston: McGill-Queen’s University Press.

Pearce, Tristan et al. (2010) [“Climate change and mining in Canada”](#), *Mitigation and Adaptation Strategies for Global Change*, 16(3): 347-368.

Van Dijken, Bob [“Mines in the Yukon: Abandoned, Orphaned and in Limbo”](#), Presentation.

Dodd, Mat, Bill Dushenko and Brett Hartshorn (2001), [“An environmental review of the Clinton Creek abandoned asbestos mine, Yukon, Canada”](#), ARCS ACC, University of Alberta.

Duerden, F., Pearce, T., Ford, J. and Pittman, J. (2014). [“Case studies of adaptation to climate change in the Yukon mining sector: From planning and operation to remediation and restoration”](#). Ottawa, Ontario: Report submitted to Climate Change Impacts and Adaptation Division, Natural Resources Canada

Reports from Subprojects and Theme Coordinator work:

[Environmental Legacies, Resource Development, and Remediation in the Arctic](#) (Project Lead: John Sandlos)

[Well-Being and the Impacts of Resource Development](#) (Project Leader Brenda Parlee)



COFFEE GOLD Project Mine

Description of the mine

The Coffee Gold Project is an advanced gold exploration project in the White Gold district of west-central Yukon, approximately 130 kilometres south of Dawson City and is located on the traditional territories of the Tr'ondek Hwech'in First Nation and the asserted area of the White River First Nation. The Coffee Gold Project is within an exploration concession area of more than 600km² and comprised of four open pits called Latte, Double Double, Supremo and Kona. It is proposed to be mined by conventional shovel and truck methods, and post extraction the ore will be crushed and place onto a heap leach facility. This mine is currently only accessible by helicopter, airplane and once on site, a 23 km all-season road that connects the Coffee barge landing site, airstrip, camp and gold deposits. To make the site more accessible, there is a proposed 214 km single-lane gravel road with pullouts from Dawson City to the Coffee Gold Project site. This is estimated to cost approximately \$25 million and take 9 months to construct and has been endorsed by the Tr'ondek Hwech'in First Nation. Construction of the mining operation is estimated to start in 2018 and take approximately 18 months to complete. Although the feasibility study rendered positive results, there is yet to be environmental and socio-economic impact studies done. Kaminak Gold Corporation intends to have their permitting applications completed and submitted by summer of 2016 to the Yukon Environmental and Socio-Economic Board (YESAB).

The coffee gold project was originally owned by a local prospector, Shawn Ryan, but was sold to Kaminak Gold Corporation (Kaminak) in 2009. Kaminak then began the early stages of development for the Coffee Gold Project. Kaminak has consulted and created a strong relationship with the Tr'ondek Hwech'in First Nation and has engaged with the community in regard to the Coffee Gold Project. As of May 2016 Goldcorp Inc. has purchased the outstanding shares of Kaminak for C\$520 million, and therefore retains ownership of the Coffee Gold Project. Goldcorp Inc. is one of the world's largest Gold producing companies in the world and is hoping to use Coffee as a catalyst for future development in the region.

Photographs/Videos



You Tube Videos

[Kaminak Gold Corporation 2014](#)



[Kaminak Gold Corp: Coffee Project November 2015](#)



[Kaminak Gold: Northern Terrestrial Restoration Research Project Video](#)

General Information

Location: West-central Yukon, Whitehorse mining district, 130 kilometres south of Dawson City

Type of mine and ore: Open pit gold mine

Owner(s): Kaminak Gold Corp, recently purchased by Goldcorp Incorporated

Time of operation: Construction: estimated 2018, Production: estimated 2019

Estimated mine life: 12 years (2 year pre-production)

Feasibility study estimates:

Average number of employees: Approximately 500 people

Estimated total gold contained: 2,157,000 oz.

Estimated total gold to be produced: 1,862,000 oz.

Local employment figures: Unknown

Mining activities conducted: Nearby communities:

- Dawson City, YT (130 km)
- Carmacks, YT (160 km)
- Pelly Crossing
- Stewart Crossing

Access to mine: 23 km road from the Coffee Creek Barge Access, helicopter, airplane, proposed single lane forestry road from Dawson city. Access road from Dawson City to mine site proposed to begin construction in 2018.

Impact Benefit Agreement (IBA): Nothing at this time. Kaminak Gold Corporation has an Exploration Cooperation Agreement with Tr'ondek Hwech'in signed May 2013 and an Exploration Communication and Cooperation Agreement with White River First Nation signed June 2014.

Impacts of Mine (Anticipated)

Positive	Negative
<ul style="list-style-type: none"> • Creates opportunities and jobs for the Tr'ondek Hwech'in First Nation and the community of Dawson City which will contribute to economic prosperity in the region • Kaminak has engaged and worked collaboratively with the Tr'ondek Hwech'in First Nation • Construction of the access road from Dawson City to the Coffee Gold Project site endorsed by the Tr'ondek Hwech'in. • The proposed road from Dawson City to the mine site will utilize already existing roads which helps minimize land disturbances. • Positive feasibility report • The proposed access road will opens up the gold filled Tintina Trench to more mining developments in the future, such as the Casino Project. 	<ul style="list-style-type: none"> • Road construction may continue to exacerbate the habitat fragmentation in the area. • The access road will cross the Yukon River and the Stewart River, which could have potential environmental impacts. • The proposed access road opens up the gold filled Tintina Trench to more mining developments in the future, such as the Casino Project.

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Eagle Gold Mine

Description of the mine

The prospective Eagle Gold mine is located on the traditional territory of the Nacho Nyak Dun First Nation, 85 kilometers north of Mayo in the Yukon Territory. In 1895, exploration and placer mining began on this Dublin Gulch property. The first gold production was reported in 1898. In 1972, several companies began exploration drilling in the area. Today, the property is owned by Victoria Gold Corporation. On October 17, 2011, an Impact and Benefit Agreement (IBA) was signed between the Nacho Nyak Dun First Nation, the Government of Yukon, and the Victoria Gold Corp. Mine construction began in 2014 and is set to be completed sometime in 2016. Today, the mine has yet to come into production.

Photograph

Photographs of the mine site are available on the Victoria Gold's website.

http://www.vitgoldcorp.com/s/dublin_gulch.asp?ReportID=733461

There is also a video (6 minutes 31 seconds) that provides details of this mine. Video at <http://www.vitgoldcorp.com/i/media/GoldProject.mp4>

General Information

Location: Near Mayo, Yukon Territory

Type of mine and ore: open-pit gold mine

Owner: Victoria Gold Corp.

Expected mine opening: 2016

Estimated mine life: 9 years

Average number of employees: anticipated 350-400 workers

Estimated size of ore body: 6.3 million ounces of gold, and sizeable silver deposits

Estimated production value: 212,000 oz Au/yr

Local employment figures: Unknown

Percentage of Indigenous employees: Has yet to be determined

Mining activities conducted: year-round

Nearby communities:

- Keno City (55 km, 34 miles)
- Mayo (85 km, 52 miles)
- Pelly Crossing (19 km, 122 miles)
- Whitehorse (450 km, 280 miles)

Access to mine: year-round road

Impact and Benefit Agreement (IBA): Yes. Signed on October 17, 2011 with the Nacho Nyak Dun First Nation, whose Traditional territory the project is located in.

Anticipated Impacts of the Mine

<i>Positive</i>	<i>Negative</i>
<ul style="list-style-type: none"> • Provide employment to locals and Nacho Nyak Dun First Nations during the construction and operation phase of the mine. • Established a scholarship program to support Nacho Nyak Dun citizens attending university, college or trades and technical courses full time. 	<ul style="list-style-type: none"> • Mine operation will increase the demand on the electrical grid. • Eagle Gold mine will increase highway traffic near the community of Mayo.

Relevant Links

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Link to Environmental Impact Process Statement: http://www.emr.gov.yk.ca/mining/eagle_gold.html

List of relevant research:

Duerden, F., Pearce, T., Ford, J. and Pittman, J. (2014). [Case studies of adaptation to climate change in the Yukon mining sector: From planning and operation to remediation and restoration.](#) Ottawa, Ontario: Report submitted to Climate Change Impacts and Adaptation Division, Natural Resources Canada, 23p.

Review Board Decision: Accepted. The Eagle Gold Project has received all major regulatory approvals required for the construction, and operation of the Project....

http://www.vitgoldcorp.com/s/dublin_gulch.asp?ReportID=733487

Materials on reviews under review or finalized are available at

http://www.emr.gov.yk.ca/mining/eagle_gold.html

Training programs: Not yet released

Impact Benefit Agreement: Not available to the public. Some information is available here:

<http://www.cannor.gc.ca/eng/1386958331529/1386958372916>



ELSA Mine

Description of the mine

Elsa Mine, located in the Yukon between the valley of the Stewart River and the Mackenzie Mountains, was one of many mineral projects located along the so-called “Silver Trail”. Silver-lead-zinc deposits were first discovered in 1914 and staked in 1924 by Charlie Brefault. Treadwell Yukon Company, a subsidiary of the Yukon Gold Company of Dawson and later reorganized under the name United Keno Hill Mines Limited, bought the property in 1932. In 1935, the company moved its mill from Wernecke to the site in response to the discovery of the rich Calumet mineral deposit. The company also operated a town site that would house about 600 people at the height of the mine’s operation. The site was renowned for its rich silver veins including one called the Bonanza Stope that yielded 4.5 million ounces of silver over the course of the roughly three years it was mined. Operations ceased during the Second World War, but were revived in 1947. United Keno Hill Mines Limited became the second largest producer of silver in Canada and the fourth largest in the world in the 1950’s. Elsa’s population grew significantly between 1950 and 1966, in part because the population of Calumet was moved to Elsa so that services could be consolidated. It closed down all operations in 1989 after years of losses and low silver prices, and the property was transferred to the federal government. Residents of Elsa moved away and most houses and buildings have been dismantled. A few caretakers remain to protect the property, which was acquired by Alexco Resource Corp in 2005. The company is responsible for reclamation of the site, and is also conducting small-scale exploration activities.

Photograph



Figure 1 Photograph of Elsa courtesy of Gertrude Saxinger, Oct. 2015

There are a number of photographs of Elsa and surrounding area on the webpage “An Explorer’s Guide to Elsa, Yukon” at <http://www.explorenorth.com/yukon/elsa.html>

General Information

Location: In the Yukon between the valley of the Stewart River to the south and the Mackenzie Mountains to the north, 700 km north of Whitehorse, and 600 east of the Alaskan border. It is located at Mile 60.3 of the Silver Trail, Yukon Highway 11.

Type of mine and ore: underground silver, lead and zinc mine.

Owner(s): United Keno Hill Mines Limited

Time of operation: From 1935-1940, 1947-1989.

