APPENDIX 4-D
KSM MINE PLAN

KSM Mine Plan

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EXECUTIVE SUMMARY

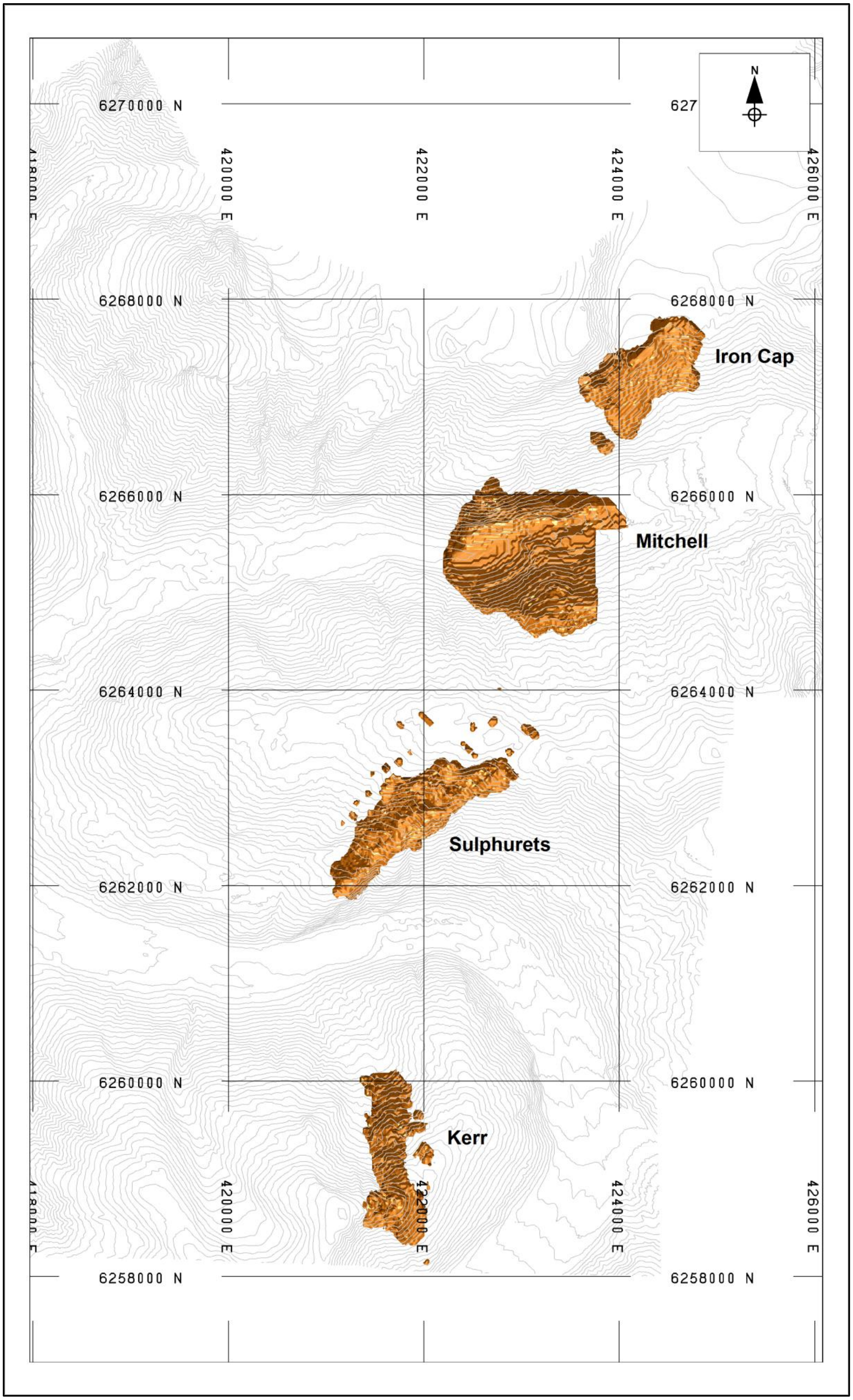
Following is a description of the KSM project along with the mine plan and associated water management plan in the mine area.

1.1. Mine Project - Plan Overview

Seabridge Gold proposes to develop 4 low grade gold-copper deposits, located approximately 65 kilometres northwest of Stewart, by open pit and underground mining. The project will have an anticipated production of 130,000 tonnes per day over a 55 year lifespan. The KSM project is comprised of 4 main ore zones (Kerr, Sulphurets, Mitchell, and Iron Cap) trending generally N-NE as shown in Figure 1. The relatively large mine area requires construction of water diversion structures to facilitate safe and efficient mining operation. Concurrently the diversions and water treatment facilities are included in order to minimize environmental effects of mining activities. Therefore a 6 year mine construction and infrastructure development plan is required before actual mining and ore production. Incorporated into this plan is the construction of the following structures:

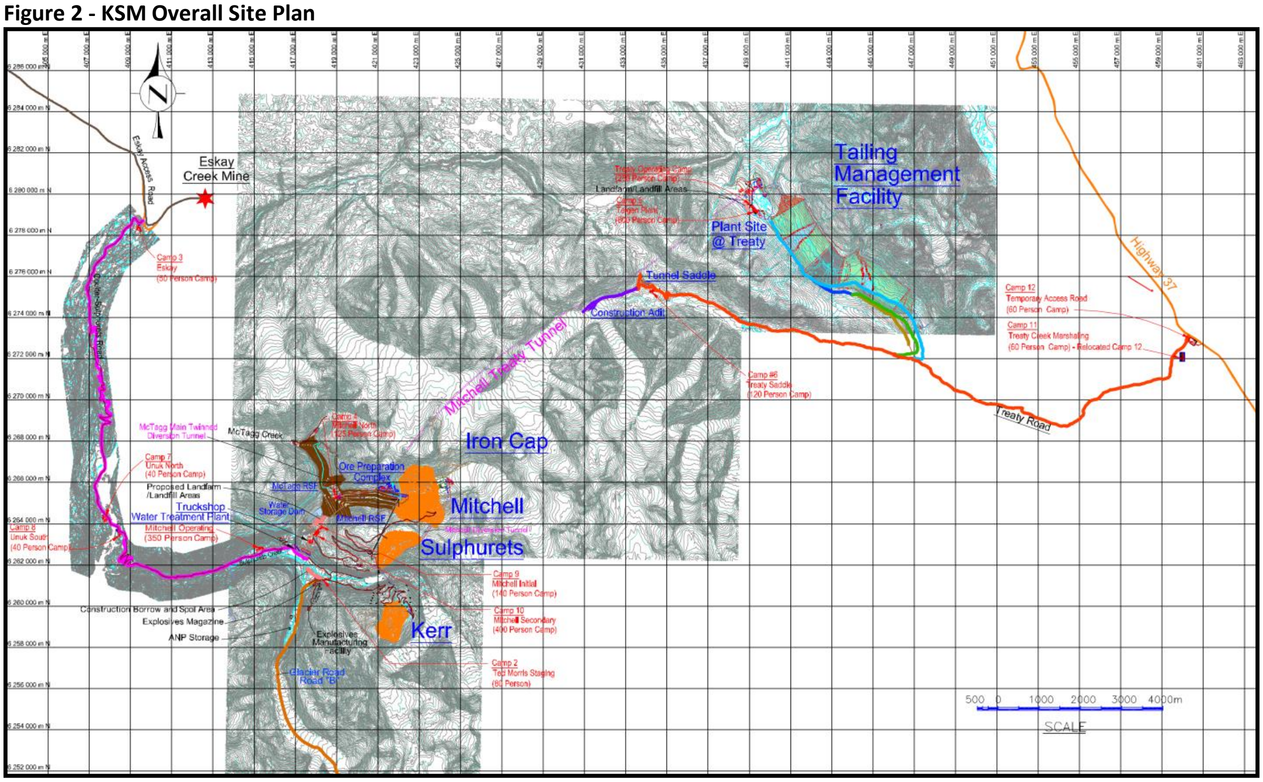
- Mitchell-Treaty tunnel
- Mitchell Diversion Tunnel
- McTagg Diversion Tunnel
- Treaty Ore Processing Complex
- Mitchell Ore Processing Complex
- Water Storage Dam
- Water Treatment Plant
- Construction Camps
- Mine Access Roads
- Mine area roads
- Surface Diversion channels

Figure 1 - KSM project deposits



Optimization of resource extraction, mill feed and required capital as well as reduction of surface disturbance has incorporated underground mining as a second development phase. This follows a period of approximately 26 years of surface mining. Studies show a viable block cave mine after initial open pit mining at the Mitchell deposit, and a viable stand-alone block cave mine at the Iron Cap deposit. Kerr and Sulphurets deposits are more suited to surface mining and are designed as open pits. Figure 2 illustrates the overall site plan.

Figure 2 - KSM Overall Site Plan



1.1.1. Mining Areas

The Mitchell open pit and surface access to the underground mining areas are located in an area of steep, high elevation terrain in the Mitchell and McTagg valleys. Sulphurets and Kerr open pits are high up on the north and south slopes of the Sulphurets valley respectively. Waste rock from all open pit operations will be stored in Rock Storage Facilities situated in close proximity to the mining area, in Mitchell and McTagg creek valleys and as backfill in the Sulphurets Pit. Most of the waste rock is potentially acid generating (PAG), particularly in close proximity to the ore deposits. PAG waste rock will make up approximately 71% by weight of the total waste rock. Uncertain PAG will be approximately 15% and non-PAG will make up approximately 14%. All PAG mined rock will be deposited upstream of the water storage facility to allow contact water to be captured and treated.

Open Pit Mining

Open pit mining at KSM will be typical of large-scale open pit operations. Mining development will be done on 15 metre benches. Production drilling will be done with electric rotary drills using large diameter blast holes. The blast holes will be loaded with bulk explosives delivered by trucks provided by an explosives manufacturer. Specialty blasting will be carried out adjacent to the final pit wall to enhance geotechnical stability. Blasthole assaying will be used to determine ore/waste cut-off boundaries on the pit benches as well as to identify waste rock that needs to be selectively mined. High capacity mining shovels and trucks will excavate the blasted material and transport it to the appropriate end location. Haul roads are designed for safe operation of double-lane traffic which will increase the productivity and efficiency of the operations. Pit maintenance equipment will be used to maintain the haul roads, shovel working areas and truck dumping areas. Dozers and backhoes will also be used to pioneer areas and open them up for more efficient large scale mining. Advanced technology control systems will be used as part of the mining methods for safe and efficient mining operations.

Initial access roads are required to be built to the top benches of each mining area and water diversions are to be constructed around the mining areas in advance of mining operations. Pit operations and activities including drilling, blasting, loading, and hauling, are planned to meet the local conditions; in particular, weather-related effects such as high snow fall. Operating practices and procedure suitable to Canadian winter operations will be implemented and mine designs will include highwall ramps and haul roads with appropriate maximum grade for safe operating conditions. There is considerable operating and technical expertise, services, and support for the proposed operations both in western Canada and in the local area. The project is a large-capacity operation that utilizes large-scale equipment for the major operating areas in order to generate high productivities, reduce unit and overall mining costs, reduce the on-site labour requirement and provide increased economies of scale for mine operations. Two drawings showing typical open-pit mining operations are shown in Figure 3 and Figure 4.

