3 Project Schedule and Phases

3.1 Project Schedule

3.1.1 Summary Schedule

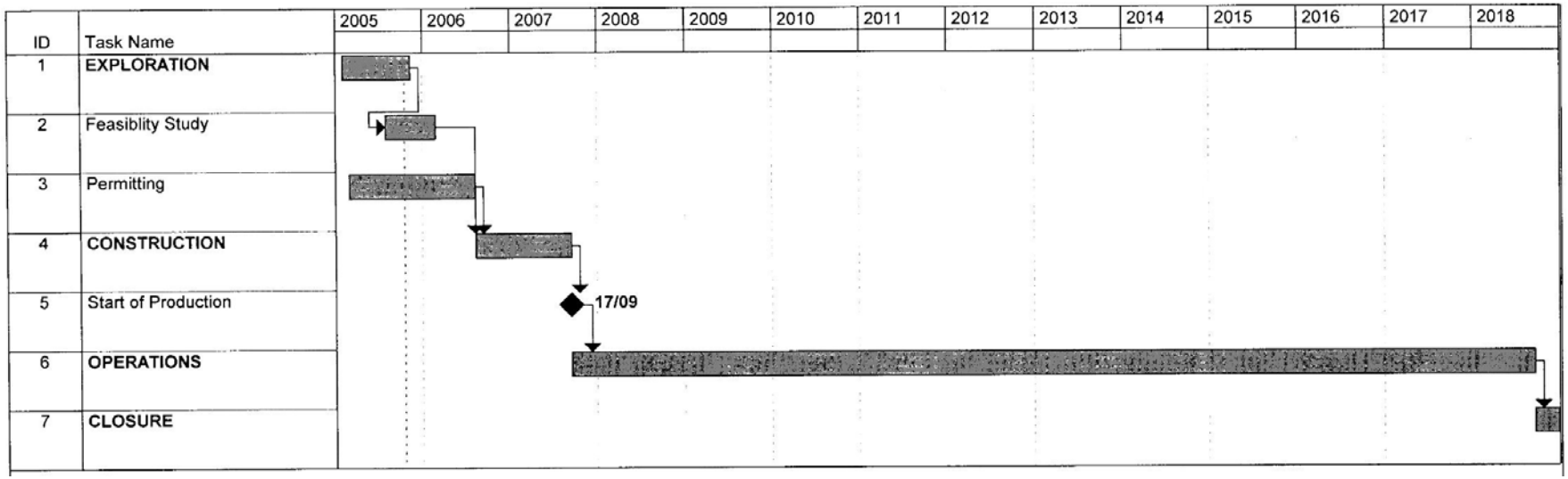
The proposed project is divided into three discrete phases:

- construction
- operations
- closure

Figure 3.1-1 shows a simplified schedule for these three phases, and includes the exploration phase currently underway. Advanced exploration activities began in February 2005 and are scheduled for completion in mid-November 2005. The objectives of the program were to confirm development and mining options and provide additional information for incorporation into the Feasibility Study.

Subject to the receipt of the necessary government regulatory approvals for the Wolverine Project, YZC anticipates commencement of full operations in October 2007. The operation is projected to last approximately 12 years, with mine closure initiating late in 2018, and extending between 5 and 10 years from 2019. The activities and details for these three phases are documented below.

Figure 3.1-1 Overall Project Schedule



3.2 Construction Phase Activities

3.2.1 Facilities

The physical facilities that will be built during the construction phase of the project are:

- crushing plant
- industrial complex, including:
    - dense media separation (DMS) plant
    - process plant including grinding and flotation
    - paste backfill plant
    - water treatment plant (WT)
    - concentrate storage and loading area
    - maintenance facility
    - warehouse
    - mine dry
    - shifters wicket and lamp charge area
    - administration, technical and supervisory staff offices
    - first aid and mine rescue stations
    - fuel storage; diesel and propane
    - diesel power generating plant and power distribution system
    - mine air ventilation and heating system
    - compressor plant
    - tailings facility
    - assay lab
    - underground preproduction development
    - mine services, including:
        - leaky feeder system
        - power distribution
        - compressed air system
        - mine dewatering system
    - communications systems
    - camp
    - incinerator
    - concrete batch plant