Average number of employees: 186

Estimated size of ore body: Unknown

Average production value: 257 kg/t (7500 oz/ton) silver.

Local employment figures: Unknown

Percentage of Indigenous employees: Unknown

Mining activities conducted: Year-round

Nearby communities:

- Keno City, YT (7.8 km, 5 miles)
- Mayo, YT (40 km, 25 miles)
- Whitehorse, YT (195 km, 121 miles)
- Pelly Crossing, YT (135 km, 84 miles)
- Faro, YT (213 km, 132 miles)

Access to mine: All-season road - Yukon Highway 11, built in early 1940's. Air service to nearby Mayo became available in 1933.

Impact and Benefit Agreement (IBA): No

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> ● Caretakers remain on the site due to the historical significance of the town. ● Townsite housed as many as 700 people and included many services: school, hockey rink, community hall, free heat, discounted groceries. It was the first Yukon community to be granted official hamlet status in the early 1980's, and thus became eligible for government funding. ● United Keno Hill Mines played a major role in the Yukon's economy in the postwar period. High mineral prices fuelled expanded exploration throughout the Yukon. ● Hydroelectric plant built to power the mine is still used by Dawson City. ● Now a historical attraction on the Silver Trail, a popular trail for tourists. 	<ul style="list-style-type: none"> ● Based on anecdotal evidence it appears most workers were shipped from the south, few were local. One past worker has stated: "Most came, made money, and split". Most First Nations workers didn't live townsite and but a few kilometres away (unclear whether this was by choice). ● The Else mill processed ore from ten major mines, resulting in an estimated 3.67 million tonnes of tailings deposited at the site. The main environmental issue is metal laden water coming out of a number of old adits or underground tunnels and from the Elsa Mills tailings pond. The key concern is with zinc as it is harmful to fish. ● Upon closure, workers were given 2 weeks to vacate Elsa, and virtually no reclamation work was done until Alexco purchased the property.

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[Environmental Legacies, Resource Development, and Remediation in the Arctic](#) (Project Lead: John Sandlos)

[Well-Being and the Impacts of Resource Development](#) (Project Leader Brenda Parlee)

[Understanding Resource Revenue Flows and How to Stop Leakages: A Case Study of the Yukon.](#) (Project Leader Lee Huskey)

Photos for Elsa Yukon Mine

<https://www.google.ca/search?q=elsa+yukon+mine&biw=1536&bih=676&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKewiLo4rajbLMAhXjyIMKHSDYAW0QsAQIQA>



FARO Mine

Description of the mine

The Faro Mining complex, located in central-south eastern Yukon, is composed of several open pits, which were mined on and off over three decades. The Faro Mine was the largest open pit lead-zinc mine in Canada in the 1970s and was at one point the largest open pit lead-zinc mine in the world. It was a major employer in the Yukon and a large contributor to the Yukon economy. The mine shut down indefinitely in 1998 when its owner, Anvil Range Mining, entered receivership.

The abandoned mine site is an environmental disaster. Toxins from the site continue to contaminate ground water and surface water. The Faro mine is one of Canada's most expensive clean-up projects costing taxpayers a billion dollars. The site continues to be remediated by the Government of Yukon with federal funding. Currently, there is no end date for the clean-up of the site.

Photograph/Video

https://www.google.ca/search?q=faro+mine+photos&biw=1536&bih=689&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwjEsqmP2N_NAhUB82MKHZKGDm8QsAQIGg

You Tube: [Faro Overflight Aug 2015](#). Yukon Conservation Society (1 min 27 sec). This is a partial view of the Faro mine site in the central Yukon Territory. Deemed an abandoned mine by the Canadian Federal government since 1998, it will probably cost about a billion dollars worth of taxpayers money to clean up and take at a minimum 400 years



General Information

Location: Central-South Eastern Yukon

Type of mine and ore: Open-pit; sulphide (zinc, lead, silver, gold)

Mine Site Footprint: 25 km²

Initial Capital Cost: \$114 million in 1967

Owner(s): Anvil Range Mining (1994-1998); Curragh Inc. (1985 – 1993); Cyprus Anvil, joint venture between Cyprus Mines 60% and Dynasty Explorations 40% (1965-1985)

Time of operation: August 1997 – January 1998, August 1995 – March 1997, Spring 1986 - April 1993;

End of 1969 - End of 1984

Average number of employees: peak production 750

Estimated size of ore body: Faro pit 1.8 million tonnes (mined out); Vangorda pit 7.5 million tonnes; Grum deposit proven reserve 1.6 million tonnes probable reserve 16.9 million tonnes; Grizzly deposit indicated 17.24 million tonnes; Swim deposit 4.3 million tonnes
 Average production value: 5.14% zinc, 3.04% lead
 Local employment figures: unknown

Mining activities conducted: Year round

Nearby communities: 230 km / 143 miles northeast of Whitehorse; 15 km / 9 miles North of Faro

Access to mine: airstrip; road

Impact and Benefit Agreement (IBA): Yes between Anvil Range Mining Corp and Ross River Dena signed in 1994; <http://www.ammsa.com/publications/windspeaker/anvil-ross-river-dena-sign-14-million-deal> and http://www.impactandbenefit.com/IBA_Database_List/

Remediation agreement between the Government of Yukon, the Government of Canada, Selkirk First nation and Ross River Dena Council <https://www.aadnc-aandc.gc.ca/eng/1315001098185/1315001165605#section6>

Percentage of Indigenous employees: unknown; 14 Ross River band members working in 1995

Impacts of Mine

<i>Positive</i>	<i>Negative</i>
<ul style="list-style-type: none"> Contributed up to 20% of the Yukon economy during peak production periods (mid 1970s) Single largest private employer in the Yukon; employed up to 15% of the Yukon workforce 	<ul style="list-style-type: none"> Cleanup costs will reach a billion dollars Fluctuating local population (Population of Faro fluctuated between 2,300 – 100) Efforts to employ First Nations peoples failed No environmental assessment 80% of local businesses closed when mine shut down Multiple tailings failures; toxic waste released into waterways Worker health & safety offenses Continuing issues with acid rock drainage Mine destroyed traditional hunting grounds Site abandoned by industry; governments forced to take responsibility for cleanup

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Training programs: Training on water monitoring (during reclamation phase).



Historic Keno Hill Mine District

Latitude 63°55'N, Longitude 135°23'W

Description of the mine

Keno Hill District is a famous historic mining camp located in Central Yukon. It was Canada's second largest primary silver producer and a major contributor to the Yukon economy from the 1920s to the early 1960s. There were over 35 mine sites in the district, which produced over 214 million ounces of silver between the periods of 1913-1989. Two major mining companies, Treadwell Yukon Corp Ltd. followed by United Keno Hill Mines Ltd., owned and operated the majority of the mine sites in Keno Hill. The last operating mines in the area were permanently shut down in January 1989.

In the 1990s there was an attempt by Dominion Mineral Resources and Sterling Frontier Properties Company of Canada Ltd. to reopen that camp but it was unsuccessful. Today, Alexco Resources Corporation owns the land and is actively conducting mineral exploration activities in the area. Alexco briefly reopened the Bellekeno Mine in Keno Hill from 2011-2013. The company is also responsible for environmental remediation of the historic mine sites.

Photograph



Figure 1 Photograph courtesy of Valoree Walker (taken near Keno August 15, 2015)

General Information

Location: Central Yukon

Type of mine and ore: underground (some open-pit); silver, zinc and lead

Owner(s): Alexco Resources Corp (2006- Present); Dominion Mineral Resources and Sterling Frontier Properties Company of Canada Ltd. (1990-1997); United Keno Hill Mines Ltd. (1947-1989); Treadwell Yukon Corp. Ltd. (1925-1941), Keno Hill, Ltd. [formed by Yukon Gold Company] (1919-1934)

Time of operation: From 1913-1989

Average number of employees: 140-600 working in the district

Local employment figures: The majority of employees were local; mostly European immigrants; exact numbers unknown

Percentage of Indigenous employees: unknown

Ore mined: 5.3 million tonnes; 214,035,599 ounces of silver recovered

Average production value: 40.52 oz/ton of silver; 5.62% lead; 3.14% zinc

Major mine (produced >500,000 oz of Ag): Hector-Calument, Elsa, Husky, Sadie-Ladue, Keno, Lucky Queen, Silver King, No Cash, Galkeno, Bermingham, Bellekeno, Black Cap, Onek, Ruby, Shamrock, and Comstock

Small mine (produced <500,000 oz of Ag): Dixie, Husky Southwest, Townsite, Mt. Keno, Miller, Ram, Yukeno, Gambler, Flame & Moth, Elsa Mil Tailings, Stone, Caribou Hill, Vanguard, Duncan, Lookout, Croesus, Silver Basin, Coral & Wigman, Silver Basin, Wayne, Klondike-Keno, Cobalt Hill, Cream-Jean, Homestake, Porcupine, Keno 6

Mining activities conducted: Year-round

Nearby communities:

- Whitehorse (330 km/ 205 miles);
- Town of May (50 km / 31 miles);
- Keno City (3 km/2 miles)

Access to mine: Road; Prior to the 1950s steamboats in summer and horse drawn sleighs in the winter

Impact and Benefit Agreement (IBA): No

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> • During the 1950s to early 1960s mining in Keno Hill supported approximately 15% of Yukon’s population • Influenced the construction of major infrastructure projects including an all-weather highway from Whitehorse to Mayo and Dawson, a hydroelectric dam, and an airport in Mayo • The difficult conditions at the mine sites encouraged mining and exploration innovations • Keno Hill was a major contributor to the Yukon economy from 1920s-1960s 	<ul style="list-style-type: none"> • Both Treadwell Yukon Corp. Ltd. and United Keno Hill Mines Ltd. went bankrupt • Company town sites were abandoned; Werneck and Calumet have been remediated; the Town of Elsa remains under care and maintenance; Keno City has a population of 15 • Environmental assessments and social licenses were not required, reclamation of the sites was incomplete • Traditional hunting and gathering grounds were severely impacted by the development of the mining district; moose and caribou habitats were damaged • Safety and environmental liabilities caused by mining \$40-75 million • Na-Cho Nyäk Dun were forced to relocate

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Review Board Decision:

Training programs:

- ➔ crew trained on site

Impact Benefit Agreement (if public): NA

Ketza River Mine

Description of the mine

The Ketza River gold mine is located southwest of Ross River in the traditional territory of the Kaska Dene people. Canamax and Pacific Trans-Ocean entered a joint-venture agreement to explore and develop the property in 1984, with Canamax as the operating partner. After three years of exploration, a production decision was approved in 1987 and the first gold bar was poured in 1988. Canamax purchased Pacific Trans-Ocean's share of the property and became the 100% owner in 1989. Oxidized gold-bearing veins and mantos were mined at about 350 tonnes of ore per day until 1990, when the oxide ore reserves were allegedly depleted. The mine produced over 100,000 oz. of gold. Wheaton River Minerals Ltd. purchased the property in 1992 and formed Ketza River Holdings (KRH) Ltd to cover the mine's assets. KRH was sold to Yukon-Nevada Gold Corp (now Vera Gold Corp) in 1994. KRH submitted a proposal to reopen the mine to the Yukon Environmental and Socio-economic Assessment Board in 2011, but it was withdrawn in 2014 after the company failed to produce required information at the adequacy review stage in a timely way. The site was subsequently abandoned in 2015. Because the project was a mine site before devolution, the ultimate responsibility for the cleanup rests with the federal government. The likely outcome is that an independent consultant will be hired to evaluate the site and develop a closure plan, with costs falling to Canada. A large portion of the company's mine security, set aside for closure activities, has already been spent. The Yukon government seized the \$3.1 million security and has been using it for urgent repairs to the site's water management facilities and arsenic treatment plant.