Figure 3 - Pit initial development

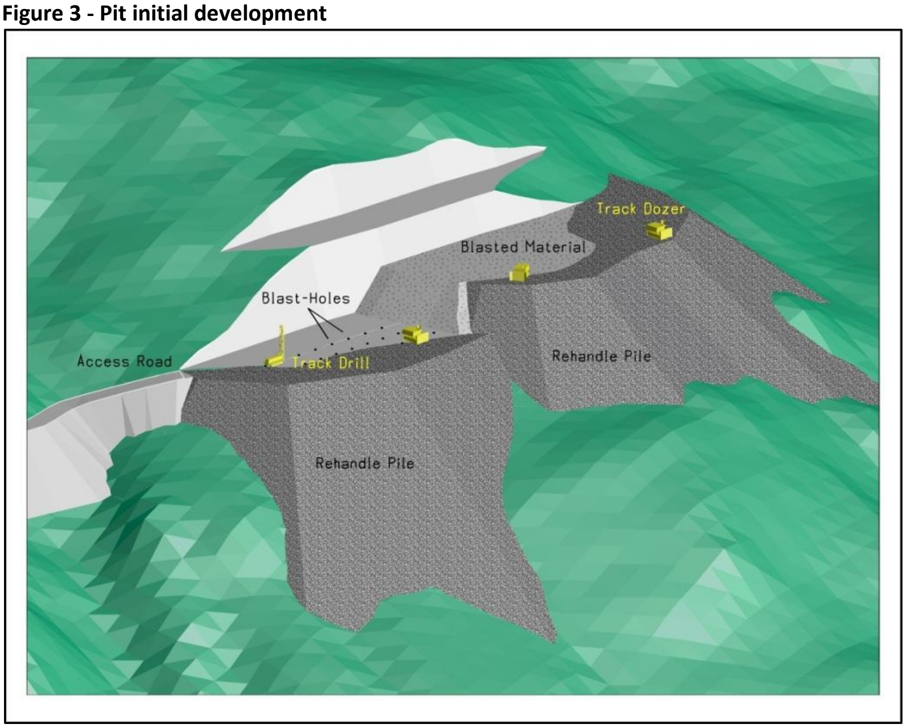
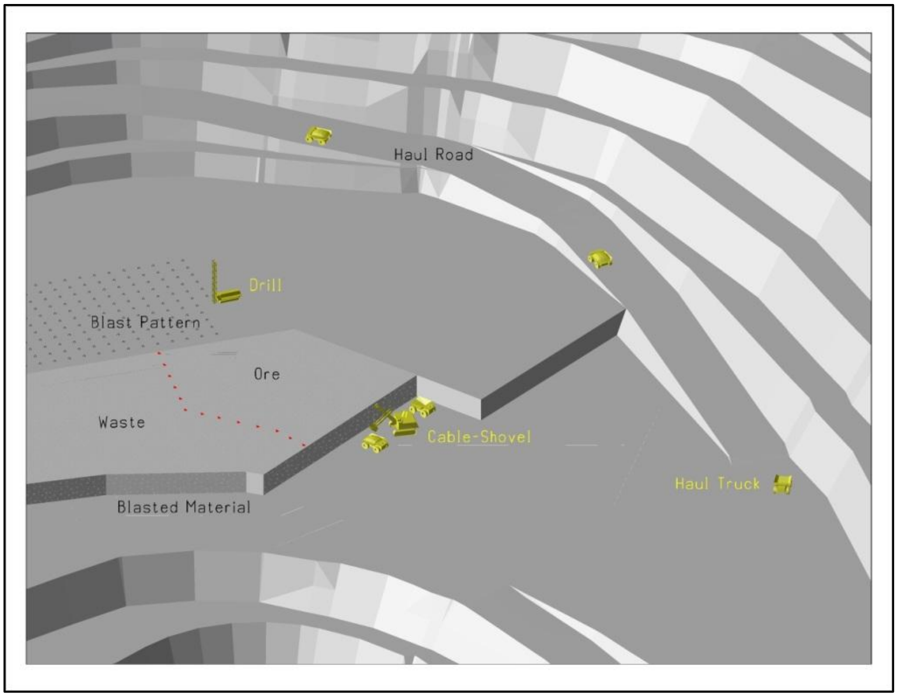
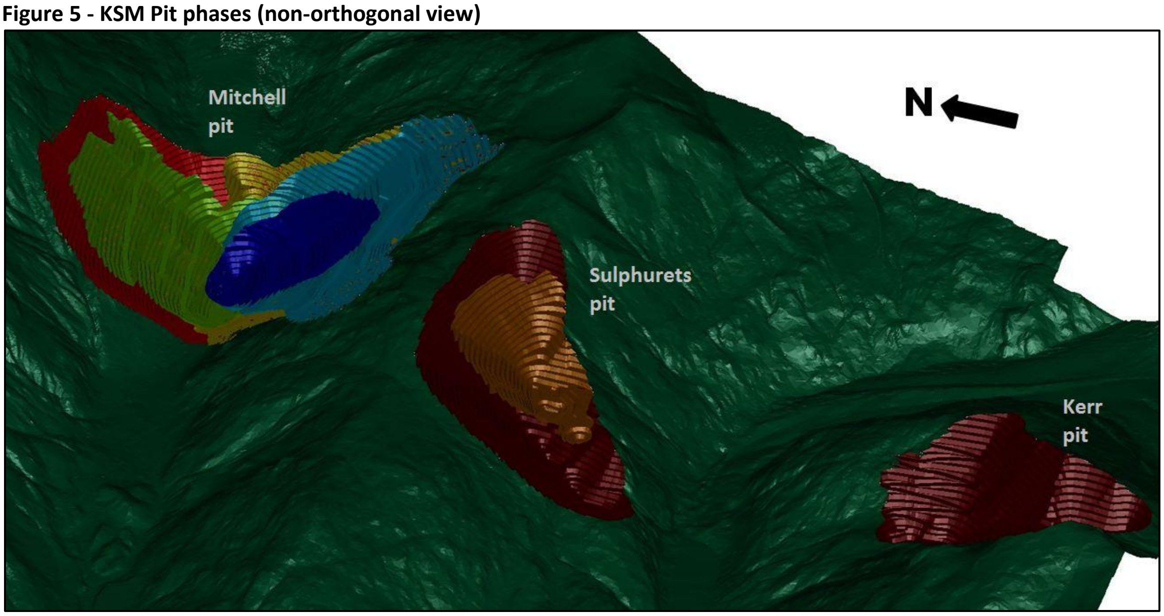


Figure 4 – Typical Open Pit Mining



Open pit designs were developed from the results of the economic ultimate pit limit sensitivity analysis, integrating geotechnical pit slope criteria. The ultimate pits have been divided into smaller mining phases, or pushbacks, shown in Figure 5, to allow for more even waste stripping in the optimized scheduling stage of the project design.

Figure 5 - KSM Pit phases (non-orthogonal view)



Appropriate mining losses and dilution have been used for each deposit to calculate the open pit ore reserves. The loss and dilution parameters are explained below.

Estimated mining loss and dilution by pit are outlined in **Table 2**. The dilution grades provided in Table 3 represent the average grade of material below the incremental cut-off grade for each pit area.

The NSR (net of offsite concentrate and smelter charges and including onsite mill recovery) is used as a cut-off item for break-even ore/waste. The NSR (in Cdn$/t) is determined using Net Smelter Prices (NSP) The NSP is based on base case metal prices, US$ exchange rate, and offsite transportation, smelting, and refining charges, etc.

Waste/ore cut-off grades vary for each pit area as shown in Table 1.

Table 1 - Waste/Ore cut-off grade by Pit

Pit	Cut-off grade NSR (Cdn$/t)
Mitchell	9.57
Sulphurets	10.17
Kerr	9.61

Table 2 - Open Pit Mining Loss and Dilution

Pit	Mining Loss	Mining Dilution
Mitchell	2.2%	0.8%
Sulphurets	5.3%	3.9%
Kerr	4.5%	3.2%

Table 3 - Open Pit Dilution Grades

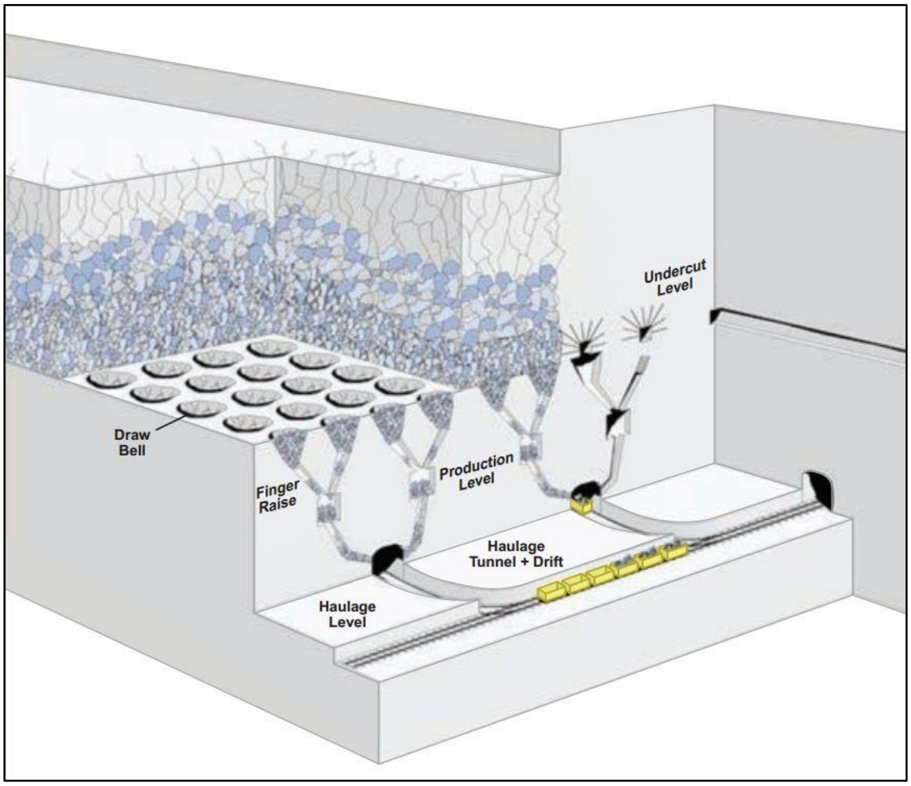
	Mitchell Pit	Kerr Pit	Sulphurets Pit
Cu (%)	0.043	0.106	0.056
Au (g/t)	0.229	0.141	0.333
Ag (g/t)	1.45	0.78	0.59
Mo (ppm)	59.4	-	19.0
NSR ($/t)	7.55	7.60	8.19

Underground Mining

Block cave mining is a low cost bulk underground mining method illustrated in Figure 4 below. The block of ore to be mined is undercut by drilling and blasting and some of the blasted material is progressively removed to create a void. This causes the rock mass above the undercut to fail and the failed material displaces and dilates into the void created by the undercut. Drawbells excavated beneath the undercut are used to direct the broken ore to drawpoints for extraction. As broken ore is extracted the resultant void causes further upward propagation of the caved block. The drawbell is the blasted area between the undercut level and the extraction level. The drawbell guides the broken ore to the individual drawpoints. The drawpoint is located in an extraction drift and provides access to the caved material to allow for removal with mechanised equipment. These features are clearly illustrated in Fig. 4). Continued extraction of the ore over a sufficiently large area allows the failure of the rock mass to propagate upward as a block cave. The vast majority of the ore block is not directly accessed or fragmented by drilling and blasting, making this a low cost, bulk mining method.