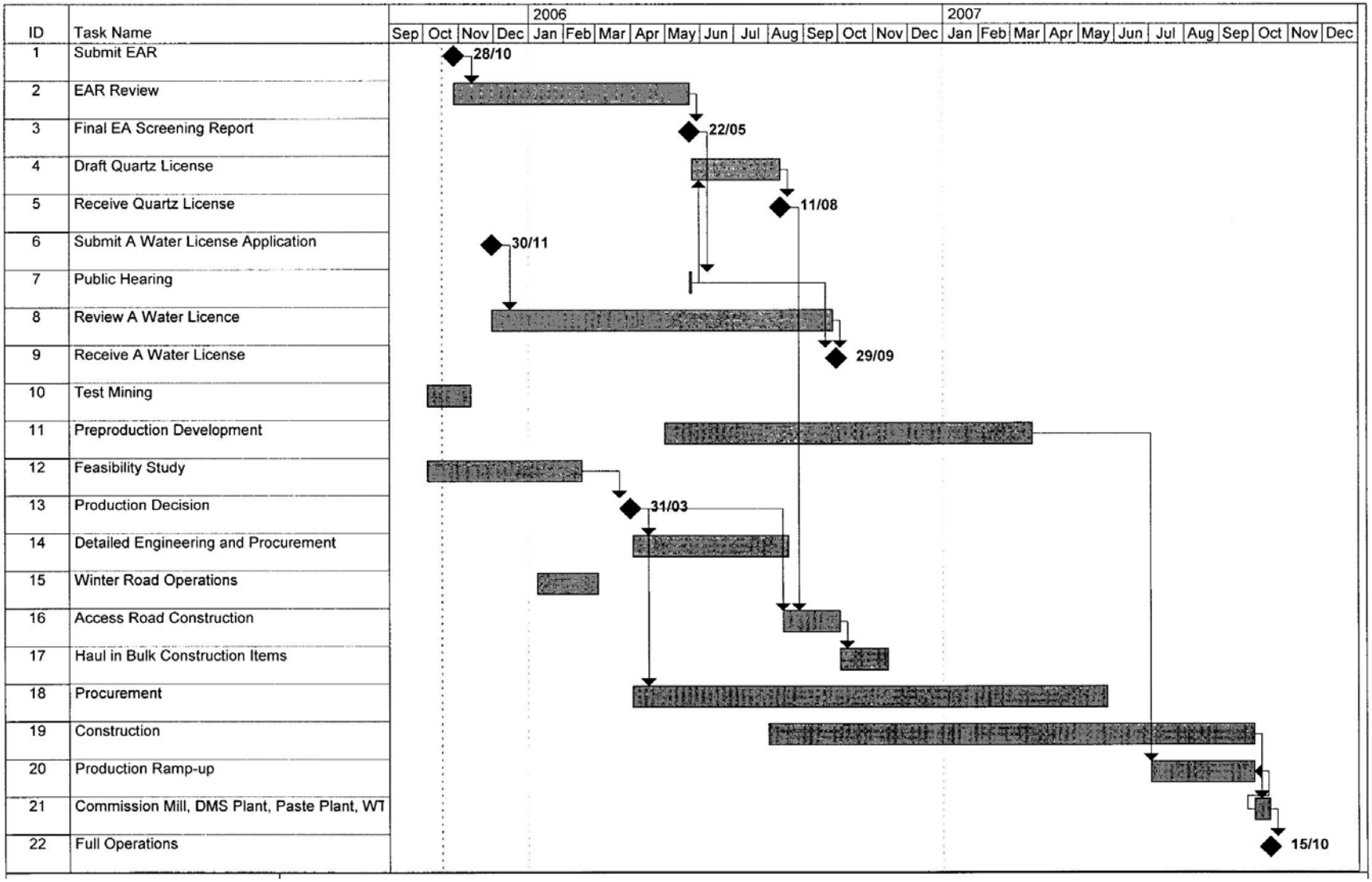
3.2.2 Construction Schedule

Construction will commence in August 2006 and will continue until completion in October 2007. Figure 3.1-2 shows a detailed schedule for the construction phase. In order to remain on schedule, the mine will be developed concurrent with surface construction activities. An earlier construction start-up would be preferred, but is not possible due to the timing of the access road construction

To maximize the efficiency of the construction start-up, the following activities will be done in early 2006:

- establish an onsite team to manage the project
- conduct topographic surveys, additional test-pitting and core drilling as required
- commence with detailed engineering
- tender and award construction contracts
- prepare a detailed construction schedule and plan in conjunction with selected contractors
- establish environmental and safety standards, policies, and reporting structures.
- pre-position earth moving equipment, fuel, modular camp units and early construction supplies via a winter road
- procure long lead-time items

Figure 3.1-2 Detailed Schedule of Construction Phase



3.2.3 Construction Planning and Management

YZC will establish a construction management team at site consisting of a project manager, buyer, surface construction supervisor, underground superintendent, safety officer, project scheduler, mine planning engineer, mine geologist, and environmental manager.

One or more engineering companies, under the direction of the managing contractor, will complete engineering. For continuity, most of the technical consultants who completed site investigations and initial designs described in this document will continue to advise the project.