Photograph/Video

[A virtual Fly-by of the Ketza River Mine, Yukon on Youtube](#) uploaded on Nov 3, 2007 (3 min 34 sec) **By Kingpoint**



General Information

Location: 85 km south of Ross River, Yukon Territory
 Type of mine and ore: open pit and underground gold mine
 Owner(s): Veris Gold Corp, Wheaton River Minerals Ltd., Canamax Resources Inc.
 Time of operation: From April 1988 to November 1990

Average number of employees: 129 workers
 Estimated size of ore body: 1987 estimate - Oxide reserves totaling 495 800 tonnes; 2008 estimate - 5 million tonnes measured and indicated resources.

Average production value: 1987 estimate: 18 g/t Au, 2008 estimate: 4.5 g/t Au

Local employment figures: Unknown

Percentage of Indigenous employees: Unknown

Mining activities conducted: year-round

Nearby communities:

- Faro, YT (69 km, 43 miles)
- Ross River, YT (85 km, 53 miles)

Access to mine: all season road

Impact and Benefit Agreement (IBA): Veris Gold Corp. (then YGC) signed a Memorandum of Understanding with the Ross River Dene Council for its participation in the exploration on the property in 2005.

<http://miningyukon.com/Documents/Why%20Yukon/Mineral%20Property%20Profiles/Ketza%20River%20Property.pdf>

Impacts of Mine

<i>Positive</i>	<i>Negative</i>
<ul style="list-style-type: none"> • Produced 100,000 oz of gold. 	<ul style="list-style-type: none"> • The company has gone bankrupt and abandoned the site; leaving taxpayers on the hook for eventual cleanup costs. This has been found by some critics to reflect the problematic history of privatizing the profit of mining but socializing the risk and expense of clean up. • Still issues regarding stability of the tailings impoundment, water quality (particular arsenic, copper and cyanide concentration), and long term monitoring and maintenance. Water has been escaping untreated from two dams.

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Reports from Subprojects and Theme Coordinator work:

[Environmental Legacies, Resource Development, and Remediation in the Arctic](#) (Project Lead: John Sandlos)

[Well-Being and the Impacts of Resource Development](#) (Project Leader Brenda Parlee)

[Understanding Resource Revenue Flows and How to Stop Leakages: A Case Study of the Yukon.](#) (Project Leader Lee Huskey).



MACTUNG Project

Description of the mine

The Mactung Project is a planned open pit and underground tungsten mine located in eastern Yukon near the border with the Northwest Territories in the Selwyn Mountain Range and covers the area around Mt. Allan. The property's original owner, North American Tungsten Corporation Ltd. (NATC), completed the Yukon Environmental and Socio-economic Assessment process in July 2014, and the Yukon Government approved construction of the mine (pending mining and water licence applications, and subject to conditions) in September 2014. The Project was forecast to run at 2,000 tonnes per day from an underground operation using conventional long hole plus cut and fill mining methods, and estimated to cost \$400 million to construct. NATC went into creditor protection in 2015 after suffering losses at its Cantung Mine site. In November 2015, the Government of the Northwest Territories purchased the mineral deposit.

Photograph

<http://www.cbc.ca/news/canada/north/nwt-cantung-mactung-purchase-yukon-reaction-1.3329083>

General Information

Location: Selwyn Mountain Range, approximately 8 km northwest of MacMillan Pass, Yukon.

Type of mine and ore: underground and open pit tungsten mine.

Owner: Government of the Northwest Territories, (North American Tungsten Corporation until 2015).

Date opened: Originally 2018/2019, now uncertain under new ownership.

Estimated mine life: 11.2 years for the underground mine with the potential to expand by 17 years with an open pit.

Average number of employees: Approximately 250 once opened

Estimated size of ore body: 33 million tonnes

Estimated production value: 0.88% WO³

Local employment figures: Company committed to hiring locally where possible.

Mining activities conducted: would be year-round

Nearby communities:

- Ross River, YT (188 km, 117 miles)
- Faro, YT (200 km, 124 miles)

Access to mine: Canol Road (all-season); new gravel road from Ross River YT.

Impact and Benefit Agreement (IBA): CanNor provided funding to be used to develop a protocol agreement and Socio-Economic Partnership Agreement between NATC and the Ross

River Dena Council and Liard First Nation in 2012:

<http://www.cannor.gc.ca/eng/1387218375049/1387218422205>

Percentage of Indigenous employees: Unknown

Anticipated Impacts of the Mine

<i>Positive</i>	<i>Negative</i>
<ul style="list-style-type: none"> • Would bring significant local employment for nearby communities, as outlined in the project’s 2009 technical report. • Would bring infrastructure improvements to the area including upgrades to the Canol Road. • Largest known tungsten deposit in North America, therefore holds the potential to bring significant economic benefits to the area should tungsten prices improve. 	<ul style="list-style-type: none"> • The Company is under creditor protection and the property was bought by the Government of NWT (i.e. NWT taxpayers). It is assumed NWT will try to re-sell when (if) tungsten prices improve. Critics argue that its concerning that an environmental regulator (GNWT) is becoming a junior mining company, as an inherent conflict of interest would arise when the project gets to environmental assessment. • Concerns regarding the potential project effects to water quality and quantity, wildlife and air quality; as well as the prediction of acid rock drainage and metal leaching potential at the mine site. • Ross River Dena Council raised concerns about social problems coming from the mine and how few jobs often become available for the mines.

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- **Review Board Decision:** Approved (with conditions) by Yukon Environmental & Socio-economic Assessment Board and Federal Government: <http://www.yesab.ca/2014/03/screening-complete-mactung-mine-project/> 'Summary on page 3 of Spring/Summer 2014 VOICE YESAB Newsletter at <http://www.yesab.ca/wp/wp-content/uploads/2014/08/VOICEspring-summer-2014.pdf> [file:///Users/gerry/Downloads/390-2%20Yukon%20Government%20Decision%20Doc ument%202014-09-04.pdf](file:///Users/gerry/Downloads/390-2%20Yukon%20Government%20Decision%20Doc%20ument%202014-09-04.pdf)

Training programs:

- YESAB's conditions for the project included mandatory education program for staff.
- Underground mining training held in Watson Lake by the Company.

Reports from Subprojects and Theme Coordinator work:

[Well-Being and the Impacts of Resource Development](#) (Project Leader Brenda Parlee)

[Understanding Resource Revenue Flows and How to Stop Leakages: A Case Study of the Yukon.](#) (Project Leader Chris Southcott)



Minto Mine

Description of the mine

Located near the community of Pelly Crossing, the Minto copper-gold mine is currently the only operating mine in the Yukon Territory (as of March 2016), owned and operated by Minto Exploration Ltd. (subsidiary of Capstone Mining Corp). Minto started producing concentrate in 2007, and produced at a rate of 3,800 tonnes of ore per day in 2015. In January 2016 Capstone Mining Corporation announced that it would halt Minto's operation in 2017 due to low commodity prices of copper.

General Information

Location: Near Pelly Crossing, 240 km northwest of Whitehorse, Yukon Territory

Type of mine and ore: surface and underground mine extracting copper and significant amounts of gold and silver

Owner: Capstone Mining Corporation

Date opened: 2007

Estimated mine life: closure expected in 2017

Average number of employees: 282 employees

Estimated size of ore body: 7659 kt

Estimated production value: 18400 kt

Local employment figures: 34% Yukon residents

Mining activities conducted: year-round

Nearby communities:

- Pelly Crossing (40 km, 25 mi)
- Whitehorse (240 km/150 miles)
- Carmacks (75 km, 47 mi)
- Little Salmon (100 km, 62 mi)
- Mayo (128 km, 79 mi)

Access to mine: plane, barge in summer, temporary ice-road in winter. For six weeks in each spring and fall there is no access to the mine via ground transportation so concentrate is produced and stored on site until the river becomes accessible.

Impact and Benefit Agreement (IBA): Surface Lease Agreement in 1997 with Selkirk First Nation; Letter of agreement signed between Selkirk First Nation, The Government of the Yukon, and Minto Explorations Ltd. Regarding the Minto Socio-Economic Monitoring Program Framework; and Memorandum of Understanding between Yukon Government and Selkirk First nation regarding Minto project signed in 2006. <http://www.gov.yk.ca/news/2006/06-192.html>

Percentage of Indigenous employees: 7.5% (2014)

Impacts of Mine

<i>Positive</i>	<i>Negative</i>
<ul style="list-style-type: none"> ● Comprehensive socio-economic monitoring program and MOU has brought a rise in First Nations training and education programs, contracting of First Nations Businesses. ● Activities at the mine were a strong economic contributor to the Yukon and Selkirk First Nation, including in the form of significant royalties. ● Brought infrastructure to the region, including a hydroelectric power line extension. 	<ul style="list-style-type: none"> ● Substantial layoffs come with planned closure of the mine ● Selkirk Renewable Resources Committee threatened to pursue legal action against the mine in 2009 for not implementing a wastewater system that met the standards of its original license. ● Has repeatedly been caught releasing untreated water into the Yukon River. General concerns regarding the mine’s influence on water quality and fish habitat. ● Generally low level of local and FN employment ● Concerns regarding impact on

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- Pearce, Tristan (2010), "[Climate change and mining in Canada](#)", *Mitigation and Adaptation Strategies for Global Change*, 16(3): 347-368.