Typically there are three main horizons in a block cave mine which include the undercut level, the extraction, or production level and the haulage level. A fourth level, the "pre-conditioning" level, may also be developed if geotechnical assessments indicate that the natural fragmentation of the mineralized material will produce material at the drawpoints that is too large to handle. Typically this level is located above the undercut.

Figure 6 – Block Caving Schematic



The parts of Mitchell and Iron Cap deposits that will be mined by block cave are shown in Figure 7.

The underground mining NSR cut-offs vary by deposit and are shown in Table 4. The underground mining dilution is shown in Table 5 and is conservatively assigned a zero grade even though it will have some mineralization. Unplanned ore dilution primarily originates from failure of the sides of the crater at the higher levels of the ore/waste contact. The planned dilution within the block cave reserves originates from material included in the cave outline which is below the cut-off grade. Both the planned and unplanned dilution rock that mix with the ore during mining have been accounted for in the mining reserves and production schedule.

Table 4 – NSR cut-off by Underground Operation

Pit	NSR Cut-off (Cdn$/t)
Mitchell	15.41
Iron Cap	15.57

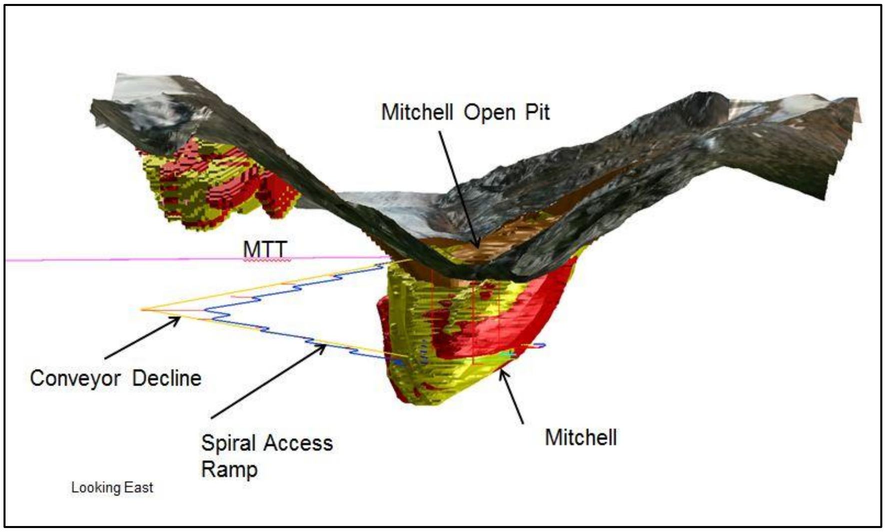
Table 5 - Underground Mining Dilution (zero grade)

Pit	Mining Dilution
Mitchell	9%
Iron Cap	5%

Mitchell Block Cave

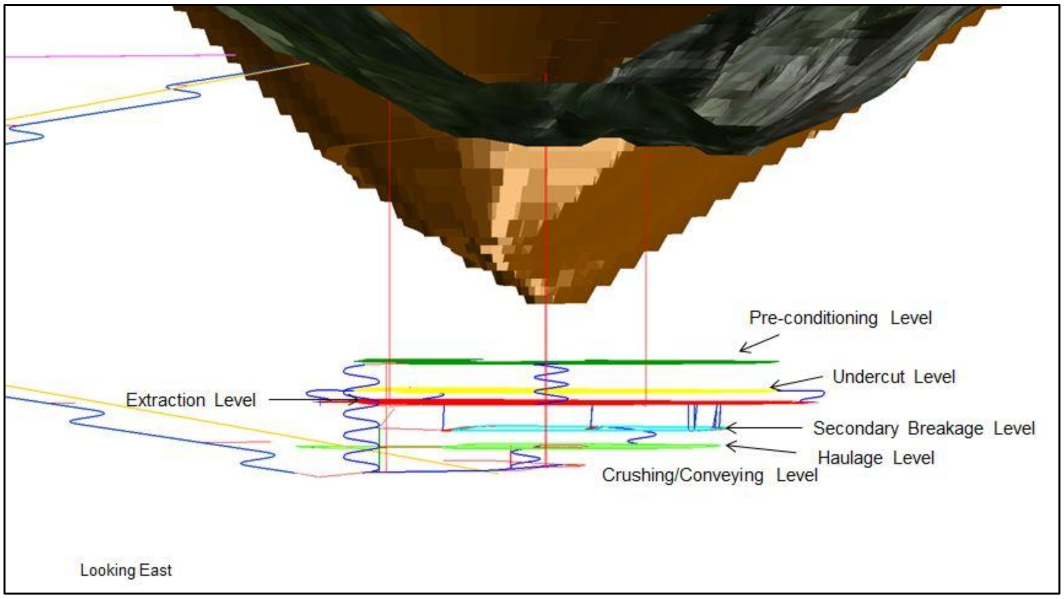
Development of the Mitchell block cave will take 6 years and starts in Year 20. Ore production from this block will start in Year 26 at which point in time the Mitchell open pit is completed. The Mitchell block cave will be accessed with a spiral access ramp and conveyor decline with portals adjacent to the south portal of the Mitchell Treaty Tunnel (MTT) as shown in Figure 7.

Figure 7 - Mitchell Block Cave



An extraction level will be established 200 metres below the bottom of Mitchell open pit with an undercut level 20 metres above it. A pre-conditioning level will be established 60 metres above the extraction level. The rock mass will be pre-conditioned using a hydro-fracturing technique designed to enhance the fragmentation of the broken rock that reports to the drawpoints. The ore will be mucked from the drawpoints on the extraction level using load-haul-dump machines and transported to adjacent ore passes. A secondary breakage level will be established beneath the extraction level. This level will utilize mobile rock breakers to break oversized rock to pass through grizzlys and down to the haulage level. From there the ore will be transported to one of two crusher stations and then fed onto a conveyor, transported to surface, and delivered to the Mitchell Ore Processing Facility for delivery to the Treaty plant site for secondary crushing. The various levels at Mitchell Block Cave are shown in Figure 8.

Figure 8 - Mitchell underground mining levels

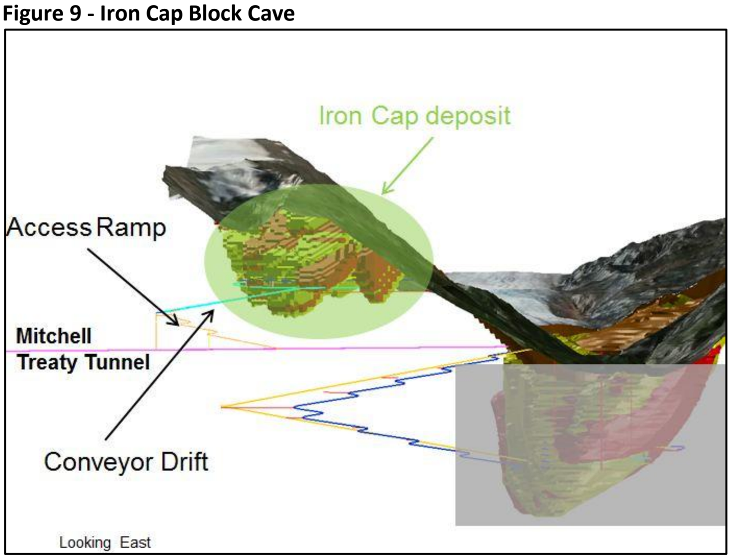


Surface inflows and water encountered in the Mitchell block cave operations during operations will be directed into an underground storage adit that will be aligned towards the Water Storage Facility. The adit will end at a point 300 metres below ground surface at the Water Storage Facility. A vertical shaft from the end of the storage adit to surface will allow the water to be pumped up to the Water Storage Facility.

Iron Cap Block Cave

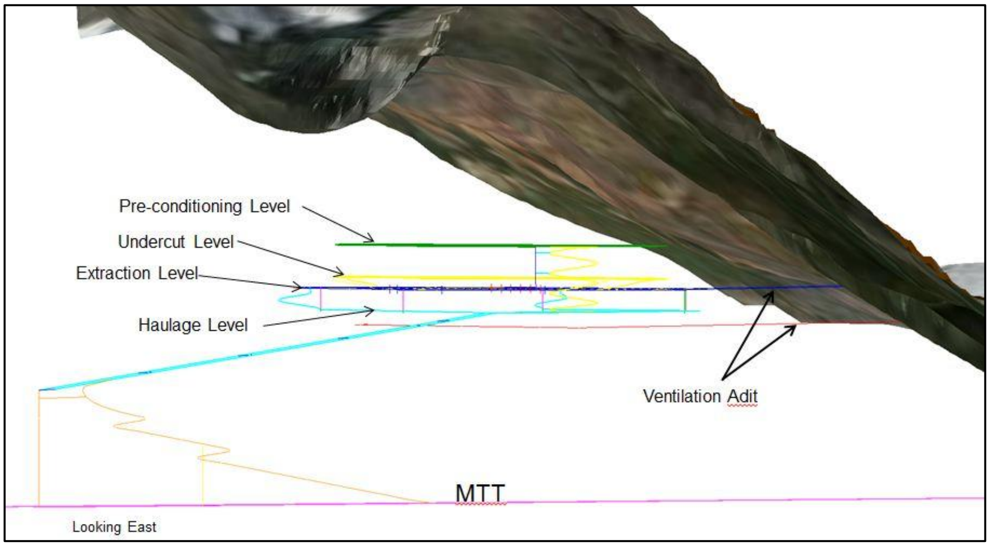
Block caving of the Iron Cap deposit will be undertaken without any prior open pit mining being undertaken on surface. The Iron Cap deposit is located north of the Mitchell open pit in an area that is currently covered by glacier ice. The Iron Cap block cave will be accessed via a ramp that will be developed from the Mitchell Treaty Tunnel (MTT). Production from Iron Cap will be conveyed from the block cave operations and fed directly onto the ore conveyor in the MTT. The overall layout of the access ramp and conveyor drift is shown in Figure 9.

Figure 9 - Iron Cap Block Cave



An extraction level will be established at Iron Cap with an undercut level 20 metres above it. A pre-conditioning level will be established and the rock mass will be pre-conditioned in a similar manner to that described above for Mitchell. The ore will be mucked from the drawpoints on the extraction level and transported directly to one of four crusher stations on that level. From there the ore will be discharged onto conveyors that will connect to the main conveyor system feeding the ore conveyor in the MTT. The various levels at Iron Cap are shown in Figure 10.