The following principles will be applied to the construction:

- Earth-moving equipment and some preliminary construction supplies will be brought in over the winter road early in 2006.
- The all weather road connection to the Robert Campbell Highway will be advanced as early as possible and will be constructed from both ends simultaneously.
- The permanent camp will be constructed early and used to accommodate the construction work force. Current projections are that the construction work force will average 120 persons and peak at approximately 150 persons, which correspond to the long term projected camp population. The camp will be refurbished and recreation modules will be added for the operations people during the project commissioning phase.
- The industrial complex and office building will be constructed as early as possible so that they can be "buttoned up" before severe winter weather. Construction will then proceed during the winter months inside both buildings.
- Off-site fabrication will be used as much as possible to minimize onsite effort and workforce requirements.
- The number of contracts will be minimized to streamline management duties and the number of onsite contractor offices. Safety and environmental performance records will be considered in selecting contractors.
- A detailed master schedule will be developed from engineering to commissioning and hand over. Logical links, constraints, and resource leveling will be included. Progress will be managed and reported against this master schedule.
- The preferred method of contracting will be fixed prices with sufficient detailed engineering completed at the time of bidding to permit the use of realistically priced hard money contracts. YZC may offer incentives where appropriate for early completion of contracts on the project critical path.
- As per the Socio-Economic Participation Agreement (SEPA) with the Ross River Dena Council (RRDC), YZC will make reasonable efforts to maximize the employment of available and qualified RRDC and other Kaska Nation members, will notify the Kaska of upcoming tenders, and will ensure that tender documents contain a "local benefits" component in the evaluation criteria to encourage and support Kaska Businesses.

All YZC and contractor personnel on site will be required to attend site orientations before starting work on the project. A presentation will be given that includes management's commitment to safety and environmental compliance. All YZC and contractor personnel on site will be required to:

- attend safety meetings
- participate in the internal responsibility system
- follow emergency procedures
- comply with all personal protective equipment (PPE) requirements
- commit to a progressive disciplinary policy (which has implications for environmental control)
- comply with environmental policies, procedures and site rules
- provide proof of accredited training programs

Procedures and standards will be designed for the work being executed. Standard project procedures will be used where applicable. Where none exist, they will be written with the assistance of the contractors doing the work. As the project moves forward, requirements will change from site preparation to steel work erection, then to mechanical and electrical installations.

The existing first-aid station and medical evacuation helipad near the 1345 Portal will be retained for the construction period. All temporary facilities will be supplied with bottled drinking water and portable toilets.

Work on the site will be continuous. Blasting and some other specialist work may only be done during daylight hours. Shift schedules and rotations will be set by each major contractor under the approval of YZC's Project Manager.

3.2.3.1 Risk Management

All potential risks will be identified, ranked and initial risk management plans will be put in place during the Feasibility Study. A comprehensive Risk Assessment Register covering all aspects of the project will be established, including identifying Risk Owners for each significant risk. Risk Owners are a responsible for ensuring that appropriate actions are taken and recorded to reduce potential risk.

The Risk Register will be periodically reviewed and updated. As a minimum, reviews will take place for each work package during detailed design ('engineering' risk reviews) and before construction begins ('construction' risk reviews). Contractors will be required to participate in construction risk reviews and take ownership of many identified construction phase risks, including risks to the environment and safety. The managing contractor will be accountable for ensuring that risk reduction plans in the Risk Register are implemented through the detailed design and construction phases. Quantitative risk reduction tools (such as Hazards and Operability Studies) will be used with every work package.

Contractors will be encouraged to have their personnel carry out job safety analyses, which are a form of risk assessment, before beginning all unusual or otherwise challenging construction tasks.

When ever possible, risks will be addressed through engineering design. When the issue is not engineering related, the managing contractor will ensure that other measures such as revising the detailed work schedule or introducing modified operating procedures, are developed in accordance with the recommendations contained in the Risk Register and handed on to the responsible manager.

3.2.4 Construction Work Force

The construction work force is forecast to peak at about 150 persons. An approximate manpower forecast for the construction period is shown in Figure 3.2-1. This forecast will be kept under continuous review and revised as the project schedule and contract packaging plans are developed.

Contractors will be required in the pre qualification and bidding processes to maximize the opportunities for RRDC and Kaska Nation members.