Review Board Decision:

Exploration Project Approved: <http://www.yesabregistry.ca:80/wfm/Project/nullf0v8227sfv>

Mining/Milling Rate Increase Proposal Approved:

http://www.yesabregistry.ca:80/wfm/Project/n_ullffodn79ymk

A third evaluation report was issued in March 2010 (2009-0206) which recommended that water management and milling rate increase to 3,600 tonnes per day be allowed to proceed. A third evaluation was issued in February 2011 (2010-0198) which recommended that phase IV development to mine the Area 2 and Area 118 resources, be allowed to proceed subject to specified mitigative terms and conditions. A fourth evaluation report was issued in April 2014 (2014-0100), which recommended that the phase V/VI development, be allowed to proceed subject to specified mitigative terms and conditions.

Training programs:

2008 – Big 5 Safety Training. Some operational training recorded for Mill Operations employees around Crushing, Grinding, Tailings, Flotation and Control.

2011 – Training expanded to include advanced Fall Protection and Confined Space, Bear Awareness, Various Mobile Equipment, Red Cross First Aid, Driving in the Active Mine, Live Fire Suppression and Indoor Crane.

2012 – Training expanded to include YWCHSB First Line Supervisor Certification, Can Scott Supervisor Skills, Joint Occupational Health and Safety Committee, Underground specific safety training, Rigging and Slings and expanded mobile equipment training.

2013-2015 – Training expanded to include Environmental Awareness, Gas Testing, DOT Drug and Alcohol Testing, Fire Extinguisher Theory, Fire Extinguisher Maintenance and Inspection, DNV Modern Safety Management, Fatigue Management.

Selkirk First Nation and Other First Nation specific training in 2014:

→Heavy Equipment Operator training

→Pre-Apprenticeship training

→Apprenticeship training

One SFN student in apprenticeship training (Electrical)

One SFN student hired Warehouse Apprenticeship position

One OFN hired for Millwright Apprenticeship

→HEO Training Services in Heavy Equipment Operator on the job training

→Environmental Monitor-in-Training; Two positions

Impact Benefit Agreement: [Socio-Economic Monitoring Program Letter of Agreement signed between Selkirk First Nation, Government of Yukon, and Minto Explorations Ltd \(2014\).](#)

Reports from Subprojects and Theme Coordinator work

[Understanding Resource Revenue Flows and How to Stop Leakages: A Case Study of the Yukon.](#)

(Project Leader Chris Southcott)



MOUNT NANSEN Mine (Yukon)

Description of the mine

Mount Nansen mine was relatively small gold and silver mine located in the western Yukon.. It produced intermittently for short time periods between 1968 and 1999. During its final production period in the late 1990s the mine repeatedly violated environmental regulations and was forced to shut down. The site was abandoned in 1999 and the Government of Canada took responsibility for the site. When the *Devolution and Transfer Agreement* was implemented in 2003 the Yukon government became responsible for the care and maintenance of the mine site. Over the last decade the Government of the Yukon, the Government of Canada, and the Little Salmon Carmacks First Nation have been actively collaborating to develop a final remediation plan for the site. The estimate cost for the cleanup is \$23 million.

Photograph of mine site with map showing locations is available on the Yukon Government, Energy, Mines and Resources webpage that details Mount Nansen

http://www.emr.gov.yk.ca/aam/mount_nansen.html

General Information

Location: Carmacks region, Western Yukon. It is 60 km west of the Village of Carmacks and within the traditional territory of the Little Salmon/Carmacks First Nation.

Type of mine and ore: Open pit/underground; gold and silver

Owner(s): BYG Natural Resources Inc. (1984-1999); Peso Silver Mines Ltd. (n.d. -1984)

Time of operation: Sep. 1968 – Apr. 1969; 1975 – 1976 (5 months); Nov. 1996 – Nov. 1997; March 1998 – Feb. 1999

Currently under government care.

Average number of employees: 70 workers

Estimated size of ore body: 16 360 tonnes mined in the 1960s, 5800 tonnes mined in the 1970's, and 269 000 tones mines in the 1990s

Average production value: 7.5-8.06 g/t Au; 50 g/t Ag

Local employment figures: 40% from Little Salmon Carmacks First Nation

Percentage of Indigenous employees: 40% from Little Salmon Carmacks First Nation

Mining activities conducted: year-round

Nearby communities:

- Carmacks (60 km/ 37 miles)
- Whitehorse (180 km/112 miles)

Access to mine: gravel road

Impact and Benefit Agreement (IBA): Yes, Socio-Economic Agreement with Little Salmon Carmacks First Nation

<http://www.carc.org/pdfs/NMPWorkingPaper70Reilly.pdf>

Impacts of Mount Nansen mine

<i>Positive</i>	<i>Negative</i>
<ul style="list-style-type: none"> • 30 members from Little Salmon Carmacks First Nation were employed at the mine (out of a total of 70-75 employees) • Joint venture with industry, other businesses, and Yukon College to establish a satellite internet system • Pilot project on literacy training • Establishment of an education training society 	<ul style="list-style-type: none"> • BYG resources violated its water license on multiple accounts in the late 1990s • Federal Government forced to shut down the mine due to environmental regulation violations • 1999 the mine was abandoned, the Government of Canada took responsibility for care and maintenance of the site • Only \$445,000 of financial security was collected from BYG Resources • Taxpayers are footing the majority of the bill to clean up the site; estimated cost is \$23 million • Environmental concerns include water that is contaminated with arsenic, cyanide, and other metals. There is also potential for dam failure • The socio-economic agreement was no longer legally binding once Little Salmon Carmacks First Nation signed its Land Claims Agreement. The band was unable to get its members to ratify a new socio-economic agreement.

Relevant Links

Government

- Yukon Energy, Mine and Resources (2013), [Background Mount Nansen](#)
- Yukon Energy, Mines and Resources (2013), [Mount Nansen: Profile on the abandon mine site](#)
- Yukon Energy, Mines and Resources (2013), [Mount Nansen: Remediation Timelines](#)
- Yukon Energy, Mines and Resources (2013), [Mount Nansen: History of the Mine](#)
- Yukon Geological Survey and Yukon Government (2008), [Mount Nansen Property](#), *Yukon Mineral Property Update 2008*

- Indian and Northern Affairs Canada. (2008). [The Big Picture: Yukon's Large Contaminated Sites](https://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-YT/STAGING/texte-text/pubs-tbp-pdf_1316463525304_eng.pdf). https://www.aadnc-aandc.gc.ca/DAM/DAM-INTER-YT/STAGING/texte-text/pubs-tbp-pdf_1316463525304_eng.pdf Ottawa.

News

- Chalykoof, Leighann (2007), [Mining watchdogs cheer Yukon court decision on BYG](#), *Yukon News*
- Istchenko, Vic. (May 17, 2016). [For sale: contaminated Yukon gold mine, feds to pay cleanup](#). The Mount Nansen gold/silver mine was abandoned 17 years ago. CBC News | North. The Yukon Supreme Court has approved a plan to clean up one of Yukon's abandoned mine sites, the contaminated Mount Nansen mine, 60 kilometres west of Carmacks...more at <http://www.cbc.ca/news/canada/north/mount-nansen-mine-byg-cleanup-yukon-1.3586083>
- Tobin, Chuck. (January 29, 2009). [Mine closure work could cost \\$20 million](#). Whitehorse Star. <http://whitehorsestar.com/News/mine-closure-work-could-cost-20-million>

Other materials (book chapters, workshops etc.)

- Office of the Auditor General of Canada (2002), [Chapter 3 Abandoned Mines in the North](#), *Report of the Commissioner of the Environment and Sustainable Development to the House of Commons*
- Copland, Hugh (2001), [Financial and Other Considerations Mt. Nansen Mine Case Study](#), *Orphan Mines Workshop*, Winnipeg, MB.
- Gartner Lee Limited (2000), [Case History of Environmental Assessment and Regulation of the B.Y.G. Mt. Nansen Mine FINAL Report](#) Prepared for: Government of Yukon Department of Economic Development. GLL 99-923.
- Cleghorn, Christine (1999), [Aboriginal Peoples and Mining in Canada: Six Case Studies](#), *MiningWatch Canada*
- O'Reilly, Kevin and Erin Eacott (1999), [Aboriginal Peoples and Impact and Benefit Agreements: Report of a National Workshop](#), *Northern Minerals Program Working Paper No. 7sch*
- Mount Nansen webpage (no date) from the [Yukon Conservation Society](#). <http://yukonconservation.org/programs/mining/current/mount-nansen/> This includes a photo gallery with pictures of the mine site.

Link to Environmental Impact Statement/Review Board Decision: Approved

http://emrlibrary.gov.yk.ca/minerals/MajorMines/mtnansen/case_history_of_environmental_assessment_2000.pdf

List of relevant research: All relevant research found is included in the relevant links section. A thorough search of academic databases did provide relevant results.

Training programs:

- Pilot project on literacy training
- Education Training Society

Impact Benefit Agreement: unavailable to the public



TAGISH LAKE/MOUNT SKUKUM Gold Project

Latitude: 60°10'N Longitude: 135°30'W

Description of the mine

The Tagish Lake Gold Project, owned by Tagish Lake Gold Corporation (a subsidiary of New Pacific Metals Corp.), is located in the Wheaton River Valley of southwestern Yukon Territory, and consists of 1,510 Quartz Mining claims and 3 Crown Grants, which encompass the Skukum Creek gold-silver prospect, the Goddell gold prospect, and the past-producing Mt. Skukum gold mine. Production at Mt. Skukum was undertaken as a joint venture between Erickson Gold Mines Ltd. and Agip Canada Ltd. between 1986 and 1988, during which a total of 233,400 tons of ore were processed in the plant, recovering 2,500 kilograms (77,790 tr. oz.) of gold. It was the first mine to open in the Yukon since 1969, and the first hard-rock gold mine in the territorial to see substantial production. The Wheaton River area has seen exploration activity since 1903. The current project obtained a land use authorization in 2008, but further assessment was discontinued. Operations remains suspended, with a small crew looking after the property.

Photograph/Video

[Photograph of old Mount Skukum gold mine of the Tagish Lake Gold's properties in the Wheaton Valley area – Yukon News July 30, 2012.](#)

General Information

Location: 55 km south of Whitehorse in the Wheaton River Valley, Yukon Territory.

Type of mine and ore: underground gold and silver mine.

Owner: New Pacific Metals Corp., Omni Resources, Erickson Gold Mines Ltd. and Agip Canada Ltd. (1984-1988).

Time of operation: Unknown (Original mine open February 1986 to August 1988)

Average number of employees: For new project – estimated 140 workers.

Estimated size of ore body: 1.55 million tonnes

Estimated production value: 7 g/t Au

Local employment figures: Unknown

Percentage of Indigenous employees: Unknown

Mining activities conducted: May-December

Nearby communities:

- Mt. Lorne, YT (42 km, 26 miles)
- Champagne, YT (89 km, 55 miles)
- Ibex Valley, YT (77 km, 48 miles)
- Carcross, YT (44 km, 27 miles)
- Tagish, YT (72 km, 44 miles)
- Conrad, YT (53 km, 33 miles)

Access to mine: all-weather road from Whitehorse, YT or helicopter from Whitehorse airport.