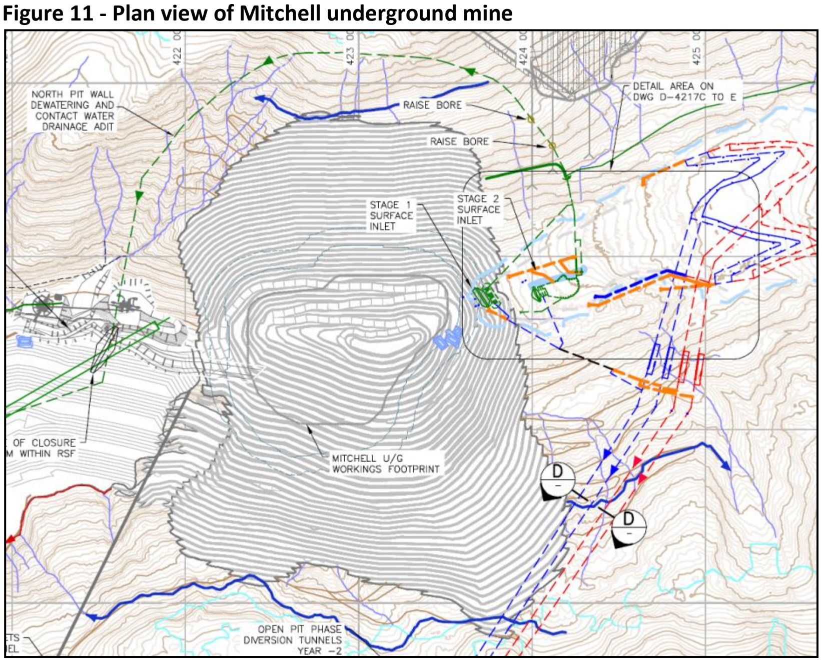
Figure 10 - Iron Cap Block Cave levels



Contact water from the Iron Cap block cave will be directed to the north pit wall dewatering adit from where it will report to the Water Storage Facility for treatment.

The footprint of the Mitchell and Iron Cap block cave in relation to the open pit mining is shown in Figure 11.

Figure 11 - Plan view of Mitchell underground mine



Production Schedule

On an economic basis the open pits would be mined in the following order –Mitchell, Kerr, and then Sulphurets. However, due to water and waste management issues the open pits are scheduled in the following order – Mitchell, Sulphurets and then Kerr.

The Mitchell underground development is started while the final phases of Mitchell pit are still in operation. Ore production from underground commences after Mitchell open pit mining is finished. Kerr open pit operations commence after Mitchell & Sulphurets open pit mining is completed and runs concurrently with the Mitchell and Iron Cap underground production to maintain plant through put. The Mitchel block cave is the last area in operation at the end of the Life of Mine schedule, with the plant running at reduced throughput reflecting the mining rate of the final caving operations.

The production schedule is illustrated in Figure 12.

Figure 12 - LOM plan

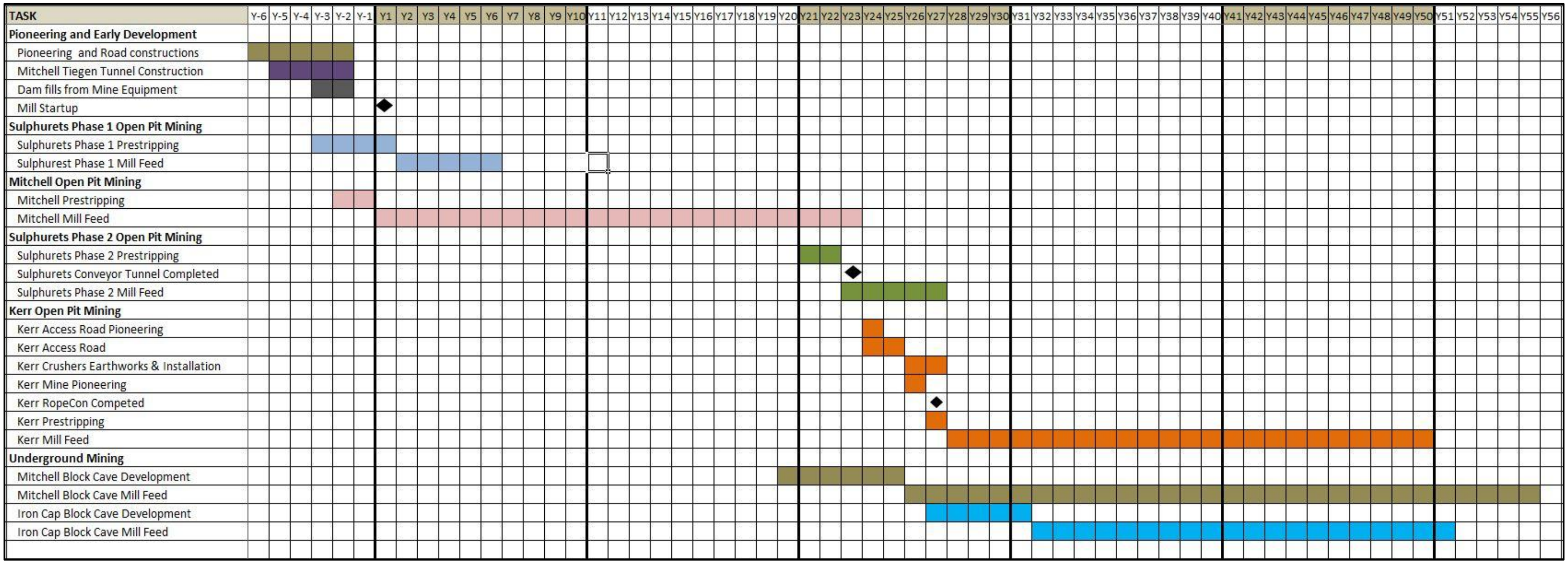


Table 6 summarizes the life of mine (LOM) ore production schedule for the KSM Project from the combined output of all the open pit and underground mining areas.

Table 6 - Summarized Production Schedule (all units in Millions tonnes)

	Years							
	Construction	1 to 10	11 to 20	21 to 30	31 to 40	41 to 50	51 to 55	LOM
Waste mined	**139**	**1,090**	**523**	**917**	**347**	**207**	**64**	**3,287**
Open Pit Ore to Mill	0	304	390	278	98	126	0	1,196
Stockpile Ore to Mill	0	149	85	104	0	0	0	337
Underground Ore to Mill	0	0	0	33	294	287	17	631
Total Mill Feed	**0**	**452**	**475**	**415**	**392**	**413**	**17**	**2,164**
Open Pit Ore to Stockpile	15	258	65	0	0	0	0	337
Ore Stockpile Inventory	15	124	104	0	0	0	0	0
Strip Ratio	N/A	2.41	1.10	2.21	0.89	0.50	3.76	1.52

The LOM tonnes are based on the mining reserves for open pit and underground mining. The mining reserves are based on the parameters listed above.

Processing

Open pit ore from the mine area is trucked to the primary crusher at the Mitchell Ore Processing Complex (OPC) in the Mitchell valley. Crushed ore is then conveyed through the 23 kilometre long Mitchell-Treaty Tunnel (MTT) to the Treaty OPC in the drainages of tributaries of Teigen and Treaty creeks. The Tailings Management Facility (TMF) is also located here. Primary crushing of the underground ore will occur at each underground operation. Underground ore will then be transferred onto the belt conveyor in the MTT for transport to the Treaty OPC.

The process plant circuit in the Treaty OPC will include secondary and tertiary crushing, primary grinding, flotation, regrinding, leaching and dewatering. Flotation tailings and washed leach residues will be sent to the TMF for storage. The process water will be reclaimed from the TMF.

The TMF will consist of three separate cells. The North and South cell will store Separate Flotation tailings and the Carbon-In-Leach (CIL) cell will store the carbon in leach tailings. The cells are confined between four dams (North, Splitter, Saddle, and Southeast dams) located within the Teigen and Treaty Creek valleys. Design criteria for the dams are based on the Canadian Dam Association Guidelines. The area is moderately seismic and the dams are designed to resist appropriate earthquake loads. A site-specific seismic hazard assessment indicates peak ground acceleration at 10,000-year return period of 0.14 *g*. The TMF cells are designed to store the 30-day probable maximum flood (PMF) with snowmelt.

In total, the TMF will have a capacity of 2.3 B tonnes, exceeding the 2.19 B tonnes required for the 55-year design mine life.

The North and CIL cells will be constructed and operated first; they will store tailings produced in the first 20 years. The North Cell will then be reclaimed while the CIL and South cells are in operation for the rest of the mine life.

1.1.2. Existing Development

There is currently an exploration camp on site in the Sulphurets valley. The camp can support up to 50 workers and is operated from June to October each year. The program has been totally helicopter supported to date and no road development has taken place onsite.

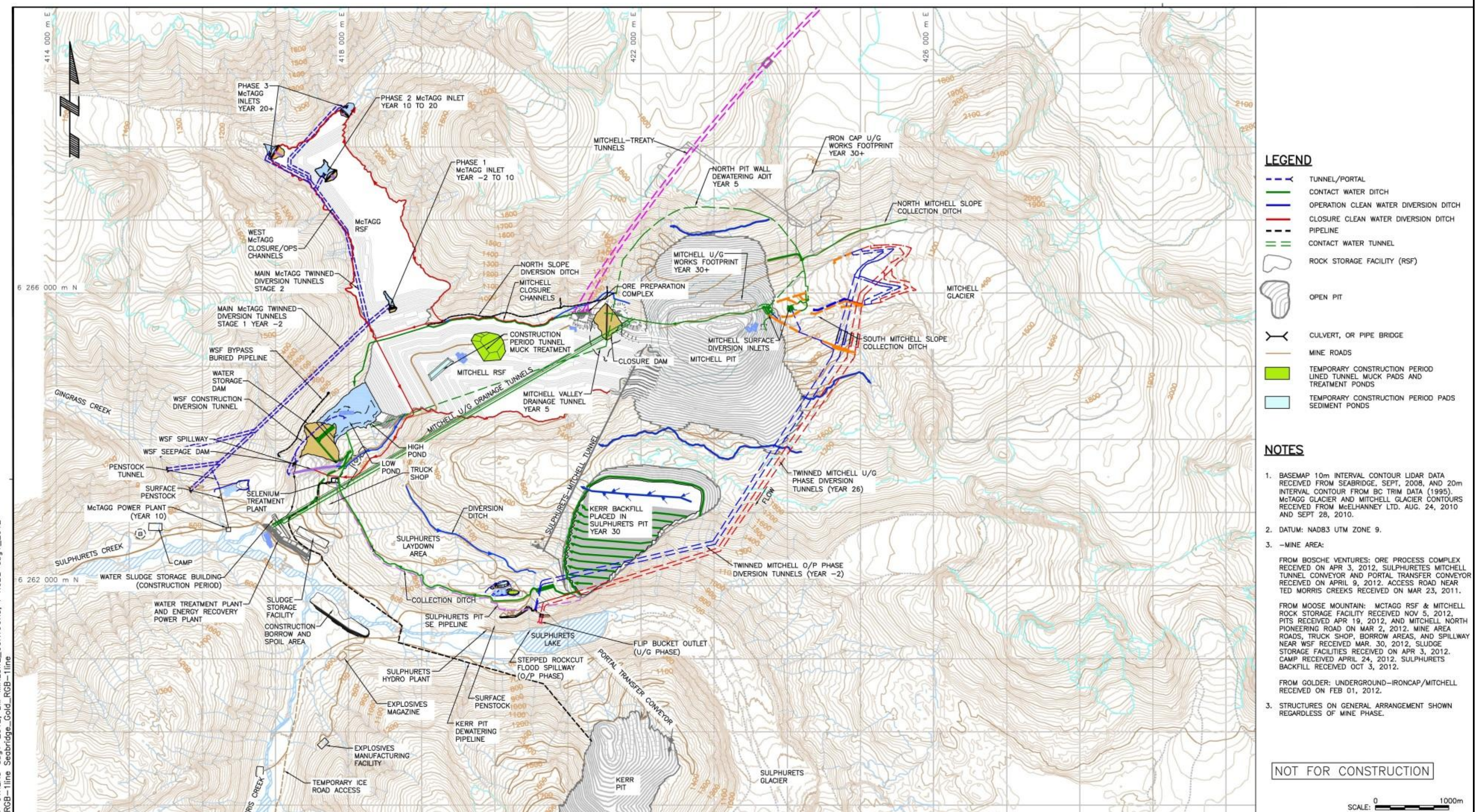
1.1.3. Water Management Plan (Overview)

