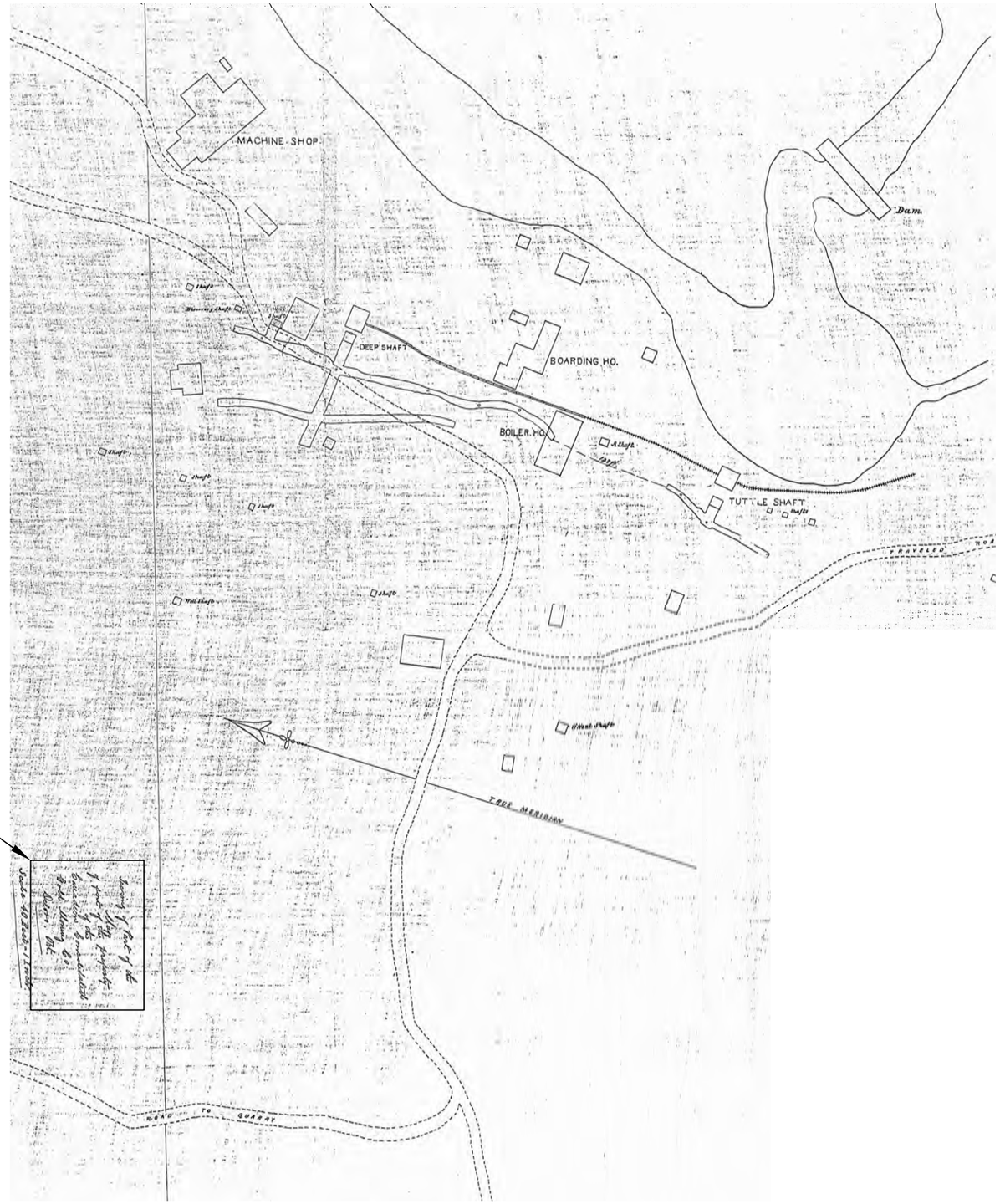
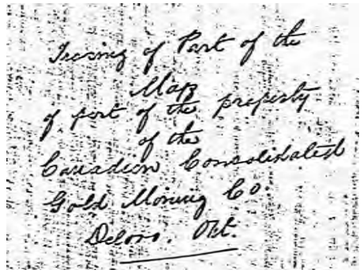


REFER TO INSET A

INSET A



REFERENCE

DRAWING BASED ON 'AUTHOR UNKNOWN'. PROVIDED BY THE MINISTRY OF THE ENVIRONMENT, *DELORO PROJECT COLLECTION*, KINGSTON, ONTARIO.

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

NOTED UNITS ON PLAN ARE IMPERIAL.

ALL LOCATIONS ARE APPROXIMATE.