Impact and Benefit Agreement (IBA): No

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> While original mine was only open for two years, it was quite profitable, helping to stimulate intensive and successful exploration of the Wheaton Valley district. Remains strong potential for additional discovery on the site. Some of the facilities of the past producing mine will be useful for current project. Current owner has strong balance sheet and no debt, and thus is well positioned to build value out of this mine and thus bring economic benefits to the area. 	<ul style="list-style-type: none"> Ongoing water quality concerns that have prevented the mine from being fully closed and remediated. Current owners of the mine ignored safety inspector orders to shut down due to their operating defective pieces of equipment in 2013. They paid a \$24,000 fine. Concerns raised about increased volume of traffic and potential for contamination seeping into Wheaton River.

Relevant Links

- Simpson, Ronald & GeoSim Services, Inc. (July, 2012), [“Amended Technical Report: Skukum Gold-Silver Project”](#) Whitehorse Mining District, Yukon Territory, Canada, Prepared for New Pacific Metals Corp.
- New Pacific Metals Corp. (2011), [“New Pacific Plans Work for its Newly Acquired, 100% Owned Tagish Lake Gold Property, Yukon Territory, Canada”](#).
- CBC News (2013), [“Yukon mine apologizes for safety violation”](#)
- The Whitehorse Daily Star (2006), [“Tagish Lake Gold pursues production plans”](#).
- Stasyszyn, Roxanne. (July 30, 2012). [Tagish Lake Gold facing safety charges](#). Yukon News.
- Marketwire. July 4, 2011. **New Pacific Metals Corp.:** [Progress report on the Tagish Lake Gold Project, Yukon and on Application for Listing on the TSX](#)

Link to Environmental Impact Statement: This is available on the YESAB registry using advanced search and proponent name “Tagish Lake”. <http://www.yesabregistry.ca/>

List of relevant research:

- McDonald, B.W.D. (1990), [“Geology and Genesis of the Mount Skukum Epithermal Gold-Silver Deposits, Southwestern Yukon Territory”](#), Indigenous and Northern Affairs Canada.
- Love, David Allen (1997), [“The Mount Skukum Epithermal Gold Deposit and its Geological Setting, Yukon Territory, Canada”](#) Doctoral Thesis, Queen’s University.
- Yukon Mineral Property Update (2008), [“Mount Skukum/ Skukum Creek/ Goddell Properties”](#).
- Nassichuk, W.W. (1987), [“Forty Years of Northern Non-Renewable Natural Resource Development”](#), *Arctic*, 40(4): 274-284.
- MiningWatch Canada (2001), [“Financial Options for the Remediation of Mine Sites”](#), (p. 13)

Review Board Decision: Approved with conditions in 2008 (see attached Appendix)

Reports from Subprojects and Theme Coordinator work:

[Environmental Legacies, Resource Development, and Remediation in the Arctic](#) (Project Lead: John Sandlos)

[Well-Being and the Impacts of Resource Development](#) (Project Leader Brenda Parlee)

[Understanding Resource Revenue Flows and How to Stop Leakages: A Case Study of the Yukon.](#) (Project Leader Chris Southcott)

Yukon Mineral Properties update 2008 [Mount Skukum/ Skukum Creek/Gooddell Properties](#) page 66-69. <https://www.hitpages.com/doc/5305039081963520/76#pageTop>

APPENDIX:

Yukon Environmental & Socioeconomic Assessment Act

Decision Document

This document meets the Yukon government's requirements as a Decision Body as set out in the *Yukon Environmental & Socioeconomic Assessment Act*

Decision Document Issued By:

YG Decision Body: EMR – Mineral Resources

[where applicable]

Federal Decision Body(ies):

[where applicable]

First Nation Decision Body(ies):

Project

Project Name : Quartz Mining, Skukum Creek YESAA File Number 2006-0324

Proponent Name: Tagish Lake Gold Corp.

Project Description:

The principal activity for this project is to conduct quartz exploration of the Skukum Property at the 1100 meter elevation, near Skukum Creek. The Skukum Property is accessible through the use of a 20 km Yukon Government maintained road (Annie Lake Road) and a 20 km gravel road beyond the Wheaton River Bridge. The proposed project is an amendment to a current water license (QZ02-057 Expiry: August 12, 2009) and will operate May through December. The activities associated with the principal project include:

- Mobilizing, demobilizing and storage of equipment and materials;
- Construction of a service, waste rock and overburden area;
- Excavation of approximately 27,000m³ of waste rock;
- Use of approximately 450 kg per day of explosives;
- Up to 480m³ per day for dewatering 1100m portal; and
- Exploration drilling of approximately 30 holes with the total length of 6,000 meters.

Accessory activities relating to this project include:

- Construction of a 14 meter free span steel girder bridge over Skukum Creek;
- Construction of two lined sumps within the service area;
- Construction of a drainage ditch and a settling pond;
- Storage, transport and use of approximately 45,000 litres of diesel fuel; and

- Reclamation of site after final site decommissioning.

* Note: In May 2006, a YESAA assessment (Project Number 2006-0106) was completed resulting in amending the Quartz Mining Land Use Operating Plan LQ00080. The project scope included: mobilizing, demobilizing and storage of equipment and materials, exploration drilling, use of explosives, construction of underground structures, excavating and storage of waste rock and reclamation of the site after final decommissioning. Therefore, these activities have existing authorization. The purpose of this assessment is for an amendment to existing Water License QZ02-057, to include the activities relating to this project scope.

Other Decision Bodies

Other Decision Body Consultation: *[list decision bodies consulted where applicable]*

Consolidated Decision Document: N/A
 No
 Yes *[list decision bodies consolidated with where applicable]*

Non-Self Governing First Nations

Non-self governing First Nation Consultation: *[list First Nation consulted where applicable]*

Decision

Pursuant to ss. 75, 76 and 80, the Yukon government has considered the YESAA Assessment and:

Accepts the following recommendation(s)

-

b) Rejects the following recommendation(s) for the following reason(s):

- *[List specific reasons]*

-

c) Varies the following recommendation(s) as follows for the reason(s) specified:

The following will be incorporated in a water use licence issued by the Yukon Water Board:

Government of Yukon accepts the following unchanged:

The following mitigative measures shall be complied with:

-
- The proponent shall comply by Department of Fisheries and Oceans Pacific Region Operational Statements- Clear Span Bridge and Bridge Maintenance.
 - The proponent shall construct and maintain a berm around the perimeter of the portal area. Rationale: To reduce potential spills of hydrocarbons, fluids and other hazardous material into Berney Creek and Skukum Creek.
 - The proponent shall construct and maintain a berm along the length of the toe of the waste rock dump. Rationale: To limit encroachment of the waste rock slope into the 30m reserve and Skukum Creek.
 - The proponent shall adhere to the following conditions regarding fording of the creek channels:
 - f) All crossings shall be at a right angle to the stream:
 - g) The stream crossings approaches shall be low and stable enough to support the vehicles and equipment;
 - h) The stream shall be crossed on either a firm rock or a coarse gravel bottom; and
 - i) The blade or bucket on equipment shall be left in a raised position when crossing the stream.
 - j) Equipment crossing the streams shall be mechanically sound and free of leaks.
 - The proponent shall have a Water Treatment and Acid Base Accounting/Metal Leaching Contingency Plan in place prior to the start of the project. Rational: The proponent has identified that this plan will include measures to be taken in the event of a temporary closure, to maintain efficiency of the system, measures to be taken in case of an emergency situation and to include an adit drainage plan.
 - Periodic monitoring of fish and benthic populations. Rationale: to determine any change in species presence and distribution. (Proposed by proponent, YESAA Online Registry 2006-0324-042-1)

Government of Yukon varies the following:

- The proponent shall incorporate those recommendations regarding potential discharge flow and water quality, reference in the geotechnical report provided by EBA Engineering Consultants (October 23, 2006) “Geotechnical Report on Anticipated Conditions in the Lower Adit Skukum Creek Property, Yukon”.

Replaced with:

- The proponent shall incorporate those recommendations regarding potential discharge flow and water quality, referenced in the geotechnical report provided by EBA Engineering Consultants (October 23, 2006) “Geotechnical Report on Anticipated Conditions in the Lower Adit Skukum Creek Property, Yukon” and the “Lower Adit Letter report Addendum – Drainage and Sump Headings, Skukum Creek, YT” (December 6, 2006).

Justification:

- *The Geotechnical Report (October 23, 2006) deals with rock structure and stability, except for one recommendation on page 8. The technical memo (December 6, 2006) deals with discharge flow and water quality.*

Government of Yukon varies the following:

-
- Periodic sediment removal from the sumps and settling pond to a location for disposal at least 30m from as far back from the edge of the top of the slope of the waste rock dumps away from Skukum Creek.

Replaced with:

- The proponent will dispose of sediment from the sumps and settling pond to an area that is at least 60m from Skukum or Berney creeks.

Justification:

- *The proponent is not limited to disposal at the waste rock dump, as long as the mitigation to the creeks is met.*
-

Dates

Project Recommendation Issued:

February 5, 2007

Decision Document Issued:

February 16, 2007

Recommendation Received From:

Location:

Designated Office

Teslin

Executive Committee

Panel

a) Panel of the YESAB

b) CEAA Panel

c) Joint Panel (YESAB and other assessment body)

Authorization

By signing below, the Yukon government has exercised its authority as per YESAA s. 75 or s. 76 to issue a decision document on this project.

Name: Robert Holmes

Position: Director, Mineral Resources

Signature: _____

Date: _____

Original signed by Robert Holmes



Sa Dena Hes (Mt. Hundere) Mine

YUKON; Latitude and Longitude: 60°31'24.58" N, 128°51'53.72" W

Description of the mine

The Sa Dena Hes Mine, also known as the Mt. Hundere Mine, was a lead-zinc mine located in the South-eastern Yukon. It operated briefly in the early 1990s. There were plans to reopen the mine in the mid-late 1990s but they were unsuccessful and the mine is now in a state of permanent closure. Teck decommissioned the mine in 2014 and is currently completing final reclamation activities.