The objectives of the water management systems are to provide safe and efficient operating areas for the life of the mining operations, and to ensure acceptable water discharge from the site during construction, operations, and post closure. An extensive system of water management facilities will be constructed and maintained throughout the life of the project to divert fresh water away from impact areas and to collect water that has contacted impact areas (contact water) for treatment before release to the environment. Treatment systems are designed to reduce the acidity of discharge water during the life of the project and post closure. These systems include:

- Water Storage Facility including the Pond and Water Storage Dam.
- Water Treatment Plant to treat all contact water discharged from the Water Storage Facility using a high density sludge treatment process
- Mitchell Diversion Tunnel to divert clean water from the Mitchell Glacier and surrounding areas upstream of the Mitchell pit to the Sulphurets Creek drainage
- McTagg Diversion Tunnel to divert clean water from the McTagg Creek Valley away from the McTagg RSF and downstream mine facilities
- North dewatering adit to de-pressure the north wall of the Mitchell Pit and transfer surface water from the vicinity of the Mitchell Glacier around the Mitchell Pit and into the Mitchell Valley Drainage Tunnel
- Surface diversion ditches and pipelines to collect contact water and route it to the Water Storage Facility
- Selenium treatment plant to remove selenium from water that has been impacted by Kerr waste
- Underground storage adit to store underground mining contact water from the Mitchell Block Cave. From here it will be pumped to the Water Storage Facility
- Mitchell Valley Drainage Tunnel to convey discharge water from the north dewatering adit to the Water Storage Facility
- Tailings Management Facility area with surface diversions and a seepage recovery dam

The layout of these facilities is shown in below in Figure 13:

Figure 13 - Water Management Plan for KSM Mine Area



NO.	DATE	ISSUE / REVISION	DRAWN	CHK'D	DESIGN	APP'D
D	NOV, 2012	FINAL REPORT	JT	GP	JM	GP
C	JULY, 2012	DRAFT – ISSUED FOR CLIENT REVIEW	JT	GP	JM	GP
B	APRIL, 2012	DRAFT – ISSUED FOR CLIENT REVIEW	JT	GP	JM	GP
A	MARCH, 2012	DRAFT – ISSUED FOR CLIENT REVIEW	JT	GP	JM	GP

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CLIENT: SEABRIDGE GOLD

Klohn Crippen Berger

PROJECT: KSM PROJECT 2012 MINE AREA ENGINEERING DESIGN

TITLE: MINE AREA GENERAL ARRANGEMENT

SCALE: AS SHOWN | PROJECT No. M09480A04 | DWG. No. D-4201A

CANCEL PRINTS BEARING PREVIOUS REVISION

Each of these facilities is discussed in more detail in the following sections.

1.1.3.1. Water Storage Facility (WSF)

The WSF is designed to temporarily store the mine area contact water to attenuate seasonal flows and regulate the flow of water to the Water Treatment Plant prior to release. A Water Storage Dam will be constructed across the lower section of Mitchell Creek where it occupies a steep sided canyon. The dam will be located downstream of the confluence of McTagg Creek and Mitchell Creek. The impoundment formed upstream of the Water Storage Dam will provide a reservoir for the collection and storage of contact water from the three rock storage facilities located in the Mitchell and McTagg valleys and the Sulphurets mined out open pit, water pumped from the open pits and underground mines, and drainage water from the Mitchell Treaty Tunnel. Seepage from the Water Storage Dam will be collected by a seepage recovery dam located downstream of the dam.

1.1.3.2. Water Treatment Plant

The Water Treatment Plant will be located on flat benched terrain near the confluence of Mitchell and Sulphurets Creeks. Contact water from the mine area will be routed to the Water Storage Facility and then routed to the Water Treatment Plant for treatment using a high density sludge, lime treatment process.

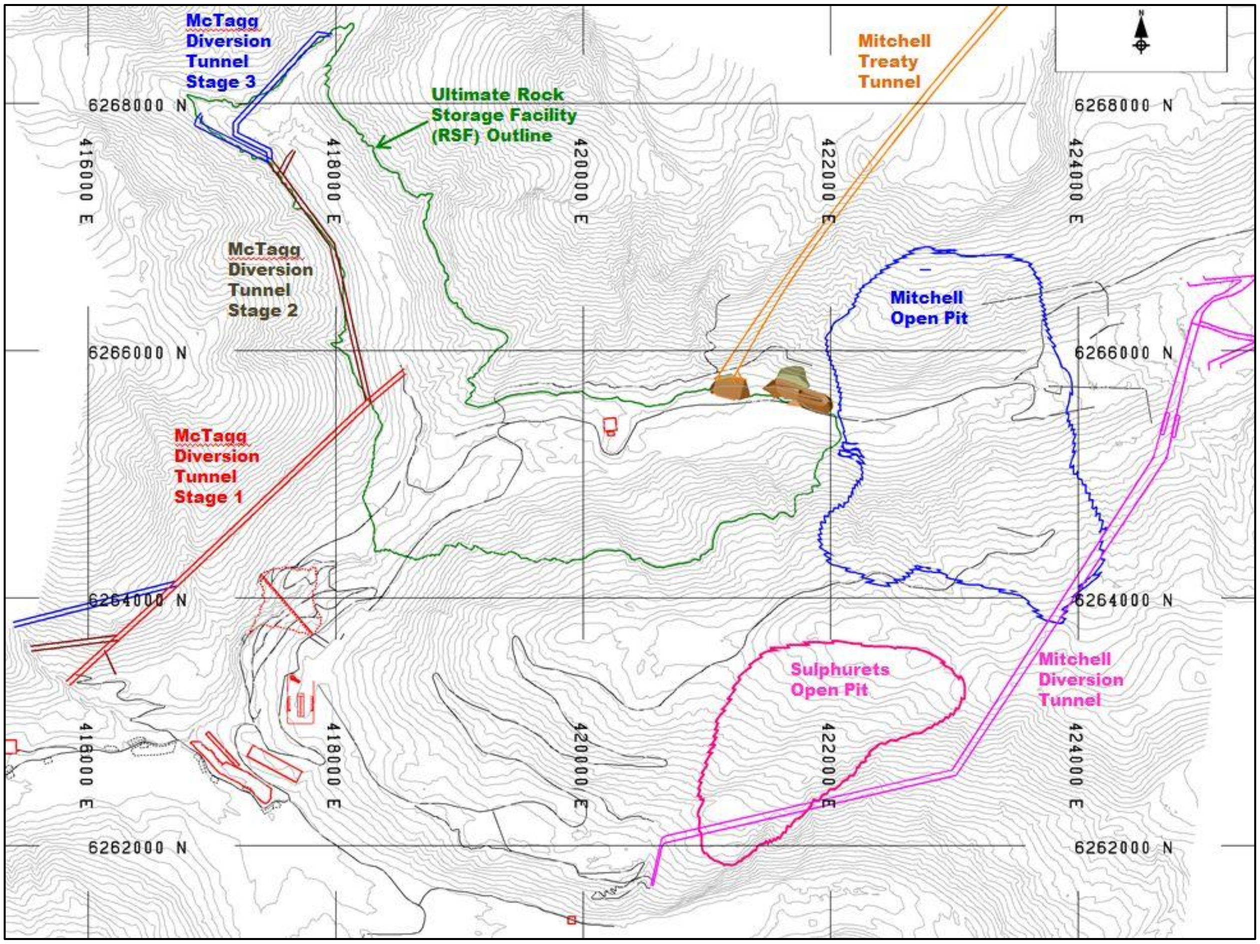
1.1.3.3. Mitchell and McTagg diversion Tunnels

McTagg and Mitchell diversion tunnels are required before mining activity start-up and will route the majority of runoff and glacial melt water around the mine area and RSFs to provide safe and efficient operating conditions. The tunnels are designed as primary diversions, taking the large majority of flows around the mine area. Both McTagg and Mitchell diversion tunnels and their inlets are twinned for redundancy against blockage or collapse and staged to take advantage of the timing of open pit and underground operations. The twinned design of the tunnels also allows access for ongoing maintenance and repairs over the life of these tunnels.

The Mitchell Stage 1 surface inlet will be operational until Year 10 at which point an expansion of the Mitchell open pit will remove the Stage 1 location. At this time the Stage 2, or ultimate, surface inlet will be put into operation at a location beyond the ultimate pit rim and any tension cracks resulting from later underground mining.

The McTagg diversion inlets are staged in elevation and location, with an initially lower level tunnel inlet in lower McTagg valley. Subsequent inlets will be established at higher elevations in McTagg as the valley is filled by the McTagg Rock Storage Facility. Stage 1 will be operation until Year 10. Stage 2 will be in service between Year 10 and Year 20 at which point the ultimate Stage 3 will be commissioned.

Figure 14 – Mitchell and McTagg diversion tunnels



1.1.3.4. North dewatering adit

After Year 5, the Mitchell Pit Wall will require dewatering for stability reasons and the dewatering adit will be constructed behind the north wall. Contact water from the slopes above Mitchell Glacier to the west of Mitchell Pit and drainage from Iron Cap will then be routed through the dewatering adit and normally discharge to the 810m elevation closure channel at the north toe of the Mitchell Rock Storage Facility. From there it can drain into the Water Storage Facility. The closure channel will be covered by the ore stockpile and the landbridge until Year 27. During that time contact water will be routed to the Water Storage Facility through the Mitchell Valley Drainage Tunnel. After Year 27 the landbridge is no longer needed and will be removed and placed in the McTagg Rock Storage Facility. This will take approximately two years. At the end of Year 29 the ore stockpile is completely reclaimed, the landbridge material is removed, and the closure channel is open. Discharge water from the dewatering adit can then be directed through the closure channel to the Water Storage Facility.

1.1.3.5. Surface Diversions for Non-Contact Water

Runoff of non-contact water from local catchments within the mine area will be diverted by secondary surface diversions and pipelines that route water around the open pit, RSF and underground mining areas and past the Water Storage Facility. These are either located in natural ground, or raised on placed stable mine rock as the RSF's expand. As surface water diversions are seasonally susceptible to avalanche blockages, the water balance of the mine does not rely on the functioning of surface diversions. Additional water treatment capacity has been provided to treat flows resulting from periods when the surface diversions may be unavailable due to blockage from snow or debris, resulting in non-contact water ditches overflowing into the contact water system.