PROJECT

CULTURAL HERITAGE EVALUATION REPORT
DELORO MINE SITE
TOWNSHIP OF MARMORA AND LAKE
HASTING COUNTY, ONTARIO

TITLE

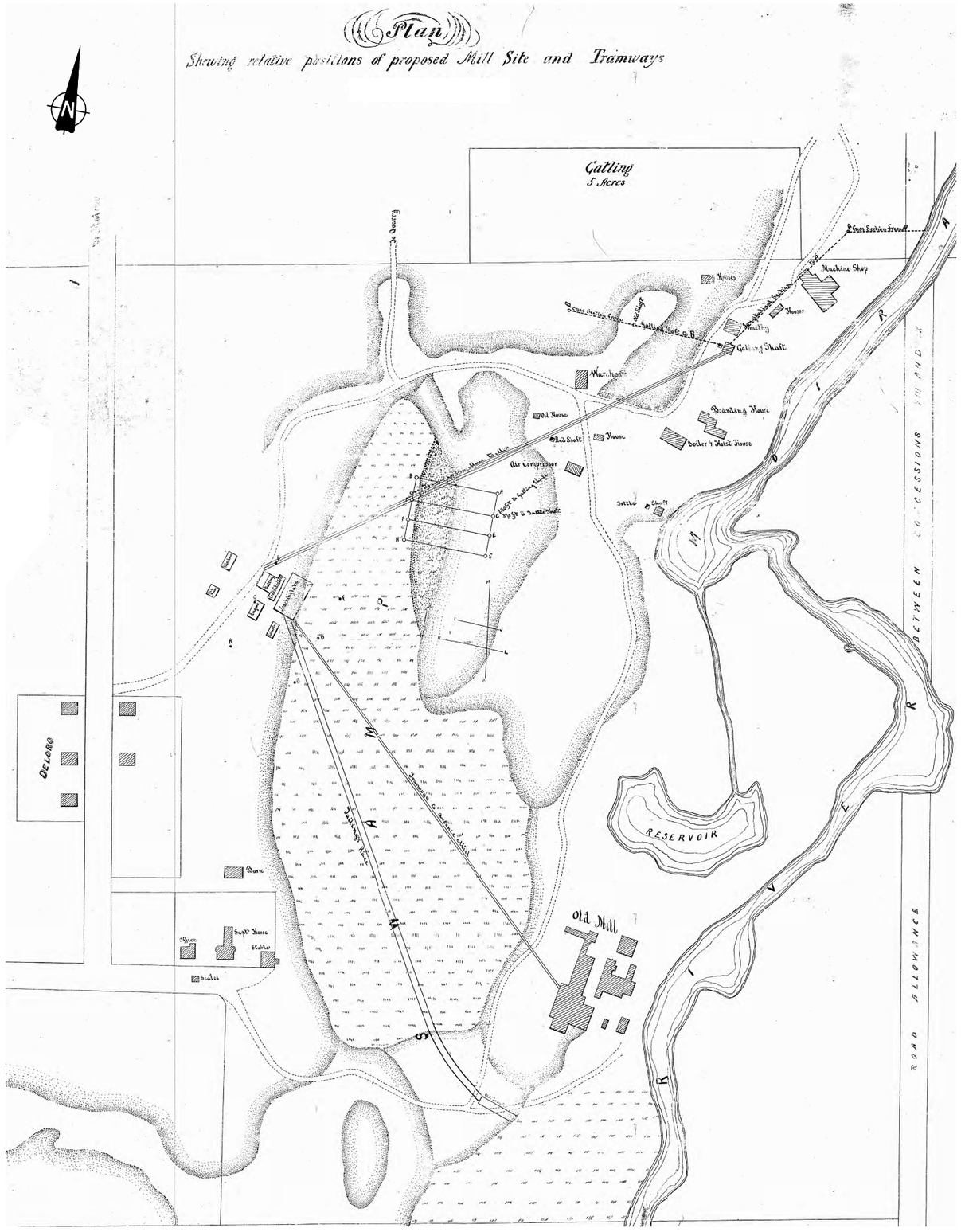
PORTION OF DELORO MINE SITE PROPERTY OWNED BY THE CANADIAN CONSOLIDATED GOLD MINING Co., 1884

Golder Associates
LONDON, ONTARIO

PROJECT No. 11-1126-0037			FILE No. 1111260037-4000-R06001	
			SCALE NTS	REV.
CADD	DCH	Apr. 20/12		
CHECK				

FIGURE 6

Drawing file: 1111260037-4000-R06001.dwg Apr 20, 2012 - 9:59am



REFERENCE

DRAWING BASED ON E. DAVIES, PROVIDED BY THE MINISTRY OF THE ENVIRONMENT, *DELORO PROJECT COLLECTION*, KINGSTON, ONTARIO.

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

NOTED UNITS ON PLAN ARE IMPERIAL.

ALL LOCATIONS ARE APPROXIMATE.