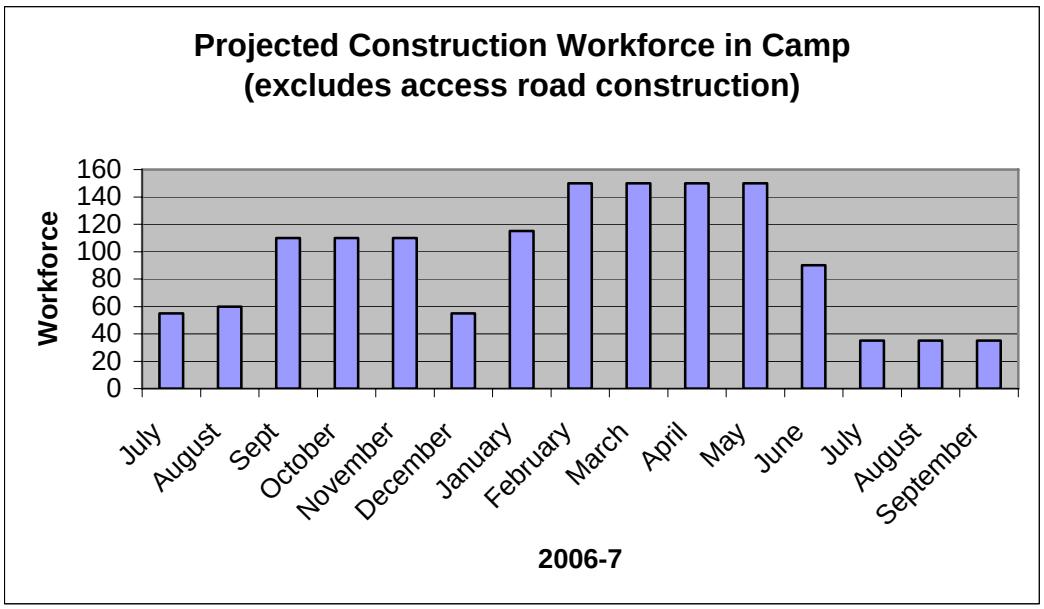


Figure 3.2-1 Projected Construction Workforce for the Camp and Industrial Complex

3.2.5 Transport and Logistics

Equipment, fuel and a limited quantity of supplies required for the civil contractor will be hauled over the winter ice road. Site preparation and access road development can then begin as soon as approval is given. Fuel will be stored in the existing approved double walled tank. A second tank will be added to increase holding capacity on site. Explosives will be stored in the existing magazines. Hazardous materials will be stored in a designated shipping container. Workers will be accommodated in the exploration camp on Wolverine Lake until the first stage of the main construction camp is operational. Workers will rotate to and from the site by chartered aircraft.

The project team will develop a detailed transport and logistics plan during first quarter (Q1) 2006. Elements of the plan will include:

- Ensuring all the materials and equipment required to sustain construction until the mine access road is open are pre positioned via the winter road in Q1 2006. Pre-positioned materials and equipment may include reinforcing steel, steel bending machines, pipe, formwork supplies, hydraulic excavators, the crushing and screening plant and the concrete batch plant.
- Developing a detailed materials management and site allocation plan for the storage and allocation of space and common supplies.
- Creating a receiving and marshalling point at the junction of the new road and the Robert Campbell Highway. Supplies and equipment will be delivered there and consolidated. Deliveries to site will be in "convoys" while the access road is being completed.
- Local procurement and expediting with local businesses where practical (Section 7.12: First Nations and Traditional Knowledge)
- A master transport contract.

3.2.6 Site Preparation and Earthworks

Initial site preparation activities will consist of:

- Establishing temporary and permanent runoff diversion channels to help drain and control runoff to and from construction areas. All diversion channels will be specified by a professional engineer, mapped and included in the scope of the civil contractor. Silt fences and settling ponds will be installed at selected locations under the control of the environmental manager. The civil contractor will be held accountable for maintenance of channels, fences and settling ponds.
- Clearing and grubbing sites for the main camp and industrial complex. Organic material will be stockpiled at the designated locations indicated on Figures 2.10-3 and 2.10-4.
- Establishing the first module of the camp for construction purposes.
- Establishing the civil contractor's support area including the equipment refueling and maintenance areas.

Subsequent site preparation will include clearing and grubbing the tailings area and construction laydown areas and enlarging the main camp for full construction. All site preparation will be undertaken according to engineering specifications included in the contract scope and monitored by a qualified technician for quality assurance (QA) purposes and environmental compliance.

All earthworks will be completed by pre-qualified civil contractor(s). Contracts will include clearly defined scopes of work and specifications, including accountability for environmental compliance and safety. The highest priorities will be to achieve road access from the Robert Campbell Highway and to complete excavation of the industrial complex area to create a bench upon which the concentrator and ancillary buildings will be constructed. The road will be developed from both ends simultaneously by pre-positioning equipment and fuel at the mine. It will be surveyed, designed and flagged in early 2006. Environmental compliance will be monitored by a qualified technician

reporting to the managing contractor. All blasted rock will be tested for acid producing potential and disposed of accordingly.

Parts of the excavation for the industrial complex will be in rock that may require blasting. Explosives will be stored in the existing licensed magazines. The current preliminary design indicates an excess of cut material. Excavated material will be tested and classified according to its potential to produce acid. Acidic material will be hauled to the future tailings impoundment. Filled areas will be compacted and graded to direct drainage to the sumps. Buried services (water, storm and sanitary sewers, electrical, propane) will be installed by the civil contractor in trenches, in compliance with the building code and insulated. Foundations for the main industrial building are considered project-critical and will be installed first so that the building can be completed and enclosed during the 2006 construction season.

The project will establish a temporary crushing and screening plant to prepare construction aggregates. The plant will be set up beside the borrow area (see Figure 2.10-2) and the principal aggregate stock piles will be established in the vicinity as shown. Area run off and sediment will be controlled and captured as described in Section 2.10: Site Facilities and Infrastructure.

Smaller stockpiles will be maintained near the concrete batch plant, which will be erected near the industrial complex area (Figures 2.10-2 and 2.1-4). Water for making concrete will be obtained from the existing well in Wolverine Creek. Concrete will be transported from the batch plant to the point of use by transit mixer. Concrete additives will be stored in sealed containers at the batch plant. Run off from the plant will be controlled and directed to the main sumps.