1.1.3.6. Selenium Treatment Plant

As Kerr waste starts to be stored in the Sulphurets mined out pit, the collected water from Sulphurets pit will be routed to the Selenium treatment plant near the maintenance facility. Once the selenium has been removed the water will then be routed to the Water Storage Facility.

1.1.3.7. Underground storage adit

Water inflow to the underground mining operations will be stored in the underground storage adit from where it will be pumped to the Water Storage Facility.

1.1.3.8. Mitchell Valley Drainage Tunnel

A 3.5km long tunnel will be constructed under the Mitchell valley to convey discharge water from the north dewatering adit to the Water Storage Facility.

1.1.3.9. Tailings Management Facility - surface diversions and seepage recovery dams

Diversions will be constructed to route non-contact runoff from the surrounding valley slopes around the Tailings Management Facility. The diversion channels are sized to allow passage of 200-year peak flows, and are large enough to allow space for passage of snow removal machinery. Buried pipe sections paralleling the channels will be installed in areas of active snow avalanche paths to enhance operability during avalanche periods.

Seepage from the impoundment will be controlled with low permeability zones in the dams and foundation treatment. Residual seepage and runoff water from each tailing dam will be collected at small downstream collection dams provided with grouted foundations. Seepage collected will be pumped back to the Tailings Management Facility for use in the process operations. The seepage dam ponds will also be used to settle solids transported by runoff from the dam and cyclone sand drain-down water.

Any contact water during mining of the Kerr, Sulphurets, and Mitchell open pits will be collected with in-pit sumps and be pumped to surface diversions or pipelines for transport to the Water Storage Facility.

The Water Treatment Plant and Water Storage Facility will be operational at the start of Year -2. Prior to this, during the early years of the construction period, temporary water management facilities are used to treat contact water before release to the environment.

1.1.4. Mine Project Area Facilities

1.1.4.1. Mitchell Ore Processing Complex (OPC)

The ore processing facilities located at the Mitchell OPC site consists of the primary crushers and associated facilities to convey the crushed ore to the concentrator via the Mitchell-Treaty Tunnel. The location of the Mitchell OPC facilities were selected to take advantage of the natural topography, minimize the impact on the environment and avoid geohazard risks.

The open pit ore will be trucked to one of two primary crushers near the Mitchell pit and after crushing will be conveyed to a live ore covered stockpile. Ore will be reclaimed from the stockpile by tunnel feeders and fed on to a tunnel conveyor of approximately 23 km in length, terminating at the Treaty OPC.

1.1.4.2. Twinned Mitchell-Treaty Tunnel (MTT)

The concentrator is in a separate valley from the mining activities and is connected to them by the twinned Mitchell-Treaty Tunnel (MTT).

Two parallel tunnels will extend from the north side of the Mitchell Zone in the mining area to the northeast into the upper reaches of the Treaty Creek valley, north of the Tailings Management Facility.

One of the MTTs is used for the belt conveyor, a water pipeline, a diesel fuel pipeline, and electrical power transmission cables. The other is a transportation tunnel to provide access for maintenance services to the conveyor tunnel. It will also serve to deliver bulk supplies and move personnel to and from the Mitchell valley mine areas. The two tunnels have been designed with separate ventilation systems, with air locked cross-cuts at specific intervals to ensure mine personnel in the transportation tunnel have access to an alternative fresh air way, if required.

The proposed tunnel route is through Crown land and approximately 15 km of its length passes through ground subject to mineral claims held by third parties.

1.1.4.3. Sulphurets-Mitchell Conveyor Tunnel (SMCT)

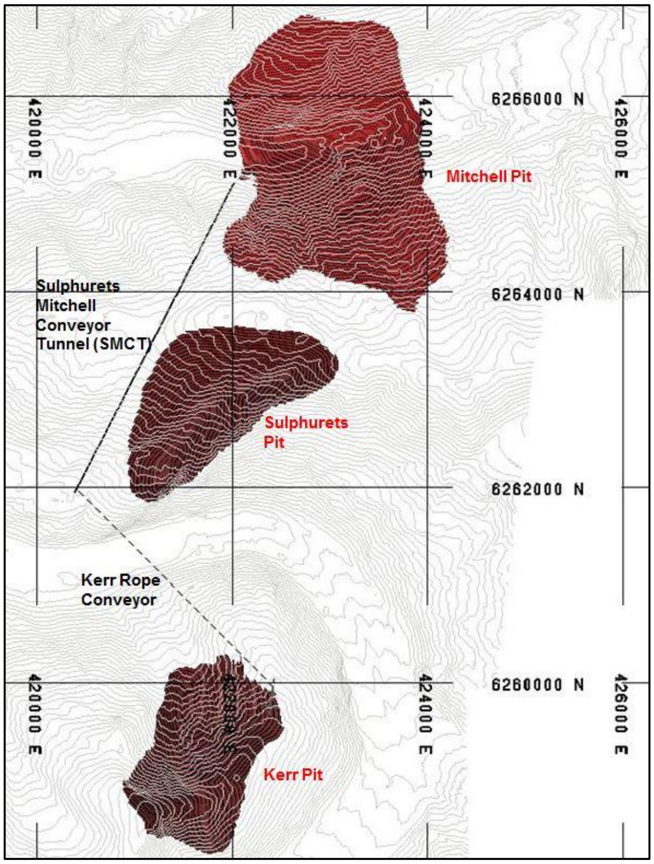
Truck transport of the open pit ore from Sulphurets and Kerr pit involves long hauls and significant changes in elevation, making them high cost. The economic alternative is a three kilometre long Sulphurets-Mitchell Conveyor Tunnel (SMCT) to be constructed through the Sulphurets ridge from the Sulphurets Creek Valley to the Mitchell Creek Valley. It will slope downwards to the north so that contact water from inside the tunnel will drain to the Mitchell Valley and be routed to the Water Storage Facility.

1.1.4.4. Kerr Rope Conveyor

Ore and waste from the Kerr pit will be crushed at the Kerr pit rim and then transported to the entrance of the Sulphurets Mitchell Conveyor Tunnel by the Kerr Rope Conveyor. The Kerr ore is loaded onto the conveyor through the Sulphurets Mitchell Conveyor Tunnel while the waste is loaded onto trucks and placed into the mined out Sulphurets pit. The

Kerr Rope Conveyor spans across the Sulphurets Creek Valley and terminates at a transfer point on the north side of the Sulphurets Creek Valley. The layout of the Kerr Rope Conveyor and the Sulphurets Mitchell Conveyor Tunnel is shown in the figure below:

Figure 15 - SMCT and Kerr Rope Conveyor



1.1.4.5. Process Plant

The Process Plant and the Tailing Management Facility are located in the eastern part of the Project area, connected to the western part of the mine project by the Mitchell Treaty Tunnel. The Processing and Tailing Management Facility is located in the drainages of tributaries of Teigen and Treaty creeks, about 15 km southwest of Bell II on Highway 37.

1.1.4.6. Waste Rock Storage Facilities (RSF)

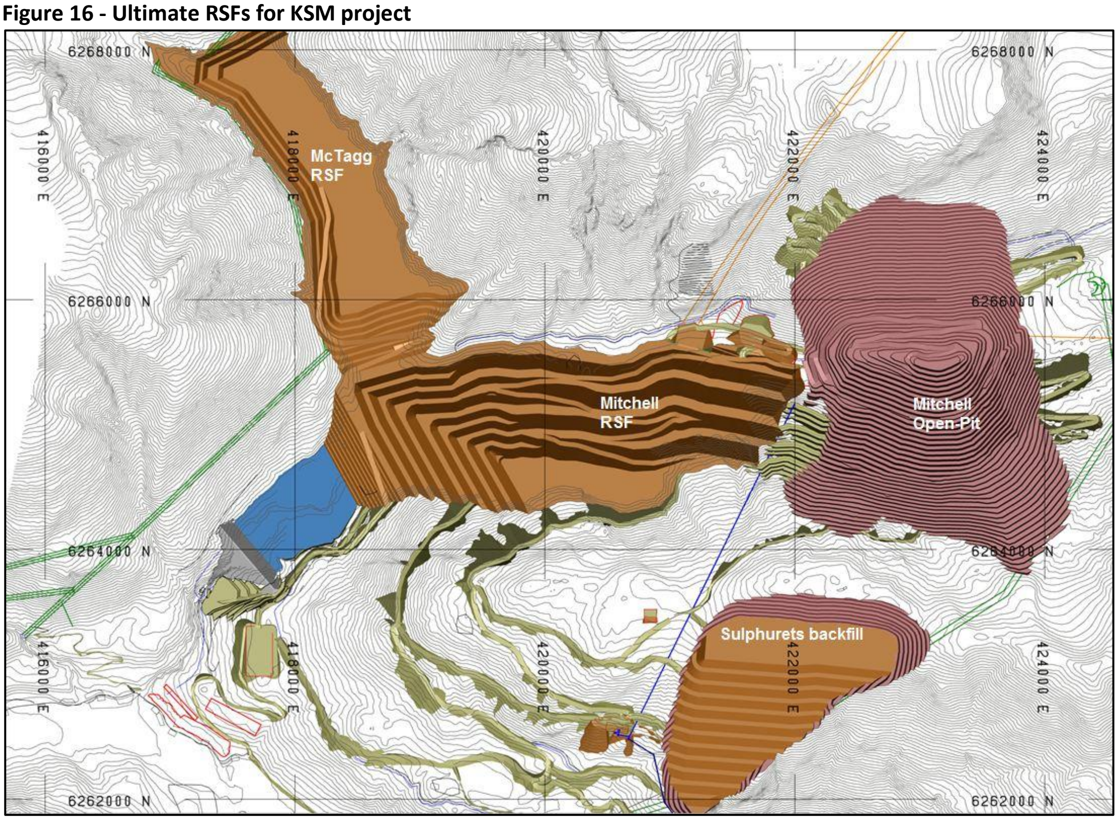
Waste rock from the open pits will be stored in a Rock Storage Facility (RSF) in either the Mitchell or McTagg valley. The RSFs will be built in such a way that they provide access to initial benches of progressive phases inside the ultimate pit, provide access for ore to be transported from the upper portions of the open pit down to the Ore Processing Complex or transfer stations, provide access between loading and dumping of waste rock, and facilitate final closure and reclamation requirements. Because the open pits at the KSM project span a large elevation change from top to bottom there is a need to save lower RSF areas for the lower parts of the open pit mining. The waste from the upper parts of the open pits will be designed to go to higher elevation RSF areas in order to keep the truck hauls as flat and as short as possible.

Mined waste rock in the KSM mine plan is placed in RSFs in as close proximity to the mining areas as possible. The mine production schedule tracks rock types based on acid base accounting quality for water management purposes. All RSF designs assume a natural angle of repose of 37°. A 20% swell factor is applied to in situ volumes to calculate the loose volume requiring placement.

Several different construction methods will be used for waste placement: top-down, bottom-up, and wraparounds. Top-down placement involves truck-dumping the material from the crest down to a platform or the topography below. Top-down dumps have been designed as 50 m maximum lifts. Bottom-up placement involves driving the truck to the bottom of the platform and placing the material in lifts (approximately15-30 m high, or less if geotechnically required), and constructing the RSF to final limits from the bottom, working upwards. Wraparounds are smaller top-down-type RSFs that are built onto the face of an existing RSF, creating a series of terraces. These are used to facilitate intermediate haul roads and to lower the overall slope angle of high dumps which assists in final dump reclamation activities.