PROJECT

CULTURAL HERITAGE EVALUATION REPORT
DELORO MINE SITE
TOWNSHIP OF MARMORA AND LAKE
HASTING COUNTY, ONTARIO

TITLE

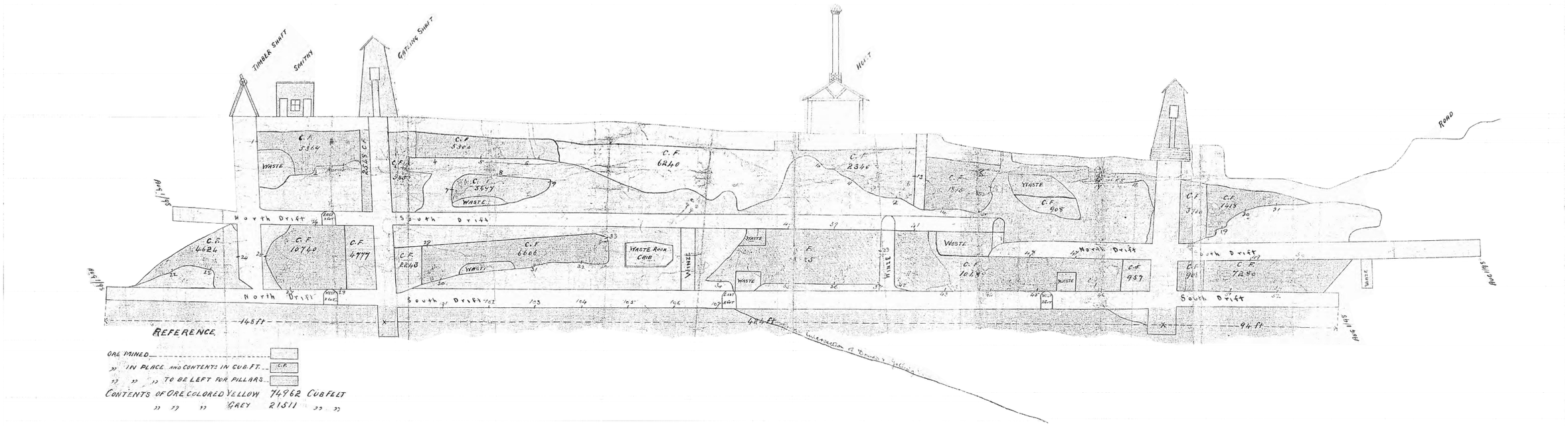
PROPOSED MILL SITE AND TRAINWAYS, DELORO MINE SITE, 1897

Golder Associates
LONDON, ONTARIO

PROJECT No. 11-1126-0037			FILE No. 1111260037-4000-R06001	
			SCALE NTS	REV.
CADD	DCH	Apr. 20/12	**FIGURE 7**	
CHECK				

Drawing file: 1111260037-4000-R06001.dwg Apr 20, 2012 - 10:01am

DELORO MINE
— LONGITUDINAL SECTION —



REFERENCE

DRAWING BASED ON UNKNOWN AUTHOR. PROVIDED BY THE MINISTRY OF THE ENVIRONMENT, *DELORO PROJECT COLLECTION*, KINSTON, ONTARIO.

NOTES

THIS DRAWING IS SCHEMATIC ONLY AND IS TO BE READ IN CONJUNCTION WITH ACCOMPANYING TEXT.

ALL LOCATIONS ARE APPROXIMATE.

PROJECT

CULTURAL HERITAGE EVALUATION REPORT
DELORO MINE SITE
TOWNSHIP OF MARMORA AND LAKE
HASTING COUNTY, ONTARIO

TITLE

LONGITUDINAL SECTION OF A PORTION OF THE DELORO MINE SITE, c1900

Golder Associates
LONDON, ONTARIO

PROJECT No. 11-1126-0037			FILE No. 1111260037-4000-R06001
			SCALE NTS REV.
CADD	DCH	Apr. 20/12	**FIGURE 8**
CHECK			

Drawing file: 1111260037-4000-R06001.dwg Apr 20, 2012 - 10:02am

Plate 8: Gatling Shaft c.1900. A mine skip car is being hoisted into the hoist house and dumped into bins identified by the heavy timber framing on lower level of structure. Rock pile on right is low grade ore. Community Archives of Belleville and Hastings County, Deloro.

Plate 9: Hoist House ruins, 1987. Commonwealth Historic Resource Management Limited. The building in c1900 is shown on Plate 27

Plate 10: Arsenic Works, c1900. See also plate 26. Boyce, Historic Hastings, p151.

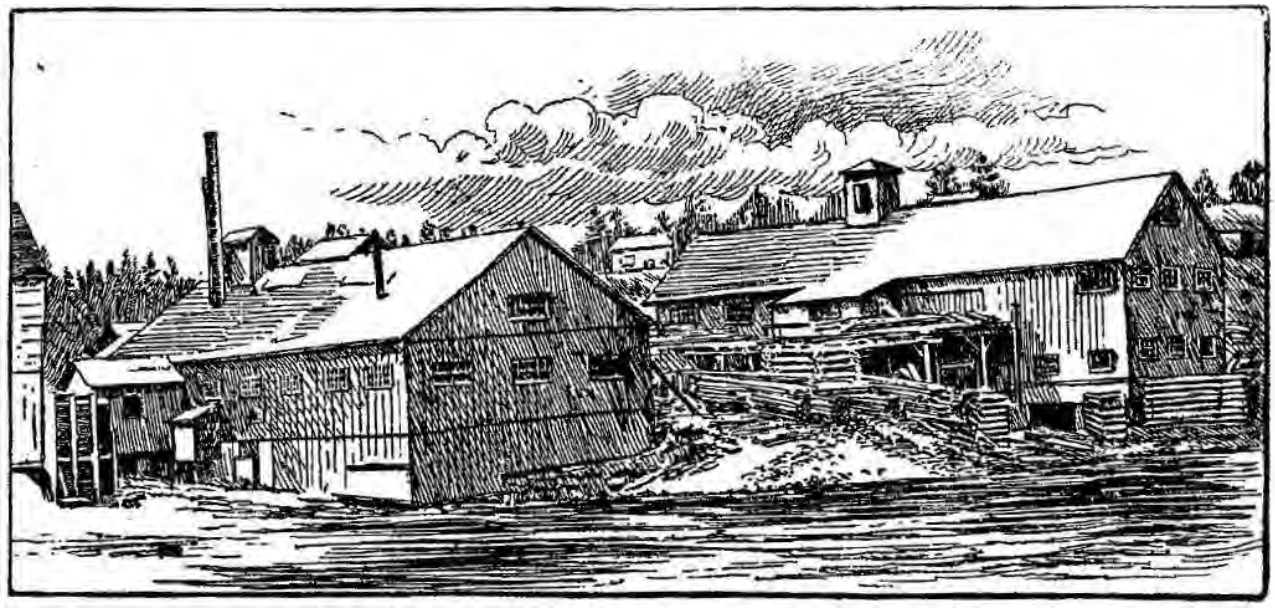


Plate 11: Hastings Mining and Reduction plant, on left, on the Crowe River in Marmora. The Pearce sawmill is on the right.