The earthworks for the tailings impoundment are of lower priority and will be started later than the road and industrial area. Drainage control channels and sediment traps will be established before excavation begins. The tailings embankment will be constructed to comply with the engineer's designs and specifications. This will be ensured with QA inspections and testing under the direction of the design engineer.

Other earthworks include leveling and servicing the camp area, preparing routes for the tailings disposal and water reclaim pipelines, and constructing containment berms around the fuel storage areas. All activities will be completed during the 2006-7 construction season to engineered designs and specifications. Qualified technicians will monitor environmental compliance, perform QA audits, and prepare construction record drawings.

3.2.7 Laydown Areas

Laydown areas will be established as shown on Figure 2.1-4. Laydown areas are required to store construction materials and large pieces of equipment. Materials and equipment are generally inert. Section 9.4: Waste Management Plan presents the storage and management plans for hazardous and non-hazardous materials. Where space permits, laydown areas will be established close to, or within, construction areas, where drainage and sediment are already controlled.

3.2.8 Waste Materials

Construction waste materials will include non-hazardous solid wastes, waste solvents and lubricants and domestic wastes. The handling and management of these wastes is detailed in Section 9.4: Waste Management Plan.

3.2.9 Drilling and Blasting

Geotechnical investigation boreholes and test pits have indicated that near surface rocks are generally weathered and weak. Therefore very little blasting will be required when excavating for the industrial complex bench, utility trenches and site roads. Most excavation will be done with a hydraulic excavator or bulldozer. Resistant material will be ripped.

Drilling for blast holes may occasionally be required to prepare the bench and expose sound rock for foundations in the industrial area and if rock is encountered along the pipeline route between the industrial complex and the tailings facility. A crawler mounted pneumatic drill with portable air compressor will be used.

A qualified contractor will carry out any surface blasting with specialized, licensed blasting operators accountable for compliance with site safety and environmental regulations. Conventional dynamite type explosives “sticks” will be used. All explosives will be purchased from reputable suppliers and transported by road in approved and licensed carriers. Explosives will not be manufactured onsite. Explosives will be stored in the existing, approved magazines.

3.2.10 Post Construction Reclamation

Unnecessary temporary construction phase facilities, equipment and structures will, upon completion of construction, be dismantled and removed from the site or burned. Examples include the concrete batch plant and temporary support buildings set up for the underground development or by other contractors. Temporary stockpiles will be removed and laydown areas will be emptied, cleaned and inspected for compliance with contract terms and site regulations. Waste disposal methods are described in Section 9.4. Site roads no longer required will be decommissioned and revegetated

Stockpiled organic materials and mulch will be spread first on cut slopes and then on other disturbed areas such as laydown areas and stockpile sites, then seeded.

3.3 Operation Phase Activities

3.3.1 Production

Operations will commence on July 2007 and last for approximately 12 years. This period of time will be divided into three distinct phases:

- ramp up to full production
- steady state operations
- wind down period to closure

3.3.1.1 Production Ramp-up

The ramp-up period is projected to last three months, from July through September 2007. The production capability of the mine has been estimated as a percentage of the fully operational mine's target of 1495 t/d diluted ore. The total ore production during this period is estimated at 67,290 t, as shown in Table 3.3-1.

Table 3.3-1 Production during the Ramp-up Period

Month	% of Full Prod Rate	Ore Mined (dil, t/d)	Month Total (t)
July 2007	25%	374	11,215
August 2007	50%	748	22,430
September 2007	75%	1121	33,645
		Total	67,290

The mill will not be operational during the production ramp-up period. As such, the ore will be stockpiled at the mine on the portal pad and on the existing temporary waste rock pad.

3.3.1.2 Steady State Operations

After the production ramp-up, the mine will achieve an operational production target of 1495 t/d diluted ore mined, and 1250 t/d processed. Based on a 5 Mt resource or 6.4 Mt diluted reserve, this rate will be sustained for a period of approximately 10.4 years from October 2007 to January 2018, during which time 4.7 Mt of diluted ore will be mined.

Figure 3.3-1 shows the materials balance for a typical operating day during this period.