Final RSF configurations are designed with terraces at “as dumped” angle of repose, with flat benches between terraces. The overall slope angle is between 26° and 30°. The Mitchell RSF is designed with a +50m wide channel at the 810 metre elevation along the north toe. During open pit and underground mining operations, this channel is used to route contact water to the Water Storage Facility. After mining operations have finished, the closure channel will be used to route non-contact water to downstream of the Water Storage Facility for discharge.

Figure 16 - Ultimate RSFs for KSM project



1.1.4.7. Ore Stockpile

Ore is stockpiled throughout the open pit mining schedule. This provides for optimization of mill feed grades as well as open pit fleet requirements throughout the project life. The ore stockpile is placed to the west of the Mitchell Ore Processing Complex and reaches a maximum size of 126 M tonnes in Year 6 of production. The ore stockpile will block the future closure channel at the north toe of the Mitchell RSF starting in Year 5. Provision has been made for contact water to be routed to the Water Storage Facility through the Mitchell Valley Drainage Tunnel. The ore stockpile will be mined out by the end of Year 29.

1.1.4.8. Soil Stockpiles

Till/soil material from McTagg and Mitchell RSF foundation areas will be recovered as reclamation material for capping of final dumps, where practical. Any recovered till material will be temporarily stored outside the active mining area until it can be used for reclamation of the final RSF slopes. Suitable locations for reclamation material storage are at the mouth of the Ted Morris valley and the current exploration camp site.

1.1.4.9. Maintenance shop, Fuel stations and associated support facilities

The maintenance shop and fuel tanks will be constructed in the Mitchell valley before open pit mining activity commences and will be completed approximately 2 ½ years before production starts. The building also includes offices for management, supervision, safety and technical personnel in the mine area.

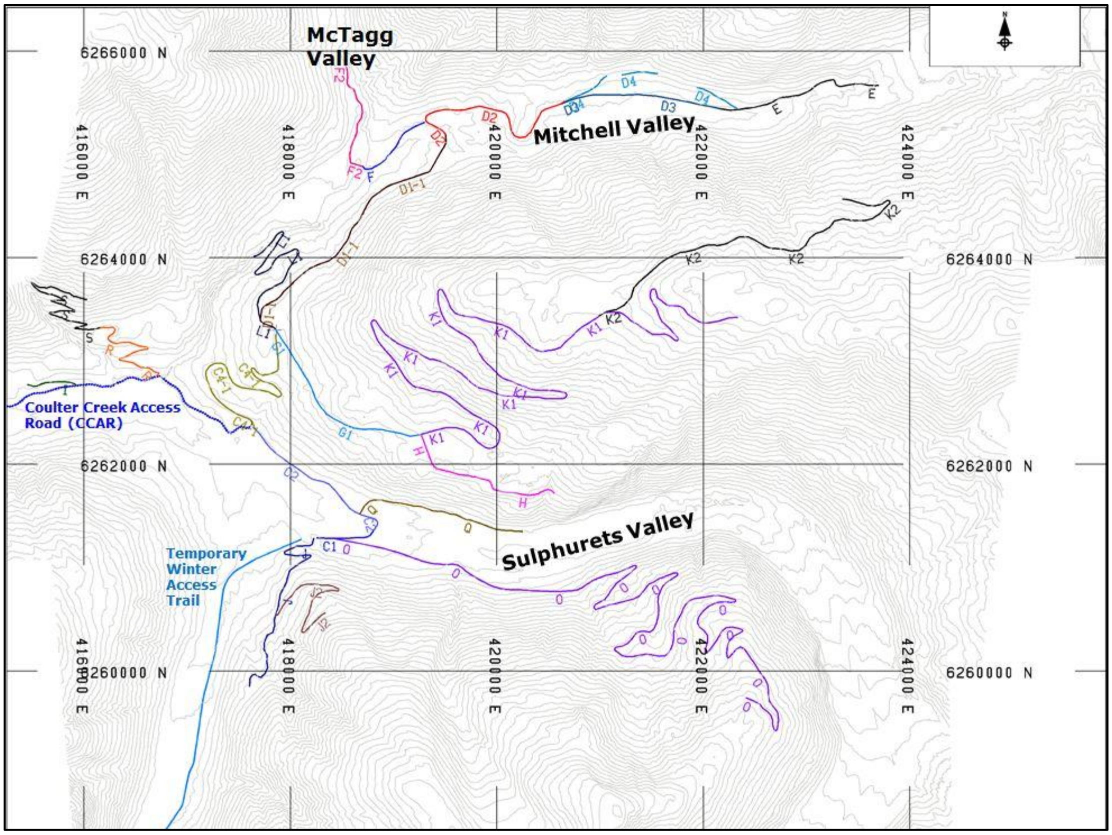
The maintenance shop has been sized to accommodate the maximum fleet size for the life of mine production plan. A separate enclosed tire bay facility is included near the maintenance facility. Site preparation is also included for the mine equipment erection site(s).

1.1.4.10. Roads at Mine Site (new and upgrades)

Mine roads include access to the Treaty Ore Processing Complex facilities in the Tailings Management Facility area, access to the Mitchell Ore Processing Complex in the mine area, onsite haul roads between the pits and to underground areas, service roads, and development and construction roads as required in the development schedule.

Pioneering access roads are required for construction to facilitate activities and maintenance access to the temporary water treatment facilities, quarries and borrow areas, tunnel portals, and other construction sites. These will be balanced cut/fill roads built with dozers. These roads will also provide access to facilities for the Geohazard and safety management systems for construction and ongoing operations. The pioneering road system is shown in Figure 17 below:

Figure 17 - Pioneering access mine area roads



Pioneering access to each pit and subsequent phases use roads with a maximum 15% grade; these are constructed using balanced cut and fill wherever possible. Pioneering roads enable major mining equipment to reach the top of each pit phase and start mining. After the pioneering road is established to the top benches of each pit phase, bench waste from the upper portions of each pit phase is used to fill full-width haul roads at a maximum gradient of 8% at the 38 m double lane width, to connect with permanent surface roads and highwall roads in the long term road network. This road network connects the mining areas with the primary crusher and stockpile areas for ore, and the Rock Storage Facility areas for waste.

Project Access

During the construction period initial access will be by helicopter followed by Site access established from three fronts:

- the temporary winter access trail from Granduc to the Ted Morris Creek valley
- the Treaty Creek Access Road (TCAR) from Highway 37 to the saddle area and the main plant site
- the Coulter Creek Access Road (CCAR) from Eskay Creek to the Unuk River and on to the Mitchell site.

The temporary winter access trail is built over the Berendon and Frank Mackie glaciers and accesses the mine area by the Ted Morris Valley. It will be in operation during the first two years of construction. The route will start at the end of the existing all-season road near the abandoned Granduc Mine, accessing the Frank Mackie Glacier from the Berendon Glacier, and will continue over the glacier into the Ted Morris Creek valley, which is a tributary of Sulphurets Creek. The winter access trail will be used to mobilize water treatment supplies, mobile equipment, and supplies for construction of mine roads and water diversions. There will be a period of time after the winter access trail has been utilized for transporting equipment and supplies into the mine site that ongoing transportation and support will be by helicopter until the CCAR is completed.

There will be two means of permanent access to the mine area:

One will include the existing 59 km resource access road from Highway 37 to the former Eskay Creek mine. This will connect to the 35 km long Coulter Creek Access Road that proceeds south from the Eskay Creek mine site to the KSM mine site. The Eskay Creek and Coulter Creek Access roads will be maintained for the life of the project, to support the mine development, transport of oversize loads, and to provide alternate emergency access. The Coulter Creek roads will be single lane (6m surface) radio-controlled roads.

The second will include a 30 km two lane access road (Treaty Creek Access Road) from Highway 37 to the Treaty Plant Site, Tailings Management Facility and east portal of the Mitchell Treaty Tunnel. The Treaty Creek Access Road leaves Highway 37 approximately 19 km south of Bell II. It will be a two lane (8m finished surface), capable of carrying the legal axle loading for trucks on BC highways on a year-round basis. From the plant site, the mine area access uses one side of the Mitchell Treaty Tunnel (23 km in length) to reach the KSM mine site. The Mitchell Treaty Tunnel will be the permanent access to the site during operations and is left for post mining access to the water treatment plant and the Hydro power installations.

Active and passive snow avalanche control measures, including the access routes, are designed throughout the project area. A dedicated crew is included in the construction and operating life of the mine to perform technical evaluations on the avalanche hazards, initiate avalanche release, and ensure safe operating practices and procedures are followed during periods of avalanche risk.

1.1.4.11. Power Supply and Distribution

Electrical power will be available from the Provincial grid following construction of the Northwest Transmission Line (NTL). The supply of electricity to the KSM site will require construction of a switching station on the NTL right of way located in the vicinity of the Treaty Creek Access Road junction with Highway 37, and a construction of a spur line to a substation at the Treaty Process Plant site. The 28.5 km long spur line will follow the Treaty Creek Access Road. The substation will be a gas insulated facility installed in a building that will be integrated into the Process Plant site. Power to the mine site will be provided through the conveyor side of the Mitchell Treaty Tunnel via power cables. These cables will be attached to the roof of the conveyor tunnel connecting the two Ore Processing Complex sites. These cables will terminate to a step-down substation at the Mitchell Ore Processing

Complex. From there electricity will be distributed to the appropriate areas in the mine site through regular overhead power lines.