Plate 12: Possible dam site looking north across the Moira River. The bedrock outcropping above the flood plain could have been a natural abutment for a low dam.

Plate 13: Causeway extending from left to right over the raceway intake with grey un-vegetated area defines bottom of channel in vicinity of culvert.

Plate 14: Grass area in foreground area of reservoir marked on maps. Valley in rear is end of raceway. A possible control dam could have been built at outlet to valley where person is visible on right.

Plate 15: Dyke showing dry stone wall. The head pond would have been to the left of the wall.

Plate 16: Dyke showing clay lining of dry stone wall to waterproof the structure. The head pond would have been in the valley on the left side.

Plate 17: The depression in the rock above the river in the middle of the photograph was identified as a "good mill site" in the 1880 map. The falls on the river are visible in the upper right.

Plate 18: West wall of c1880 tramway embankment with Moira River in background.

Plate 19: Top of tramway embankment with west wall visible on left; the east wall is between the two clumps of trees on the right.

Plate 20: Hawkeye Mine Road near the north boundary fence.

Plate 21: Remnants of Deloro Road.

Plate 22: Group of Gatling Mine ventilation shafts.

Plate 23: Modern Tuttle Mine pump house with 1907 electrical substation in background.

Plate 24: Hawkeye Mine waste tip finger, or rock dump.

7.0 CANADIAN GOLDFIELDS LIMITED 1896-1907

7.1 Historic Overview

In 1898 Canadian Goldfields Limited reopened the Deloro mines. The company had a very short operating life brought to an end by a catastrophic flooding of the Gatling Mine in 1902. However, Canadian Goldfields was very important to the future development of Deloro because it acquired the Canadian rights to the first commercially successful process to refine mispickel ores. In the long run, these rights were not of much value to gold mining since the Hastings mispickel deposits were too small by 1900 to attract mine investors. Instead, as described in the following Section 8, the process was adapted to refining silver/cobalt mispickel ores which enabled the Deloro plant to expand into a new, far more lucrative market in the 20th century. The driving force to make this transition was provided by metallurgical skills of Strafford Kirkpatrick at the Queens University Mining School, Kingston, and consultant to Canadian Goldfields, and to the entrepreneurial skills of Peter Kierkegaard, the Canadian Goldfields mine manager.

Sometime around 1896, the Canada Ventures Syndicate Limited, a British Company, acquired options and rights to about 10,000 acres within the Township of Marmora including Deloro. The Syndicate had the rights to the bromo-cyanide (Sulman-Teed) process which was the first practical method of refining mispickel ores (See Section 4.7.1). In the absence of documentary evidence, it is assumed that the Syndicate had been organized to find mining opportunities in Ontario. It is also assumed that once the organization has settled on Marmora Township, a separate British company, Canadian Goldfields Limited, was incorporated to develop these resources. The Canadian rights to the Sulman-Teed Process were transferred from Canada Ventures to Canadian Goldfields in June 1896.[135]

Canadian Goldfields put most of its efforts into developing the 500 acres which formed the modern Deloro Mine Site. The company was also rumoured to hold options on 25,000 acres in addition to those lands that it had acquired from the Syndicate. Canadian Goldfields also prospected on 15 lots in Marmora Township, five in Lake Township and four in Elzevir Township.[136]

Since the company was still exploring other mining opportunities, it built a mill at a 40 acre plot located 250m east of the Marmora Station on the Central Ontario Railway. This was seen as the best location to service other future properties that might be developed. The mill burned down in early 1898 and the company decided to rebuild at Deloro.[137]

Around 1900, Canadian Goldfields, the Atlas Arsenic Company, and other gold/arsenic operators in the district considered a proposal to amalgamate their mines. There is no indication if this plan was developed out of desperation or opportunities. Under the scheme, all refining would be done by Canadian Goldfields in order to provide cheaper production costs. Atlas Arsenic was forced to shut down in the fall of 1901 while negotiations were underway but the scheme collapsed.[138]

[135] OBM 1896;"Gold Mining in Ontario," *CMR* 15: 1896, p.220; "Gold and Arsenic," *Canadian Mining Review*, 1901

[136] OBM 1896, 1897

[137] OBM 1896, 1897

[138] OBM 1901, 1902

In March 1902 a heavy flow of water was encountered during the sinking of a winze from the fourth level of the Gatling Mine. As a consequence mining was stopped and the stamp mill ran out of ore. The arsenic plant continued to treat concentrates and ore from other properties. Under the direction of Kirkegaard the mine and plant had been operating very efficiently and likely could have re-opened. The suspension of operations was due primarily to a heavy drop in the price of white arsenic and an absentee British Board of Directors.[139] Canadian Goldfields Limited was dissolved in England in 1907.