Photograph of the Sa Dena Hes lead-zinc mine on the CBC website at:

http://i.cbc.ca/1.2779416.1411767193!/fileImage/httpImage/image.JPG_gen/derivatives/original_300/sa-dena-hes-mine-yukon.JPG

General Information

Location: South-eastern Yukon

Type of mine and ore: Open-pit/Underground; lead-zinc

Owner(s): Teck (50% ownership and operator) and Pan Pacific Metal Mining Corp. (50% ownership; subsidiary of Korea Zinc) (1994 – Present); Curragh Resources (80% ownership) and Hillsborough Resource Ltd (20% ownership) (1989 – Dec 1993); Canamax Resources (n.d. – 1989)

Time of operation: From August 1991 – November 1992 (14 months)

Average number of employees: 110

Estimated size of ore body: 2.190 million tonnes; proven and probable 1.3 million tones

Average production value: grading 10.4% Zn and 2.6% Pb; proven and probable 10.1% zinc, 2.3% lead and 43 g/t silver

Local employment figures: unknown

Mining activities conducted: year round

Nearby communities: Watson Lake 40 km/ 25 miles

Access to mine: Road

Impact and Benefit Agreement (IBA): Yes a socio-economic agreement was signed by Cominco, Kaska Dena First Nation, Liard First Nation, the Town of Watson Lake and the Yukon Government in 1991

In October 1997 Cominco (now Teck) signed a socio-economic agreement with Liard First Nation it was updated in 2012

Percentage of Indigenous employees: unknown for original mining activities; 50% of all Teck-contracted hours worked on-site were First Nations employees in 2014

Impacts of Mine

<i>Positive</i>	<i>Negative</i>
<ul style="list-style-type: none"> • Mine sale included requirements for First Nation participation in future ventures • Teck has a strong working relationship with the Yukon Government and the affected Yukon First Nation governments 	<ul style="list-style-type: none"> • 11 people injured when a bunkhouse exploded in 1991 • 1000 gallons of diesel spilled in 1991; 300 gallons of diesel spilled in 1992 • Clean up crews faced lead exposure during reclamation

Relevant Links

News

- Hartland, Samson (2015), [Yukon’s mining industry has come a long way since the Gold rush](#), *Yukon News*
- Dolphin, Myles (2015), [More than 200 may have faced lead exposure](#), *Yukon News*
- Alarcon, Krystle (2014), [Worker says he got lead poisoning at mine cleanup](#), *CBC News*
- CBC News (2014), [Lead poisoning found in clean-up workers at Yukon mine](#)
- [Sarasota Herald Tribune \(1991\), Blast blows Miners Out of Bed](#)

Websites

- Yukon Energy, Mines and Resources, [Sa Dena Hes](#)
- [Town of Watson Lake](#)
- [Laird First Nation](#)
- [Kaska Dena First Nation](#)
- Teck, [Planning for Closure](#)

Reports and Presentations

Teck Resources Ltd. (2015), [Detailed Decommissioning & Reclamation Plan August 2015 Update](#) [167 pages]

Azimuth Consulting Group Partnership (2014), [Sa Dena Hes Mine Human Health Risk Assessment \(HHRA\)](#), *Teck Metals Ltd.* [332 pages]

Golder Associates (2013), [Phase I and Phase II Environmental Site Assessment](#) [497 pages]

Teck Resources Ltd. (2013) [Sa Dena Hes Mine Detailed Decommissioning & Reclamation Plant Appendix H – First Nations Consultation](#) [38 pages]

Yukon Energy, Mines and Resources (2008), [Sa Dena Hes Property, Mineral Property Update 2008](#)

Environmental Directorate (2001), [Screening Report On the Sa Dena Hes Mine Project](#) [93 pages]

[Sä Dena Hes Mine - Plans and Reporting Summary](#)

Link to Environmental Impact Statement/Review Board Decision:

Original Assessment:

http://emrlibrary.gov.yk.ca/minerals/MajorMines/sa_dena_hes/project_proposal_post_reclamation_phase/appendices/20141028_2014-0179_appendix_g_reporting.pdf

Reclamation assessment: http://www.emr.gov.yk.ca/mining/sa_dena_hes.html

List of relevant materials from EMR library web

http://emrlibrary.gov.yk.ca/minerals/MajorMines/sa_dena_hes/

List of relevant research:

Dreyer, Doris (2001), [Impact and Benefit Agreements: Do the Ross River Dena Benefit from Mineral Projects](#) (M.A. Dissertation). University of Northern British Columbia

Prystupa, Mark V. (1994), [Evaluation of Yukon Environmental Assessment Interest Representation](#) (PhD Dissertation). University of Western Ontario.

Notzke (1994), [Aboriginal Peoples and Natural Resources in Canada](#). Concord, ON: Captus University Publications.

Training programs:

- ➔ Preferential rights to training
- ➔ Minimum targets for apprenticeships

Impact Benefit Agreement: agreement is not public; some details regarding the original agreement can be found in Notzke (1994) – see reference details above

Reports from Subprojects and Theme Coordinator work:



Tantalus Coal Mine

Description of the mine

The Tantalus and Tantalus Butte Coal Mines were located in the Carmacks area of the Yukon Territory. Coal was first report in the area in 1887 by George Dawson, who found that coal outcrops in the area provided a source of fuel for prospectors and trappers. In 1903, Captain Miller of the steamboat Reindeer opened a coalmine called “Hidden Treasures” along the river above Carmacks. Later called Tantalus Butte Mine, this operation was supposed to supply coal for steamboats, but not many boats ever converted to coal from wood. Later on, the coal was used for heating fuel in Dawson. Production rose to ten thousand tons per year by 1907, but dropped to a few hundred tonnes per year by 1918. It closed in 1922 when a fault was reached in the main tunnel, and the coal vein could not be relocated, and the operation moved across the river to Tantalus Butte. The Tantalus Butte Mine operated for many years afterward, though it went through a series of openings and closings. It was re-opened a final time in 1970 by Anvil Mining Corporation, who used the coal to heat their Faro lead-zinc mine. It closed permanently in 1982. A forest fire in the 1950s ignited a small coal seam at the old mine, and some locals report that smoke can occasionally still be seen coming out of crack in the ground around the old workings. The mine site was not one of the seven mines the federal government agreed to clean up during devolution.

Photograph

Series of photographs of the mine site at the Explore North website page on **The Tantalus Butte Coal Mine Carmacks, Yukon Territory** by [Murray Lundberg](http://www.explorenorth.com/library/mining/tantaluscoal.html)
<http://www.explorenorth.com/library/mining/tantaluscoal.html>

General Information

Location: Along the Yukon River near Carmacks, Yukon Territory

Type of mine and ore: underground coal mine.

Owner(s): Anvil Mining Corporation, Yukon Coal Company (subsidiary of Cassiar Asbestos), Captain Miller

Time of operation: From 1903-1922, 1970-1982

Average number of employees: 250 workers

Estimated size of ore body: 5.5 million tonnes

Average production value: \$80-100 per tonne (1910 dollars)

Local employment figures: Unknown

Percentage of Indigenous employees: Unknown

Mining activities conducted: year-round

Nearby communities:

- Carmacks, YT (2 km, 1.17 miles)
- Little Salmon, YT (32 km, 19 miles)
- Minto, YT (64 km, 40 miles)
- Pelly Crossing, YT (83 km, 52 miles)

Access to mine: all-season road

Impact and Benefit Agreement (IBA): None

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> • Important part of Yukon history. • Infrastructure developed for the mine was utilized by other mines in the area. • Facilitated the development of the Carmacks community. • Began to hire First Nations workers in 1945, and for many years this was an important income for those who had settled around Carmacks. • Very productive mine for its time, mining over 10,000 tonnes of coal per year at its peak. 	<ul style="list-style-type: none"> • Coal fires continue to burn underground at the site, with residents complaining of smoke and fire escaping from up to six different mine entrances. Residents downhill are concerned if deadly gases, avalanches or mudslides could come from the mine. • Mayor of Carmacks concerned that site is not barricaded off and is thus a safety hazard. • Testimony that conditions were very poor for miners underground, with extremely low temperatures.

Relevant Links

- CBC (2007), [Former mine fires alarm Carmacks residents](#)
- McLaughlin, Les. [Yukon Nuggets: “Tantalus Coal Mine”](#), Hougen Group of Companies
- Dawson Daily News (1910), [“Opening the Coal Property: Several Men Prospecting”](#)
- Tage Cho Hudan Interpretive Centre, [“Carmacks, Yukon: A Northern Tutchone Homeland”](#)

List of relevant research:

- Boyd, B.W. (1973), [“Coal Resources of the Carmacks Area, Yukon Territory”](#), Department of Indian Affairs and Northern Development.
- Lundberg, Murray [“The Tantalus Butte Coal Mine”](#), *Explore North*

Reports from Subprojects and Theme Coordinator work:

[Environmental Legacies, Resource Development, and Remediation in the Arctic](#) (Project Lead: John Sandlos)

[Well-Being and the Impacts of Resource Development](#) (Project Leader Brenda Parlee)

[Understanding Resource Revenue Flows and How to Stop Leakages: A Case Study of the Yukon.](#) (Project Leader Chris Southcott)



Whitehorse Copper Belt Mines 1900-1920

Latitude and Longitude:

Copper King: 60.7398194, -135.14302782

Grafter: 60.67237516, -135.12108739

Arctic Chief: 60.66138929, -135.11699471

War Eagle: 60.743037, -135.175305

Pueblo: 60.723931, -135.17566

Valerie: 60.631214, -135.061157

Empress of India: N/A

Anaconda: 60.7496, -135.145604

Rabbit's Foot: 60.751213, -135.148473

Best Chance: 60.67280663, -135.12053167

Description of the mine

Between 1900 and 1920 a collection of 10 or more mines operated on the Whitehorse Copper Belt, a 30 km stretch of copper-rich skarn running parallel to the Alaska Highway. Due to poor record keeping and the onset of World War I, there may have been more operations shipping ore than are listed here. Starting small in the early 1900s (2-5 people working each site), operations were mired by transportation and technological difficulties due to the isolation of the Yukon and its cold environment. Mines would frequently stockpile ore until prices rose and it was once again profitable to transport it from their isolated locations. Between 1903 and 1907 prospects increasingly grew into mines, the larger of which included Copper King, Grafter, Arctic Chief, War Eagle, Pueblo and Valerie. Empress of India, Anaconda and Rabbit's foot were smaller operations in the area. The Copper King mine was the first mine to ship out ore, starting in 1900. Pueblo was the largest mine and at its peak produced up to 227 tonnes of ore per day (1916). Pueblo produced nearly 128,000 tonnes of 3.5% Cu while operated by the Atlas Mining Company (1912-1920), and this accounted for 86% of the copper belt's ore production of the time. Approximately \$2,712,000 worth of copper ore came out of all the copper belt mines combined in that period. Copper Prices dropped with the end of WWI and transporting ore to the smelters in the south proved too expensive. The copper belt mines were therefore abandoned and not seriously revisited for another 40 years.