Mini Hydro Plants and Energy Recovery

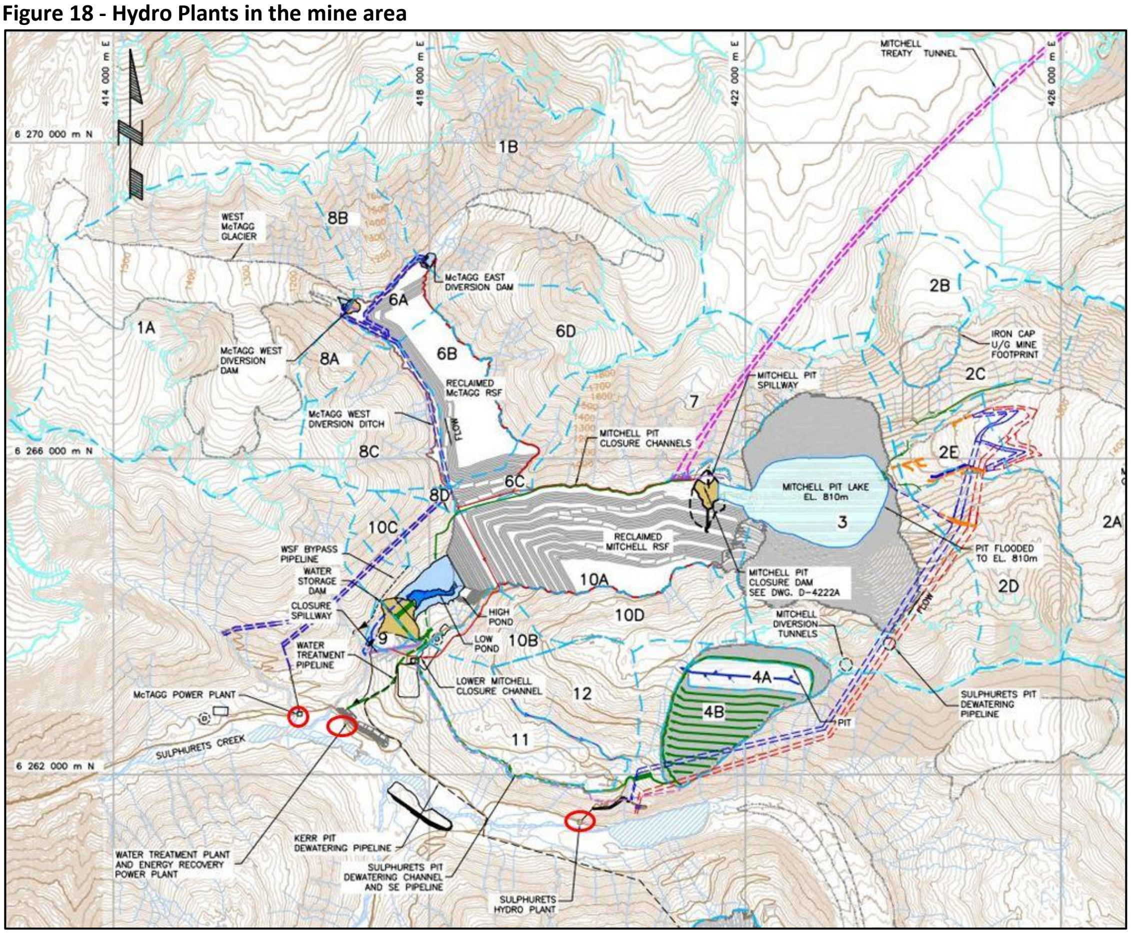
Hydroelectric power will be generated on-site with several mini hydro plants to take advantage of generation capacity related to hydraulic head from operation of the various facilities. The plants will all be located within the mining lease area. Power generated from the hydro plants will be fed into the local mine distribution power lines. The plants will either displace costly Tier 2 utility power, or will be sold back to BC Hydro under their Standing Offer Program.

Mini hydro generation plants will be located at these sites:

- Water Treatment Plant and energy recovery power plant
- Sulphurets Hydro Plant
- McTagg Hydro Plant

The location of these hydro plants is shown in Figure 18 below:

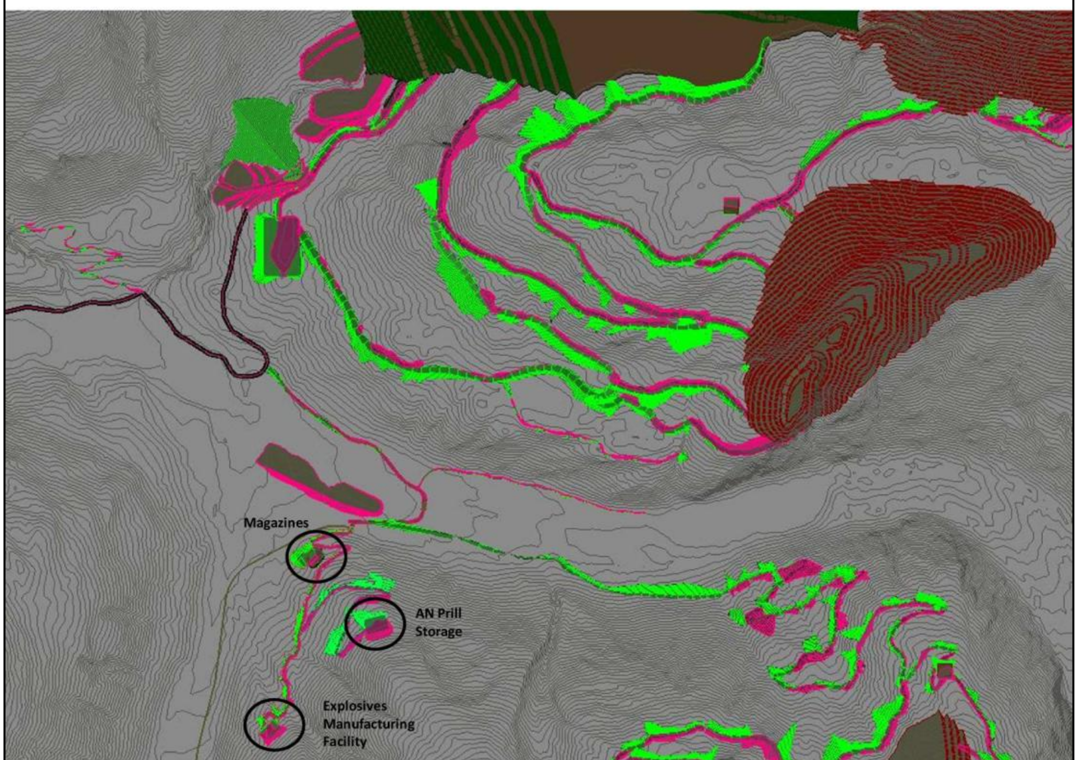
Figure 18 - Hydro Plants in the mine area



1.1.4.12. Explosives Facilities

A contract explosives supplier will provide the blasting materials and technology for the mine. Due to the remote nature of the operation, an explosives manufacturing facility will be built on site. The supplies required to manufacturer the explosives will be trucked to site as non-explosive chemicals via the Coulter Creek Access Road. The explosives contractor will deliver the prescribed explosives to the blast holes and supply all blasting accessories. Blasting accessories will be stored in magazines which will be designed and permitted according to MEA and NRC regulations. Sufficient supplies will be stored on site to allow continued blasting activities if the access roads are temporarily closed. The explosives manufacturing facility and magazines are designed to avoid geohazard risks and are located on the east side of the Ted Morris Valley above the valley bottom floor. This location ensures that they are an adequate distance away from other infrastructure and high traffic areas. The location of the blasting plant and the explosives magazines are outlined in Figure 19.

Figure 19 - Explosives Infrastructure



1.1.5. Life of Mine Plan

The mine schedule is shown in yearly time periods. The mill starts at Time 0. Full mill feed production (100%) is expected in Year 2. The production schedule specifies:

- **Pioneering construction: Years -6, -5, -4**
  - equipment and consumables delivered using the temporary winter access trail,
  - access roads established to all mine site tunnel portals, Mitchell and Sulphurets pits,
  - explosives facilities, water treatment facilities, and Mitchell Ore Processing Complex pad preparations, and
  - mining of borrow sources begins for construction of the Water Storage Dam and associated facilities

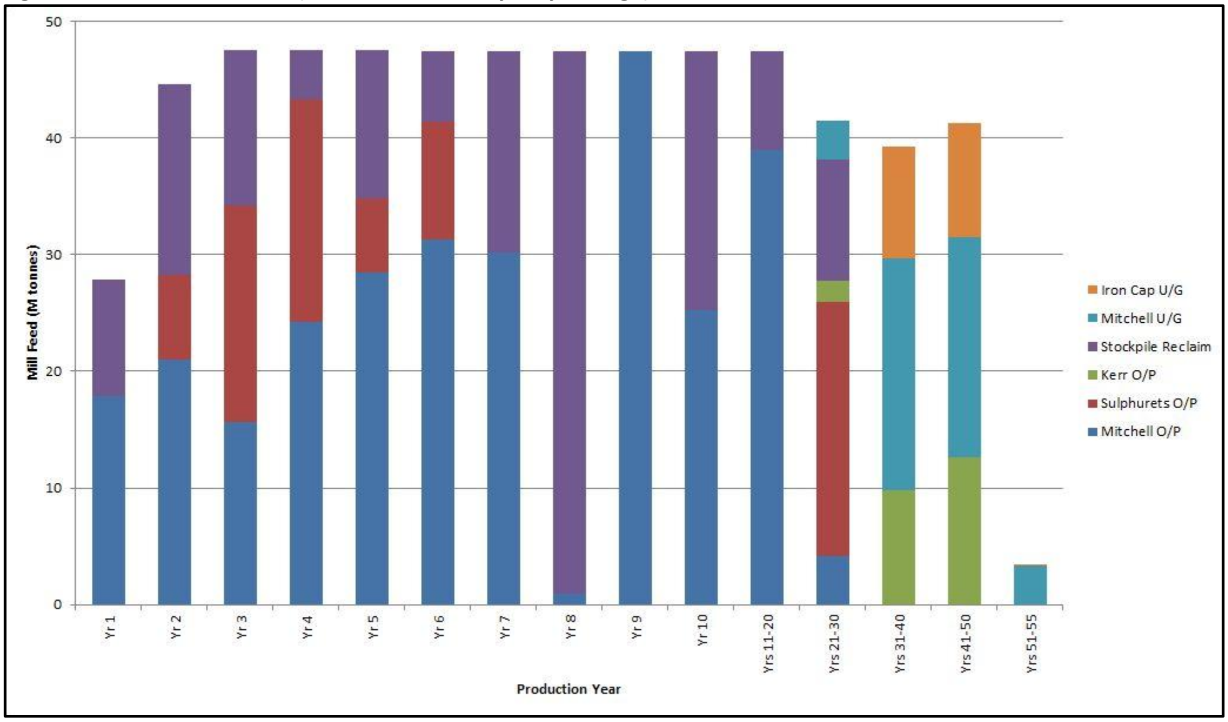
- **pre-production construction: Year -3,-2,-1**
  - a construction aggregate pit west of the Mitchell Ore Processing Complex is mined to complete fills required for the Mitchell Ore Processing Complex construction,
  - Pre-stripping and mining of the Mitchell and Sulphurets pits begins when the Mitchell Diversion Tunnel is completed to divert drainage away from the Mitchell Pit.
  - Initial Mitchell waste is used to build an access road to the Mitchell Ore Processing Complex, remaining waste is dumped in the Mitchell Rock Storage Facility
  - Initial Sulphurets waste is used to build a double-lane haul road from the pit to the maintenance facility. Remaining waste is split between the Water Storage Dam construction and the Mitchell Valley
  - A small ore stockpile is built in the area to east of the Mitchell Ore Processing Complex.

- **Life of Mine (LOM) operations: Year 1 and onwards.**
  - 355 mine operating days scheduled per year assuming 21 operating hours per day,
  - mine operating days are based on a weather study with an allowance made for days where the cumulative effect of severe snow storms or poor visibility requires the mine to completely shut down, and
  - annual mill feed of 47,450 kt/a is targeted based on a nominal throughput of 130,000 t/d.

Figure 20 shows the LOM ore production sources and illustrates that significant stockpile reclaim is required throughout the mine life to even out strip ratio during the pre-stripping of the Mitchell phases**.** Table 6 (shown previously) shows the production schedule for the LOM.

The underground mining production schedule is generated based on the development requirements, and the size and capacity of the individual Mitchell and Iron Cap block caves. These are then integrated into the total property production schedule. Ore production from each pit is inserted where it provides the best contribution to the project economics. The open pit ore targets are then adjusted to meet the mill capacity. In the later years of the schedule, the open pit reserves are depleted and mill production is limited to the capacity of production from the underground only.

Figure 20 - Mill Feed Sources (Year 11 onwards is yearly average)



1.1.6. Reclamation Plan Overview

At the end of the mine life, an approved closure and reclamation plan will be implemented that will meet the end land use objectives and satisfy the regulatory commitments.