7.2 Property Development

7.2.1 Mines

Gatling Mine

The Gatling Mine was being worked to the fourth level at 340 feet (103.5m). Sinking of a shaft for a further 100 feet (30.5m) was underway to open a fifth level. The Gatling shaft was deepened to 192 feet (58.5m), the Tuttle to 122 feet (37m) and the Keswick shaft to 50 feet (15m). About 878 feet (roughly 267.5m) of levels were reported in the mine. Ore was hoisted to the shaft house in skips, dumped over a grizzly, with the finely ground material going directly to storage bins. Since the white quartz had little value, all of this material as well as the country rock was returned through a chute back to the mine where it was used for filling the stopes (Plates 8, 27, 28).[140]

Mine Shafts

Canadian Goldfields used a number of other shafts, some of which had been built earlier such as the Red Shaft and the Tuttle Shaft, and some of which were new. The company used Shaft A to handle materials (timbers, mining equipment, etc.) and for mine ventilation. The Keswick D and the Gatling West Crosscut Vein Shaft were sunk about 1899. Number Four Shaft reached a depth of 120 feet (36.5m) at an incline of 45°.[141]

Air Compressor Building

The company also constructed a brick air compressor building to furnish air for drills and general purposes. A second, smaller 60 horsepower air compressor was used for pumping water out of the mines using the Harris Air lift. Initially compressors were powered by steam engines. Then in 1900, a steam-driven generator was installed to drive motors. The generator worked until 1909 when the company decided to purchase power (Plate 25).[142]

---

[139] "Deloro Mining" *CMJ* 1:17, 1907 517-22

[140] OBM 1896, 1900, 1902Kirkegaard, "Auriferous Mispickel Ores," 1901; "Deloro Mining and Reduction Company,"1907

[141] *Canada Consolidated* 1881; OBM 1897, 1899, 1902

[142] CDM *Mining and Metallurgical Industries 1907-8*, 380-1; OBM 1900, 1918;; OBM, *Annual Report* 1918 Vol 27, Part 3, *Cobalt*, p.38-39; T&NO Ry. *Mining Industry*, 1912

Magazine

In 1898 the Ontario Bureau of Mines ordered the company to build a new magazine of lighter construction than the old stone one and to locate it at least 120m away from any works or road. The new magazine was built of wood, well ventilated, and with sand filling the hollow wall space and erected about 200m from the arsenic works and 300m south of the mines.[143] This feature is mapped and located in the vicinity of what is called in 2011, the *"incinerator."* (Section 7.4.4, Figure 11)

7.2.2 Refining

The gold milling plant completed in Deloro in 1898 consisted of four separate buildings; a stamp mill, ore leaching plant, powerhouse and an assay/laboratory building. Apart from the stamp mill, the other buildings were constructed of brick. For fire protection the structures were well separated from each other (Figure 9, Plates 27, 28).[144]

When Canadian Goldfields initially planned to build their concentrator at Deloro after the fire at Marmora, a site was selected on the west bank of the Moira River valley wall, directly below the village of Marmora (Figure 7). This was a very steep slope and quite far from the mine. There is no apparent reason why this location was selected. Before any work began, the mill was relocated half the distance to the mine on a much wider area.

Initially a ten stamp mill was built in 1898 and then doubled in size in 1900. In 1901, ore from the storage bins at the Gatling Mine shaft was filled into cars and transported 240m to the mill over an inclined, three-rail tramway. The twenty stamps had a crushing capacity of 80 tons a day (Plate 28).[145]

A separate brick powerhouse was constructed to hold a steam engine to operate the stamps and other machinery. It also contained a 40-horsepower steam engine driving a 30 kilowatt alternator to light the whole plant. The building was about 12m from the stamp mill and power was transmitted by a four-inch (10.16 cm) shaft to the outside of the mill. Alongside the mill building was a tunnel which ran the main belt that connected to the main countershaft of the mill.[146]

Within the stamp mill the ore was crushed and about 20 percent of the gold content was extracted by mercury amalgamation inside the mortars. The discharged slurry, or "pulp", of water and powdered gold ore flowed downstream to the Leaching Plant where it was treated by the Bromo-cyanide process. Between amalgamation in the stamps and this process, between 85 and 90 percent of the gold value was retrieved (See Section 4.7.1, Figure 10).[147]

[143] OBM 1898, 1899, 1900

[144] Kirkegaard, "Auriferous Mispickel Ores," 1901

[145] "Deloro Mining and Reduction Company,"1907 Kirkegaard, "Auriferous Mispickel Ores," 1901

[146] "Deloro Mining and Reduction Company,"1907; Snell, , Mines and Mining; Kirkegaard, "Auriferous Mispickel Ores," 1901

[147] Kirkegaard, "Auriferous Mispickel Ores," 1901; "Gold and Arsenic," *Canadian Mining Review*, 1901

The leaching plant was a two storey building below the mill. The main equipment consisted of four leaching vats, four solution tanks on the floor above with three small steam pumps, and the other equipment below. The building was separated from the stamp mill by six metres to prevent any mill vibrations from affecting the leaching process. [148]

The leaching process produced a gold "slime" that was dried by roasting. The dried slime was mixed with a suitable flux and smelted in clay crucibles. For safety sake, presumably in case of breakage, they were placed inside graphite pots. The smelt was finely cast in the "usual brick" moulds.[149] One of these crucibles was identified in the 2011 archaeological field work.

An early reference to employee safety appears at this time. In 1899 the Ontario Bureau of Mines requested that hydrogen peroxide and hypodermic syringes be made available in case of cyanide poisoning.[150]

7.2.3 Arsenic Works

Initially, Canadian Goldfields did not plan to reclaim the arsenic but in 1899, the company decided to revive the old Canada Consolidated plant. The arsenic plant was completely reorganized in 1900 (Plate 26).[151]

Drying the gold concentrate, or slimes, was undertaken in a revolving cylindrical roaster. This drove off the arsenic and the volatized arsenic trioxide was condensed and collected in a series of brick chambers with vertical baffle walls. The crude arsenic was further refined by additional roasting and condensing to form crystals and powder. This was the only arsenic producing plant on the American continent that was manufacturing arsenic on a commercial scale. The plant produced 40-50 tons per month.[152]