Photograph



General Information

Location: Whitehorse Copper Belt, within Whitehorse City Limits today, Yukon

Type of mine and ore: Surface and Underground operations. Copper Ore.

Owner(s): Mines changed hands easily, especially in their early days (between 1900 and 1910). Records are incomplete. Some of the larger mines are more easily traceable:

- Copper King
 - William Grainger (1900-1907) & Jack McIntyre (1900-1902)
 - 1907 Colonel W.S. Thomas of Guffey & Thomas
- Pueblo
 - 1900 British American Corporation
 - 1906 Yukon Pueblo Mining Company
 - 1910-1920 Atlas Mining Company
- War Eagle
 - 1900-1912 -Sam McGee (partial owner)
 - 1912-1920 Atlas Mining Company
- Valerie
 - 1906 A.B. Palmer
 - 1912-1920 Atlas Mining Company
- Grafter
 - 1900 Robert Lowe
 - 1912-1920 Atlas Mining Company
- Arctic Chief
 - 1906 Arctic Chief Copper Mines Company
 - 1912-1920s Atlas Mining Company
- Best Chance
 - 1906 Arctic Chief Copper Mines Company
 - 1912-1920s Atlas Mining Company

Time of operation: From 1900 to 1920s

Average number of employees: Varied by mine and era.

- After copper prices crashed in 1908 only 25 men in the entire district worked on mining.
- 70 workers at Pueblo in 1910
- In 1912 about 200 workers total were employed at Pueblo, Best Chance, Grafter and Valerie

Estimated size of ore body: There were several ore bodies. The richest exploited site was Pueblo. More than 147,000 tonnes of ore produced in this era.

Average production value: Varied by deposit. 3.5% - 18% Cu

- Copper King - 1915-1920, 4,800 tonnes ore of 10% Cu
- Pueblo - 1912-1914, 127,000 tonnes of ore 3.5% Cu, 50% Fe
- War Eagle - 1907-1915, 900 tonnes of shipping grade ore
- Valerie - 1907, 90 tonnes 18% Cu
- Grafter - 1907, 12,000 tonnes 6% Cu
- Arctic Chief - 1904, 127 tonnes 7.22% Cu

Local employment figures: N/A, Many miners were Klondike stampeders who never made it to Dawson. They were from all over the world, but there would've been an overwhelming number of Americans.

Mining activities conducted: Surface and Underground; In the early days seasonal. In 1907 Copper King, Grafter, Arctic Chief, War Eagle, Pueblo and Valerie planned to be open in the winter. After that production may have been year round.

Nearby communities:

Whitehorse –distances from town site:

- Copper King (6 km)
- Pueblo (7 km)
- War Eagle (7.5 km)
- Valerie (9.5 km)
- Grafter (6 km)
- Arctic Chief (7 km)
- Best Chance (6 km)

Access to mine: A trail was built between Whitehorse and the copper mines (distances up to 30 km) in 1900, funded by the Territorial Council. White Pass and Yukon Route built a spur line from their main track at Macrae, through Valerie, Arctic Chief, Grafter, Best Chance and ending at Pueblo; this was completed in 1910. By 1909 all major mines had a road.

Impact and Benefit Agreement (IBA): No

Percentage of Indigenous employees: N/A

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> ● Provided incentive for Yukon Territorial Council to finance trails and roads to all the major sites. ● Wood cutting industry to support the mines provided many jobs outside of mine labour ● Provided the economic and political stability for Whitehorse to establish itself as a permanent town site. ● Boom times or increased speculation in the copper belt (especially 1900 and 1906-7) led to increased in-town prices, especially for real estate. 	<ul style="list-style-type: none"> ● Largest mining disaster in Yukon's history happened at Pueblo mine March 21st 1917 when 9 miners were caught in a tunnel collapse. 3 were rescued, 6 died. ● Whitehorse industry was largely dependant on the mine and in 1911 when Pueblo temporarily ceased operations and White Pass did some layoffs, the city's population decreased by 20-30% ● There was a narrow margin of profit after extraction and transportation costs. The mine and its workers were therefore highly vulnerable to world copper prices ● Many of the mines were not appropriately decommissioned and remain hazardous. A dog got stuck in an adit entrances in the 1990s, nearly 80 years after the site had been abandoned. ● Many mines located on and affect the traditional territories of Southern Tutchone First Nations. There were no

	consultations or considerations for previous land occupants.
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Relevant Links

- Dobrowolsky, Helen and Rob Ingram (1993) “A History of the Whitehorse Copper Belt”.
[http://emrlibrary.gov.yk.ca/ygs/open_files/1993/1993_1\(i\).pdf](http://emrlibrary.gov.yk.ca/ygs/open_files/1993/1993_1(i).pdf)
A comprehensive outline of mining activity on the copper belt from 1898 until 1990s
- MacKay, Gordon; Rick Diment and Jo-Anne Falkiner (1993). “Whitehorse Copper Belt a Simplified Technical History” [http://emrlibrary.gov.yk.ca/ygs/open_files/1993/1993_2\(i\).pdf](http://emrlibrary.gov.yk.ca/ygs/open_files/1993/1993_2(i).pdf)
Companion piece to “A History of the Whitehorse Copper Belt” by Dobrowolsky & Ingram
- Danièle Héon (2004) “The Whitehorse Copper Belt, Yukon”
http://ygsftp.gov.yk.ca/publications/miscellaneous/brochures/copperbelt_booklet.pdf
An annotated geology map and booklet of the economic and geological history of the copper belt. Has recent pictures of the areas of interest.
- Kindle, E.D. (1964) “Copper and Iron Resources, Whitehorse Copper Belt, Yukon Territory”
http://emrlibrary.gov.yk.ca/gsc/papers/63-41/pa_63-41.pdf
Historical and contemporary review of mining activity and geological survey of the Copper Belt.
- McConnell, R. G. (1909) “The Whitehorse Copper Belt”
<http://babel.hathitrust.org/cgi/pt?id=mdp.39015067296288;view=1up;seq=37>
Done for the Geological Survey of Canada in 1907, it is a geological and mining overview of the area contemporary to the mines discussed in this profile.
- Gaffin, Jane (2014) “A Glimpse at the Whitehorse Copperbelt”
<https://janegaffin.files.wordpress.com/2014/10/whitehorse-copperbelters.pdf>
Comprehensive summary of Gaffin’s research into the Copper Belt. She was a journalist in the Whitehorse area, particularly active in the 1970s.

Link to Environmental Impact Statement: N/A

List of relevant research:

Review Board Decision: None

Training programs: None

Impact Benefit Agreement (if public): None

Reports from Subprojects and Theme Coordinator work: NA



Whitehorse Copper Mines (1967-1982)

Latitude and Longitude for mine sites:

- *Little Chief:* 60.64100119, -135.05989562 (most work was done at the little chief deposit)
- *Black Cub South:* 60.570092, -134,946731
- *Arctic Chief:* 60.66138929, -135.11699471
- *War Eagle:* 60.743037, -135.175305
- *Keewanaw:* 60.57823166, -134.96085871

Description of the mine

Whitehorse Copper Mines (WCM) started mining operations in 1967 on several sites previously mined between 1898 and 1920 on the Whitehorse copper belt. The Whitehorse copper belt is a 30 km stretch of copper-rich skarn that runs parallel to the Alaska highway in the area behind the Whitehorse town site, within current city limits. A mill was constructed at Macrae, close to the Little Chief deposit, so raw ore could be converted into concentrate, making transportation easier. From 1967-1971 New Imperial was open pit mining at six deposits including Little Chief, Arctic Chief, War Eagle, Keewanaw and Black Cub South. How much was extracted at each site varies by report, but overall more than 2,884,847 tonnes of ore was extracted in this period. All surface deposits were mined out by 1971 and WCM was dormant for about a year.

In 1971-72 the company was restructured and became Whitehorse Copper Mines Ltd. The Little Chief underground development became the company's sole producing site, though exploration continued throughout the company's holdings on the belt. The mine stayed open for another 10 years before world copper prices dropped and it was no longer economical to maintain operations. The mine officially closed on December 31st, 1982. Overall Whitehorse Copper Mines milled 10,247,000 tonnes of ore from the open pits and the Little Chief underground operation. 7.25 million of those tonnes came from Little Chief. In 2010 preliminary preparations were made to extract magnetite from the Whitehorse Copper Tailings, but by 2014 low iron-ore prices and local lawsuits saw the project mostly defunct.

Photograph



General Information

Location: Whitehorse copper belt, Whitehorse, Yukon

Type of mine and ore: Surface operations (1967-1971) and Underground operations (1971-1982).

Principally mined copper ore with about a quarter to a third of revenue coming from gold and silver production

Owner(s): Hudson Bay Mining and Smelting Company (1978-1982); Hudson Bay Mining and Smelting Company & Anglo American Company of America (1972-1978); New Imperial Mines and Minerals (1967-1971)

Time of operation: From May 1, 1967 to December 31, 1982

Average number of employees: Had workforce of 95-150 people between 1967 and 1971. WCM had 200 employees annually in the 1970-1982 era.

Estimated size of ore body: Little Chief ore body totalled about 9.1 million tonnes.

Average Production Value: Mill concentrate averaged at 35% Cu

Local employment figures: Most new employees after 1968 were hired locally and trained on the job.

While a few of the head figures were from Toronto, the labour was not migratory. No statistics available.

Percentage of Indigenous employees: There were some indigenous employees, but the percentage was low (no numbers available).

Mining activities conducted: Seasonal work above ground (1967-71), year round operations underground (1971-82).