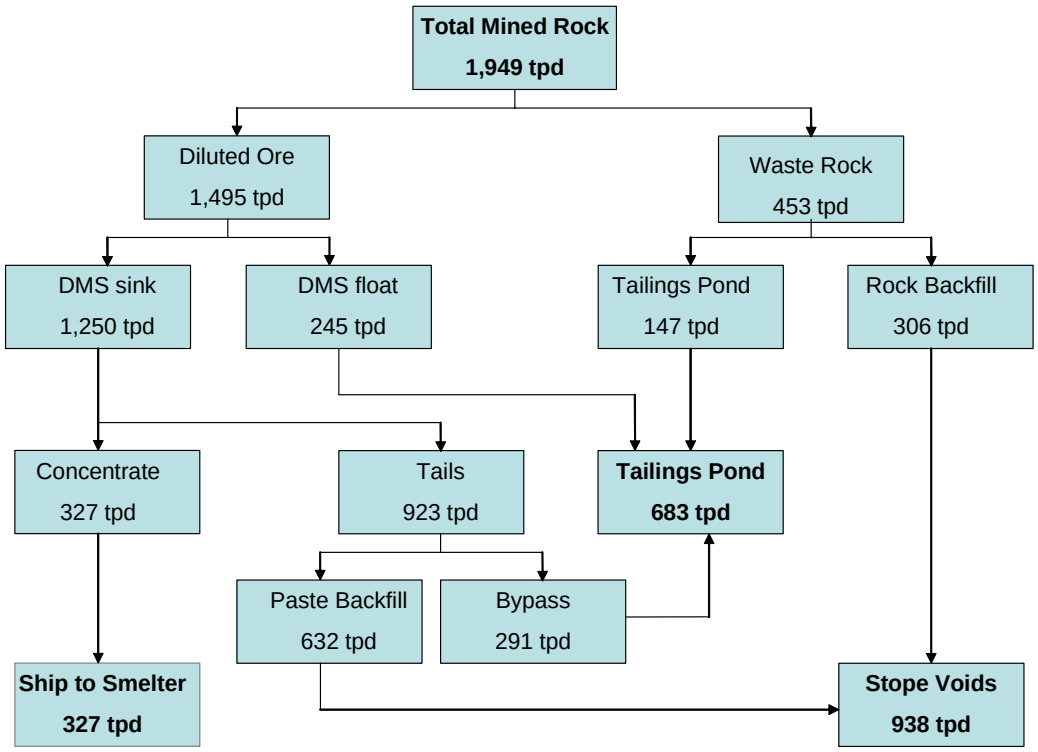


Figure 3.3-1 Projected Daily Materials Balance during Steady State Operations

3.3.1.3 Production Wind-down

The production wind-down is projected to last approximately eight months in 2018, the final year of operations. The production assumptions for this period are shown in Table 3.3-2.

Table 3.3-2 Production Wind-down Projections

Months	% of Full Prod Rate	Ore Mined (dil, t/d)	Month (t)	Total (t)
February to July 2018	75%	1121	33,645	201,869
August to September 2018	50%	748	22,430	44,860
			Total	246,729

3.3.2 Manpower

The mine and mill will operate on two shifts per day, 365 days of the year. Most workers will work shifts of two weeks on and two weeks off. Shifts will be 12 hours long for surface and mill workers and 11 hours long for mine workers. The hour between mining shifts will be used to blast and clear the smoke from the mine.

This shift schedule is desired by the company for the following reasons:

- The cost of personnel transport will be too high for more regular rotations (like a traditional five days with weekends off, or four days, on four days off).
- In remote sites, workers generally prefer longer days as opposed to excess idle time.
- A regular rotation offers a reasonable family life to local workers, maintaining a stable and healthy workforce.
- Longer rotations and increased work hours per employee would reduce the number of workers on payroll.

It should be noted that the Mines Safety Regulations Section 17.(1) stipulate that "No worker shall be scheduled to remain in an underground mine for more than eight hours in any consecutive twenty-four hours…" The proposed shift will require a variance, as per Section 17(4): "An employer at an underground mine may apply to the Director for an order exempting the employer from the provisions of subsection 17(1)." Subsection 17(5) states the considerations that the Director will consider, including the remoteness of the mine, the difficulty of access to the mine, and the consent of the workers. It is reasonable to assume that in this case, the variance will be granted.

The operation will require a total manpower of almost 200 workers, as shown in Table 3.3-3. Tables 3.3-4 to 3.3-7 show breakdowns of manpower projections by department. Note that there are two counts for each position – the number of workers that will be onsite at any given time and the total number of persons on payroll for that position. Most hourly positions will be covered by four workers; one working, one onsite resting, and two off-site on days off. Some hourly and staff positions will be covered by two workers, one onsite and one off-site, working only on dayshifts. Managers will work more frequent rotations and designates shall be used for continual onsite coverage of their responsibilities.

Table 3.3-3 Manpower Projection for Operation

Department	On-Site Ave.	Total Payroll
Administration	17	26
Mill	25	45
Mine	48	89
Maintenance	16	31
Total	106	191

Table 3.3-4 Manpower Requirements, Administration

Department and Position	On-Site Ave.	Total Payroll
Administration	1	1
Mine manager	1	2
Secretary	1	1
HR manager	1	1
HR clerk	1	1
Aboriginal liaison officer	1	1
Environmental manager	1	1
Environmental technicians	1	1
Purchasing agent	1	1
Buyer	1	1
Warehouseman	2	4
Safety and training officer	1	2
First aid	1	2
Gate security	1	4
Controller	1	1
Payroll clerk	1	1
Accounting clerk	1	2
Total Administration	17	26

Table 3.3-5 Manpower Requirements, Milling

Department and Position	On-Site Ave.	Total Payroll
Mill staff		
Mill superintendent	1	1
Mill foreman	2	4
Metallurgists	1	1
Mill technicians	1	1
Clerk	1	1
Subtotal mill staff	6	8
Mill hourly		
Crusher operator	2	4
Grinding operator	2	4
Flotation operator	2	4
De-watering operator	2	4
Reagent and water treatment operator	2	4