Arsenic trioxide, or white arsenic, is extremely toxic. Separate rooms were provided for clean clothing for the workers and for bathing facilities. The men were required to bathe at the end of each shift. As well, many of the workmen in the plant painted their face with ferric-oxide which was suppose to be an antidote to the poisonous fumes. However, emissions into the air still produced complaints about the health of livestock in the vicinity of the mine.[153]

[148] "Deloro Mining and Reduction Company,"1907; Kirkegaard, "Auriferous Mispickel Ores," 1901; Gold and Arsenic," *Canadian Mining Review*, 1901

[149] Wright, "Auriferous Mispickel Ores," 1901

[150] OBM 1899

[151] "Deloro Mining and Reduction Company,"1907

[152] CDM *Mining and Metallurgical Industries 1907-8;* OBM 1902; Kirkegaard, "Auriferous Mispickel Ores," 1901; "Gold and Arsenic," *Canadian Mining Review*, 1901

[153] OBM 1899, 1900; Miller, *JCMI* 1902, Vol 5 p. 333

7.3 Other Mining Companies

7.3.1 Atlas Arsenic Company Limited

The Atlas Arsenic Company Limited was incorporated in 1899 at Belleville. One of the directors, W. A. Hungerford was from Deloro while the other three directors were from Cleveland, Ohio. The company owned the Five Acre Site and the Gawley Mine. The Gawley was located at Malone, about six kilometres north of Deloro and not associated with the Deloro Mine Site (Figure 3). The Five Acres Mine was closed in 1901.

Coincidentally, the Ohio Gold and Arsenic Mining Company was formed about 1901, again by Hungerford as a director and company manager, and in association with J.W. Britton of Cleveland. All mining activities were concentrated on the nearby Pearce Mine. It seems that Atlas Arsenic and Ohio Gold were effectively the same operation.

In 1904 the Cleveland Gold Mining Company (or Cleveland Mining Company of Ontario) purchased the Pearce Mine from Ohio Gold. The mine was worked intermittently until 1907 when H.E. Lawson either purchased or leased the property.[154]

The Five Acres Mine was not included in the Gatling Gold and Silver Mining Company that had been set up by J.W. Gatling in the 1870s. He probably considered it the most valuable of the Deloro group. The property was not acquired by Canada Consolidated, which owned most of the land around it. After Gatling's death the property passed into the hands of some local men who sold it to the Atlas Arsenic Company in 1899. The property was surrounded on all sides by the lands of the Canadian Goldfields Limited.

Atlas Arsenic built a ten-stamp mill, a ten-drill air compressor plant, shaft houses, blacksmith shop, repair shops, and office on the property (Plate 29). The stamp mill was built by the William Hamilton Manufacturing Company of Peterborough, Ontario. The underground workings consisted of two shafts. The Number 1 shaft ultimately reached a depth of 85 feet (26m). The number 2 shaft had a depth of 60 feet (18m). The mine workings closed in 1901 and were allowed to fill with water.[155]

The Pearce Mine, on the east side of the Moira River, had originally been opened in c.1869/70 when a shaft, or pit, had been sunk to 15 feet (4.5m). At that time the property was known as the Severn Mine (See Section 5.2.3). At some point in time, the property was acquired by the Pearce family who created a large enterprise dealing in flour, woollen goods, lumber and the development of mines in and around Marmora. They came to control the entire water power at Marmora Village. The Pearce Company was incorporated in 1893.[156]

By 1892 the Pearce family had sold the mine on Lot 8, Concession 9 to the Hastings Mining and Reduction Company which sank a shaft to 90 feet (27.5m). The company was unable to make the final purchase price and the property reverted to the Pearce family.

---

[154] OBM 1899, 1900, 1901, 1902, 1908; *CMR* 28:1907, 60-1; Snell, *Mines and Mining*; Miller, *JCMI* 1902, Vol 5 p. 333; CDM *Arsenic-bearing Deposits, 103*; Park, Ian G., "Report on Gatling and Gawley Properties", June 3, 1983; CDM, *Gold Occurrences*, 1936, 117;

[155] OBM 1899, 1900, 1902; Miller, *JCMI* 1902, Vol 5 p. 333; CDM *Arsenic-bearing Deposits, 103;* Snell, *Mines and Mining*; CDM *Arsenic-bearing Deposits, 103.* The William Hamilton Company was organized in 1883 to manufacture saw mills, mining machinery and water wheels. It closed in bankruptcy in Dec. 1906: St. John (N.B.) *Sun* Dec 12, 1906.

[156] Vennor, 1871-72, p.138; Snell, *Mines and Mining*.

Ohio Gold purchased the mine in 1901 from the Pearce Company and worked it until 1904. The last documented use of the property was by H.E. Lawson in 1907. The Pearce shaft ultimately reached a depth of 173 feet (52.5m).[157]

7.3.2 Cook Land Company

The Cook Mine was owned and operated by the Cook Land Company of Toronto. All mining was undertaken between 1901 and 1905 on two veins about 240m apart. The main shaft (Shaft One) was sunk to 180 feet (55m) and had two levels. Shaft Two was located 500m to the north east and sunk to 120 feet (36.5m). A pit was also excavated into a marshy area of boulder rock but no further development was taken. The company property also included the former Dean-Williams Mine that had been worked prior to 1873 (See Section 5.2.1).[158]

7.3.3 Toronto (Rankin)

At some point in time, six acres of the southeast corner of Lot 6 Concession 8 were sold to the Toronto Mining Company. This property had been part of the Gillen Mine in 1870 (See Section 5.2.2) and the following year became the Campbell-Bloomfield property. In the early 20th century a shaft and pit were sunk on property.[159]

7.4 Inventory 2011

7.4.1 Gold Refining Complex

Canadian Goldfields constructed a complex of four structures to process their gold ore. Two of the structures, the Twenty-Stamp Mill and the Concentrating Building were constructed in line with each other on terraces cut into the hill side. Gravity was used to carry ore slurries from one processing stage to another. A small, detached powerhouse provided mechanical and electrical power to the refining complex. A separate brick laboratory building was located a short distance from the other buildings.