Nearby communities: All sites are within current day Whitehorse city limits

-Little Chief is approximately 8km from townsite

Access to mine: Copper Haul Road

Impact and Benefit Agreement (IBA): No

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> ● Provided significant direct employment to the Yukon’s largest town. ● Employees didn’t need to fly-in to a camp, and could live with their families in town ● Supported transportation and secondary industries (construction, maintenance, material suppliers) ● Supported local recreational activities, including supporting local softball events. ● The first female mine labourer, Jeanne MacGillivray, won the right to work at this mine, setting a precedent for future mining activities in the Yukon. 	<ul style="list-style-type: none"> ● The loss of the mine crippled local businesses and industry that depended on the mine, including the transportation and housing sectors. ● The mine increased Whitehorse’s population, and while the city’s population continued to increase after the mine’s closure, post 1982 there was a substantial increase of people on social assistance and further stress on local infrastructure that was already weakened by the loss of the mine. ● With the mine’s closure White Pass and Yukon Route Railway could no longer afford to stay open and shut down in

<ul style="list-style-type: none"> • Created and further developed roads and trails in the Whitehorse area that have since been repurposed for recreational activities such as biking, skiing, and snowmobiling. • War Chief mine site was repurposed into the Whitehorse Municipal Landfill 	<p>1982.</p> <ul style="list-style-type: none"> • Dust from the tailings pond can billow up and blow toward Whitehorse • No consultation with local indigenous groups. • No initial remediation plans, though remediation has been moderately successful
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Relevant Links

- Craig, D.B. (1995) [“Vegetative Rehabilitation of Whitehorse Copper Mine Tailings Report Number 2.”](#)
- Dobrowsky, Helen and Rob Ingram (1993) [“A History of the Whitehorse Copper Belt”](#). A comprehensive outline of mining activity on the copper belt from 1898 until 1990s
- MacKay, Gordon; Rick Diment and Jo-Anne Falkiner (1993). [“Whitehorse Copper Belt a Simplified Technical History”](#)
- Danièle Héon (2004) [“The Whitehorse Copper Belt, Yukon”](#) An annotated geology map and booklet of the economic and geological history of the copper belt. Has recent pictures of the areas of interest.
- Bidwell, G. (1985) [“Assessment Report on Whitehorse Copper Mines Property”](#)
- Gadsby Consultants Ltd. and Steffen Robertson & Kristen (B.C) Inc. [“Whitehorse Copper Mine Yukon Territory Conceptual Decommissioning Plan”](#)
- Gaffin, Jane (2014) [“A Glimpse at the Whitehorse Copperbelt”](#) Comprehensive summary of Gaffin’s research into the Copper Belt, which was extensive as she was a journalist in the WCM era
- Whitehorse Daily Star (September 2014) [“Mine Tailings Project Not Looking Good”](#)
- Brodie, M.J. (1995) [“Whitehorse Copper Mine Reclamation Review”](#)

Link to Environmental Impact Statement: None

List of relevant research:

Whitehorse Copper Mines Limited (1975). Annual Report 1975. (Available at Energy Mines and Resources Library in Whitehorse)

Review Board Decision: None

Training programs: None

Impact Benefit Agreement (if public): None



WOLVERINE Mine

Description of the mine

Wolverine mine was a recent zinc-silver-copper-lead-gold mine that operated in the southeast Yukon region for 4 years. In 2015 the mine was put on care and maintenance due to low commodity prices. The company operating the mine, Yukon Zinc, entered creditor protection in the spring of 2015. The company has a restructuring plan and the mine is to remain in care and maintenance for the foreseeable future. There is a prospective buyer for the site but currently there are no plans to sell the mine.

Photograph

<http://yukon-news.com/news/100-jobs-cut-at-wolverine-mine/>

General Information

Location: South-east Yukon

Type of mine and ore: underground zinc-silver-copper-lead-gold

Owner(s): Yukon Zinc Corp (parent company Jinduicheng Molybdenum Group)

Time of operation: 2011 – January 2015 (currently on care and maintenance)

Average number of employees: up to 365 staff including contractors

Estimated size of ore body: measured 4.52 million tonnes; inferred 1.69 million tonnes

Average production value: measured grading 12.04% zinc, 351.5 grams per tonne silver, 1.15% copper, 1.68 grams per tonne gold and 1.57% lead; inferred grading 12.16% zinc, 385.1 grams per tonne silver, 1.23% copper, 1.71 grams per tonne gold and 1.74% lead

Local employment figures: over 28% are from the Yukon, 21% are First Nations

Percentage of Indigenous employees: 18-21% were First Nations

Mining activities conducted: Year round, employees on a two-week in two-week out rotation

Nearby communities:

- Ross River (180 km, 112 miles)
- Watson Lake (190 km, 118 miles)
- Whitehorse (282 km, 175 miles)

Access to mine: access road west off of the Robert Campbell Highway and an all-season gravel airstrip.

Impact and Benefit Agreement (IBA): Yes, Yukon Zinc signed a socio-economic participation agreement with the Ross River Dena Council

Yukon Zinc Corp. webpage [Social Responsibility](http://www.yukonzinc.com/en/responsibility_social.cfm):
http://www.yukonzinc.com/en/responsibility_social.cfm

Impacts of Mine

Positive	Negative
<ul style="list-style-type: none"> • Over 145 employees were from the Yukon; 45 of which were Kaska First Nation • \$31.7 direct spending in the Yukon in 2013 • Utilized over 80 Yukon vendors • Annually contributed \$10,000 to the Yukon Government’s Finlayson Caribou Annual Survey • Yukon Zinc contributed to local cultural/environmental events in Ross River and Watson Lake • Collaboration with Yukon College • Yukon Zinc hosted pre-employment workshops • Kaska First Nation Scholarship • Mine had a strong social license to operate (see Pétrin 2012) 	<ul style="list-style-type: none"> • 3 deaths related to mining activity • Over 100 jobs loss due to mining closure • Businesses, suppliers and employees received late or partial payments due to Yukon Zinc’s financial difficulties • Non-compliance with closure plan lead to flooding of the mine • Occupational health and safety concerns • Uncertainty regarding the future of the mine

Relevant Links

- CBC News (2015), [Campbell Highway upgrades favoured Wolverine Mine, say Yukon NDP](#)
- CBC News (2015), [Wolverine Mine creditors urged to accept Yukon Zinc proposal](#)
- CBC News (2015), [Yukon Zinc creditors vote ‘Yes’ to restructuring plan](#)
- CBC News (2015), [Wolverine Mine creditors to vote on Yukon Zinc’s debt repayment plan](#)
- CBC News (2015), [Yukon Zinc makes offer to creditors owed money by Wolverine Mine](#)
- CBC News (2015), [Yukon Zinc accused of concealing \\$4.4M in San Francisco bank](#)
- CBC News (2015), [Wolverine mine flooding, Yukon Zinc not complying with agreements](#)
- CBC News (2015), [Wolverine Mine closure felt by Watson Lake](#)
- CBC News (2015), [Yukon Zinc sues Procon Mining for defamation over mines lien](#)
- Tobin, Chuck (2015), [Unstable mineral markets blamed for shutdown of underground](#), *Whitehorse Star*
- Joannu, Ashley (2014), [Truck driver dies near Wolverine mine](#), *Yukon News*
- Yukon Zinc Corporation (2014), [Newsletter](#)
- Waddell, Stephanie (2013), [Official probe huge propane escape at the Wolverine Mine Site](#), *Whitehorse Star*
- Ronson, Jacqueline (2013), [100 jobs cut at Wolverine mine](#), *Yukon News*
- Rember, Reiner (2013), [Campbell Highway fiasco](#), *Yukon News*
- Ronson, Jacqueline (2013), [Yukon Zinc is boosting production at the Wolverine mine](#), *Yukon News*
- Yukon Zinc Corporation (2013), [Yukon Zinc Achieves Full Design Capacity at Wolverine Mine](#)

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- Yukon Zinc Corporation (2012), [Yukon Zinc Provides Company Update](#)
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- CBC News (2011), [Company pleads guilty in Yukon mine death](#)
- Tobin, Chuck (2011), [Workers escaped injury after massive cave-in](#), *Whitehorse Star*
- Munson, James (2010), [Wolverine trucks ore this week](#), *Yukon News*
- Munson, James (2010), [Tunnel collapse kills Wolverine mine worker](#), *Yukon News*
- Yukon Zinc Corporation (2010), [Wolverine Project Mine Development and Operation Plan](#)
- Thompson, John (2009), [Man dies at Wolverine mine](#), *Yukon News*
- Thompson, John (2009), [Wolverine aims to open in 2010](#), *Yukon News*
- Martinka-Peterson, Vicki (2009), [The yin and the yang: Yukon Zinc has bridged a cultural gap between western and eastern mining business models, thanks to its work with Chinese firms](#), *Exploration + Processing*
- Canadian Mining Journal Editor (2008), [Acquisition: Chinese scoop up Yukon Zinc](#), *Canadian Mining Journal*

Link to Environmental Impact Statement/Review board decision:

<http://www.emr.gov.yk.ca/mining/wolverine.html>

List of relevant research:

Dance, Anne (2015), "[Northern Reclamation in Canada: Contemporary Policy and Practice for New and Legacy Mines](#)". *The Northern Review*, 41: 41-80. <http://journals.sfu.ca/nr/index.php/nr/article/view/468>
<http://journals.sfu.ca/nr/index.php/nr/article/download/468/505>

Abstract: This article discusses the factors shaping contemporary reclamation regimes in the Yukon, the Northwest Territories, Nunavut, northern Labrador, and Nunavik in northern Quebec. It distils policy documents, laws, research reports, and newspaper articles for a clear overview of current policy and practice in the North and shows that no overarching vision informs reclamation planning. Instead of direction from Ottawa, responsibility for policy-making now largely sits with provincial, territorial, and regional governments along with local land and water boards. Efforts to mitigate the impacts of new and legacy mines are complicated by the highly site- and case- specific nature of reclamation; the lack of a clear, ambitious technical and regulatory definition of reclamation; and the jurisdictional overlap and governance issues associated with cleanup. Addressing these wider policy challenges in the North is crucial to meet the expansive, expensive demands of mine reclamation. As well, remediation efforts that draw on traditional knowledge and encourage local involvement can mitigate and manage some of the worst impacts of northern resource development. Policy reform such as strengthened regulations and more rigorous government enforcement will help facilitate this. However, reclamation can also exacerbate inequality and environmental problems. Effective reclamation demands more than a particular technological fix or planning strategy; it involves a candid discussion of the goals and limitations of reclamation projects, both past and present. This article has been summarized in an accessible up-to-date poster and will be of interest to concerned parties grappling with a plethora of reclamation regulatory bodies and programs.

Haney, Lauren Elizabeth (2009), [Evaluating Governance for its Contribution to Sustainable Development](#) (Master's Thesis) International Institute for Industrial Environmental Economics (IIIEE): Lund, Sweden.

Abstract

Few industries have as profound an impact on the natural environment and local and regional development as mining does. This work is premised on the notion that sustainability principles can be applied to mining development toward ensuring it contributes to and does not undermine sustainable development. This research focuses on large-scale mining in the Yukon Territory of northern Canada. The Yukon has deep historical and societal roots in mining, which has persisted as a cornerstone of its economy. The Territory is also characterised by a legacy of unsustainable mineral development that has left its mark on the region's environment and people.

Pétrin, Rébecca (September 14, 2012), [*Protection de l'environnement par L'acceptabilité sociale? Le cas des mines au Yukon*](#) (Master's Thesis) University of Sherbrooke: Sherbrooke, Quebec.

Training programs:

- Pre-employment to Mining Workshop
- Collaboration with Yukon College
- Kaska First Nation Scholarship (over 54 provided)
http://www.yukonzinc.com/en/responsibility_social.cfm

Impact Benefit Agreement: Documents are not publicly available