Table 3.3-5 Manpower Requirements, Milling (cont'd)

Department and Position	On-Site Ave.	Total Payroll
DMS operator	2	4
Paste backfill operator	1	2
Concentrate load out	1	2
Labourer/trainee	2	4
Subtotal mill hourly	16	32
Assay		
Chief assayer	1	1
Assayer	1	2
Sample bucker	1	2
Subtotal assay	3	5
Total mill	25	45

Table 3.3-6 Manpower Requirements, Mine

Department and Position	On-Site Ave.	Total Payroll
Mine staff		
Mine superintendent	1	1
Mine foreman	2	4
Mine clerk	1	2
Chief engineer	1	1
Senior Engineer	1	1
Mine engineer	1	1
Mining technician	1	2
Chief geologist	1	1
Senior geologist	1	1
Mine geologist	1	1
Sampler/core splitter	1	2
Subtotal mine staff	12	17
Mine hourly		
Miner A	6	12
Miner B	6	12
Miner C	6	12
Shotcrete crew	2	4
Surface operator	2	4
Nipper	2	4
Diamond driller	4	8
Paste backfill (U/G)	2	4
U/G haulage	4	8
Labourer/trainee	2	4
Subtotal mine hourly	36	72
Total mine	48	89

Table 3.3-7 Manpower Requirements, Maintenance

Department and Position	On-Site Ave.	Total Payroll
Maintenance		
Maintenance foreman	1	1
Lead mech/elect	1	2
Mechanic (mine)	8	16
Electrician (mine)	1	2
Surface electrician	1	2
H.D. mechanic	2	4
Welder	1	2
Machinist	1	2
Total maintenance	16	31

It is the Company's desire to hire locally as much as possible, both for the positive impact on the local community, and also to reduce turnover and transportation costs. Many of the positions will require skilled workers at start-up and as a result, much of the initial workforce will be from outside the region. A period of transition will be made using the outside skilled workers to train local workers.

3.3.3 Transportation

The mine access road and airstrip will be used to supply the operation with materials and equipment as well as transport workers. Supplies will typically be brought to site via the Robert Campbell Highway as described in Section 2.11: Transportation

The frequency of truckloads is estimated at 13.2 trips per day into the project site, as shown in Table 3.3-8. Therefore with back hauls from the site, the number of trips on the road during a 24 hour period is 26 trucks. It may be possible to reduce this number by using the back-haul of the concentrate haulage trucks to bring in supplies.

Table 3.3-8 Estimated Truck Haulage Frequency

Transport Type	Trips/day to the project site
Concentrate Trucks	9.4
Mill and Mill Supplies	1.5
Fuel/Propane	0.7
Other (e.g., Service/Maintenance Suppliers)	1.5
Total	**13.2**

3.3.3.1 Air Support

Personnel will continue to be transported to site using fixed-wing aircraft. Satisfying the desire of the company to hire locally will require commuting workers from the neighboring communities of Ross River and Watson Lake, as well as Whitehorse.

For the shift schedule proposed, there will be a complete crew turn-around every two weeks. This would likely entail two 30 passenger planes flying from Whitehorse to site, one stopping over at Ross River and the other at Watson Lake.

Additional lighter flights will be required on an ongoing basis for managerial staff, company officers, visitors, and emergency supplies.

3.4 Decommissioning and Closure Activities

This section describes the activities pertaining to decommissioning and closure, which will commence following cessation of underground mining and processing operations. Initial plans for temporary closure, decommissioning and closure and reclamation plans are provided below. Site specific closure objectives, as determined by the regulatory authorities in conjunction with YZC, will be incorporated into a comprehensive closure plan.

3.4.1 Introduction

In keeping with its high standards for environmental and social responsibility, YZC intends to implement an environmentally sound and technically feasible decommissioning and closure plan for the proposed project. Closure planning and its implementation will be undertaken with appropriate environmental care, while respecting local laws, public interest and ensuring that high environmental standards are achieved. A principal philosophy followed during the development of this plan was to work towards eventual passive closure.

The following objectives were incorporated into the development the initial reclamation and closure plans:

- protection of public health and safety
- implementation of environmental protection measures that prevent adverse environmental impact
- ensuring land use is commensurate with surrounding areas
- recognition that mining is the short term goal and land restoration to a productive state is the long term goal
- progressive reclamation measures implemented during mine operations
- site monitoring to assess effectiveness of closure measures for the long term

The determination of closure activities and mitigation measures has involved an assessment of the critical components that could potentially place the public or the environment at risk. Site specific monitoring and contingency plans will continue to be developed as necessary. Where possible, performance based criteria will be integrated into the monitoring programs.

A mechanism will be established to ensure that communication between government agencies, communities of interest and YZC is clear and consistent, and all closure objectives are met.

It is important to note that the length of the closure period will depend upon whether decommissioning, closure and reclamation objectives are met. Once decommissioning, closure and reclamation activities meet the respective objectives, the site will be declared as permanently closed (post-closure).