Physical evidence remained in 2011 of the Twenty-Stamp Mill and Powerhouse and these are described in the 2011 Golder Archaeological Report. The laboratory building appears to have been bulldozed into a large debris dump on the valley wall (Plate 34). There is no evidence of the Concentrating Building apart from the terrace cut into the base of the valley wall.

[157] Snell, *Mines and Mining*; OBM 1893, 1902, 1908; Canada. *Arsenic Bearing Deposits* 1927 p.103; CDM, *Gold Occurrences*, 1936, 118.

[158] CDM *Arsenic-bearing Deposits,* 103; CDM, *Gold Occurrences*, 1936, 116; Vennor, 1871-72, p.133-6; RC, 1890 p. 28; OBM 1902, 1904; Snell, , Mines and Mining

[159] Snell, , Mines and Mining; CDM, *Gold Occurrences*, 1936, 115; CDM *Arsenic-bearing Deposits,* 104

Twenty-Stamp Mill

The foundations of the stamp mill were built on four levels (Figure 9). The highest portion (Archaeological Report H29-1, H29-2) was the top of the hill and was delineated by stone foundations. It is assumed that this was the base of the ore storage pockets.

Two iron pipes entered the foundations from the east. These are assumed to have been water supply pipes. A smaller diameter pipe adjacent to one of these pipes may have been used to supply compressed air.

The second level (Archaeological Report H29-3) contains the heavy, burnt timbers of the stamps (Plate 30). The third level (Archaeological Report H29-4) contained tables and plates to separate the milled host rock from the gold. This level also extended northward from the Twenty-Stamp Mill to the Powerhouse (Plate 31).

The fourth level (Archaeological Report H29-5) contained the base of the stamp mill and the top level of the Concentrator building. These structures were built on separate sides of the level with a roadway between them.

Concentrator Building

The excavated earthwork where the building once stood is described in the Archaeological Report as H29-6. The vertical height between the fourth level and the base of the Concentrator was about three metres. At the foot of the slope was the remains of a large wooden tank used in the concentrating process (Plate 33).

Powerhouse

The building foundations (Archaeological Report H29-7) were in a very ruined state in 2011. Fragments of the engine mounting blocks were evident. Level three (H29-4) contained the remnants of five timber trestles set on heavy rock bases. They were in a line between the powerhouse and the stamp mill. These trestles originally supported a line shafting the transmitted power from the engine to the stamps and other machinery (Plate 32).

Table 10: Gold Refining Complex Cultural Heritage Evaluation

Evaluation of Cultural Heritage Value or Interest According to Ontario Regulation 10/06:	
Not determined to have 10/06 provincial cultural heritage value or interest	
Evaluation of Cultural Heritage Value or Interest According to Ontario Regulation 9/06:	
Design or Physical Value:	Large mill operation
Historical or Associative Value:	Main feature from era of Canadian Goldfields
Contextual Value:	Large distinctive structure; contributes to mining cultural landscape
Character Defining Elements: Five levels cut into hillside to support stamp mill/concentrator; trestles from powerhouse; ruins of powerhouse	

7.4.2 Five Acres (Atlas Arsenic) Stamp Mill

The physical evidence of this stamp mill was assessed in the archaeological investigation of 2010 and described in the Golder Archaeological Report of the same year. The site consists of terraces cut into the valley wall, the timber remains of a stamp frame and an engine wheel pit (Plate 35).

Table 11: Five Acres (Atlas Arsenic) Stamp Mill Cultural Heritage Evaluation

Evaluation of Cultural Heritage Value or Interest According to Ontario Regulation 10/06:	
Not determined to have 10/06 provincial cultural heritage value or interest	
Evaluation of Cultural Heritage Value or Interest According to Ontario Regulation 9/06:	
Design or Physical Value:	None noted
Historical or Associative Value:	Small independent operator in Deloro Mine Site
Contextual Value:	contributes to mining cultural landscape
Character Defining Elements: terraces in slope, stamp frame, wheel pit	

7.4.3 Mining Roads

Twenty-Stamp Mill Road

The 2011 inventory identified this road about 100 m south of the Twenty-Stamp Mill. The road surface rose gradually up the slope of the hill until it disappeared into a remediated area. Trees were growing up in the right-of-way. The distinctive feature was the massive stone retaining wall that supported the road surface on the hillside (Plates 36, 37). Unlike the other mine roads, the Twenty-Stamp Mill road was a specifically engineered structure.

Table 12: Mining Roads Cultural Heritage Evaluation

Evaluation of Cultural Heritage Value or Interest According to Ontario Regulation 10/06:	
Not determined to have 10/06 provincial cultural heritage value or interest	
Evaluation of Cultural Heritage Value or Interest According to Ontario Regulation 9/06:	
Design or Physical Value:	Best quality mining road built on property
Historical or Associative Value:	Transportation link between gold mill and arsenic mill
Contextual Value:	contributes to mining cultural landscape
Character Defining Elements: Stone retaining walls; wide road surface	

7.4.4 New Magazine (Incinerator)

The name “Incinerator” was given to this feature in the Commonwealth Report. Visually the structure does not look like an incinerator nor is there any indication that it could have functioned as one. Further research undertaken for this study in 2011 indicates that this was a second powder magazine. Figure 11 and Plate 27 confirm the location of the magazine on a slope at the end of a valley to the southeast of the former Hub. About 1900 Canadian Goldfields was required by the Ontario Bureau of Mines to build a new powder magazine located further away from the Gatling Mine area than the 1870s magazine (See Sections 4.5.3 and 5.3.1). It was described as a wood structure with hollow walls filled with sand.[160] It seems likely that a timber structure was built on top of the stone base that remains today. The 2011 inventory noted that the stonework was of poor workmanship and in poor condition. The only detail on this foundation was a small vent in the base of the wall (Plate 38). Plate 27 does not provide enough information to confirm the design of the magazine. The structure is described in the ERA report appended to this document.

Table 13: Incinerator Magazine Cultural Heritage Evaluation

Evaluation of Cultural Heritage Value or Interest According to Ontario Regulation 10/06:	
Not determined to have 10/06 provincial cultural heritage value or interest	
Evaluation of Cultural Heritage Value or Interest According to Ontario Regulation 9/06:	
Design or Physical Value:	Poorly built structure
Historical or Associative Value:	Possibly a powder magazine
Contextual Value:	Distinctive structure in middle of a field
Character Defining Elements: Square stone structure	

7.4.5 East Bank, Moira River

The east bank of the Moira River was extensively impacted by the 2010/2011 site remediation activities. The largest project was the reconstruction of the Deloro refinery tailings pond. The work was archaeologically monitored as part of the remediation process. The following two mine sites were observed during the 2011 inventory. In addition, iron bolts described in Section 8.6.4 of this report are also on the east bank of the river.

[160] OBM 1898, 1899, 1900

Cook Mine

During the May 2011 site visit, the Cook Mine site was being re-graded for a rock dump as part of the remediation activity(Figure 3). A concrete cap and stainless steel vent over one of the former shafts was evident. The site was distinct because it was the only known horizontal entrance, or adit, into a mine on the property (See Section 4.5.1). All of the others were by vertical or sloping shafts.

The area of the adit had previously been remediated, probably in the 1990s to cover this area. A large riveted steel tank sat on the slope below the mine site. The mine was archaeologically assessed in 2011 and described in the Golder Archaeological Report of the same year. No built heritage features are associated with the mine today.

A road extends from the mine tailings pond past the Cooks Mine before disappearing as a series of ill-defined trails into the bush. The road follows the contour of the land and has a very narrow right-of-way. Given the limited and late mining activity in this area, it is assumed that this road dates from the late 19th or early 20th century. Several exploration pits and trenches were observed along the road alignment and marked with metal poles painted blue.

Pearce Mine

The Pearce Mine was also inspected in May (Figure 3). The property was archaeologically investigated in 2010 and the ruins of several buildings and structures were evident (Plate 39). By August, the site had been graded, capped with earth and re-vegetated. The mine was archaeologically assessed in 2011 and described in the Golder Archaeological Report of the same year. No built heritage features are associated with the mine today.

7.5 35 Years of Gold Mining

The two major gold mines in North Hastings were the Deloro and the Belmont, or Cordova, Mines, about 20 km to the north west. The ores of the two were quite different; Deloro was arsenical, Belmont was free milling. The Belmont opened in 1898, closed in 1903, reopened in 1911 and then was destroyed by fire in 1917. During the last six years of operation it was operated by P. Kirkegaard the Manager at Deloro. The total value of gold production over 11 years of operation was $334,422. By comparison the Deloro mine during its four years of operation between 1898 and 1902 recovered $181,907 of gold. But, in addition it produced $128,976 of arsenic for a total value of $310,833. The combined gold and arsenic production made Deloro a far more valuable mine on the basis of annual production than the free-milling gold at Belmont.[161]

These operations were exceptions. Certainly with regards to the Deloro field, the arsenical ore proved to be an insurmountable problem until the end of the 19th century. By then it was too late as far more promising mining areas in Ontario had attracted investor interest. Gibson, in his 1937 assessment of the situation, gives eloquent reasons for the failure of gold mining in Hastings County:

[161] Gibson, *Mining in Ontario*, 1937 p.6, 7

> *Many of the mines consisted of mispickel deposits and the treatment of this arsenical ore was not fully understood. Mining and metallurgical methods were crude and consequently there were heavy losses of gold in the tailings. Capital, though not altogether absent, was scarce. The failure of one mine led to the discouragement on the part of others. Interest waned and finally died and after a twenty to thirty year era finally came to an end.* [162]

Looking more specifically at Deloro, it did not have a spectacular grade of gold ore. A recovery of 0.26 ounces per ton appears to have been the productive rate (Table 14). The Famous 1878 Homestake Mine (it was discovered in 1876) had a recovery of somewhat under an ounce per ton and it was considered a low grade ore.

Table 14: Summary of Gold Ore Extracted at Deloro[163]

Name of Mine	Year	Gold (oz.)	Tons Milled	Ounces/Ton Recovered
Gatling/Tuttle	1897-1902	10,360	39,143	0.26
Cook	1901-1902	389	1,483	0.26
Dean and Williams	1870	500	1,000	0.50
Gatling Five acre	1900, 1902	2,353	6,114	0.38
Pearce	1893, 1908	302	239	1.26
Severn	1891-92, 1900	370	1,962	0.19

[162] Gibson, M*ining in Ontario*, 1937 p.7

[163] Ontario Geological Survey Gold Deposits of Ontario. By J.B Gordon. Mineral Deposits Circular 18 Part 2., 1979