The sections below document the requirements for a temporary closure period, and those for the decommissioning and closure phase.

3.4.2 Temporary Closure

A temporary suspension of mining and processing activities could result when factors such as changing market conditions or mine related factors occur. A temporary state of inactivity could be either a defined or indefinite period of suspension. A state of inactivity may evolve into a state of permanent closure if prevailing conditions for the resumption of operations are not favourable.

YZC recognizes the legitimate concern that government and the public have with respect to a state of temporary closure. At the same time, it must be recognized that world commodity prices are difficult to predict, are cyclical, and are not under the control of YZC. Consequently, the company may not be able to state when operations are likely to resume once the project is temporarily closed.

During a temporary closure, YZC intends to be a responsible steward of the site and demonstrate its commitment to re-opening the site by:

- continuing to have the site under the care and maintenance of an on-site caretaker
- continuing to maintain the main access road in a manner that heavy equipment can be brought to the site on short notice to deal with an environmental emergency
- implementing a performance-based monitoring program for the duration of the closure period
- adequately monitoring and maintaining buildings and facilities such as tailings facility
- ensuring that fixed equipment and buildings remain essentially intact on site

The sections that follow describe the activities that would occur during a temporary closure, including access and security measures pertaining the mine openings, facilities and equipment, and waste and water management plans.

3.4.2.1 Access and Security

The site will be manned or inspected by representatives from YZC on a 24-hour basis. The main access roads will be kept open with restricted access and maintained.

Surface facilities will only be accessible to YZC personnel, or designated representatives. All surface mine facilities will be locked and trespassing signs posted. Other potential entry to the buildings, such as windows, will be secured.

3.4.2.2 Mine Openings

The 1345 and 1360 Portal entrances will be fenced or gated to restrict access to the mine. In addition, access points to these openings will be blocked using large boulders (boulder fencing). All other access points to the vertical openings such as the rent shafts will be secured.

3.4.2.3 Industrial Complex Facilities and Equipment

Fuel storage and reagent tanks will be regularly inspected for leakage to ensure they are operating according to the applicable regulations and licenses. If required, a fuel distribution agent or a waste management contractor will pump the contents of storage

tanks. Tanks that will not be reused will be removed and offered for sale or scrap, following appropriate procedures and protocols.

Mining equipment will be left in no load condition. All equipment not required for site maintenance or operations during this period will be stored in locked buildings or in appropriate areas.

All wastes will be handled, stored, managed and disposed of in a proper manner (Section 9.4: Waste Management). As there will be no tailings or waste rock generated during this phase, the main waste sources will include domestic waste and other minor waste streams.

Chemicals that are deemed to have short shelf life will be returned to suppliers/manufacturers, and those chemicals that cannot be returned will be disposed of in a proper manner as per manufacturer's requirements.

3.4.2.4 Tailings Facility

All dams will be maintained in a safe operating condition pursuant to the appropriate guidelines. Operating and inspection protocols outlined in the Tailings Facility Operating, Maintenance and Surveillance (OMS) Program will followed as the tailings facility will remain operational (i.e., tailings effluent will be treated as documented in Section 2.9: Site Water Management). In general, activities include regular visual inspections, plus routine geotechnical inspections and dam safety reviews by a geotechnical engineer.

3.4.2.5 Water Management

The predicted water treatment requirements for a period of inactivity are outlined in Section 2.9: Site Water Management. Water management systems such as the tailings impoundment, reclaim pipeline and pumps, underground dewatering pumps and surface diversion ditches, and sumps) and treatment systems (water treatment plant, polishing pond, treated effluent discharge pipeline) will continue to be operational and discharges to receiving environment will be monitored in accordance with Type A Water License requirements. A performance-based monitoring program will be developed and executed for the duration of the period of inactivity.

3.4.3 Decommissioning and Closure Phase Activities

The initial plans for decommissioning and closure presented below have been based on the best information available at the present time, as well as pre-feasibility level engineering design drawings. Following detailed engineering and subsequent reclamation research programs, a comprehensive reclamation and closure plan will be submitted to the Yukon Government for review and approval.

Site decommissioning activities are anticipated to commence during the final stages of operations in late 2018, and take approximately one year to complete. The closure phase is anticipated to range from 5-10 years, and the final term is dependent on achieving site specific criteria designed to allow for eventual passive closure. As described in Section 2.8: Tailings Disposal, water treatment may be required for up to nine years following the cessation of mine operations. Although these are preliminary water quality estimates, it has been assumed that the closure period will extend to 2029 for the purposes of this EA Report.

Figure 2.10-2 provides the general project layout. Following completion of the construction phase, an as-built layout will be completed and decommissioning and closure plans and disturbance footprint estimates will be revised. Closure plans will continue to be reviewed and revised during the operations phase to reflect onsite conditions.

3.4.3.1 Decommissioning and Closure Work Force

A number of personnel will be required onsite to implement the various decommissioning, closure and reclamation tasks. The majority of these activities will be undertaken on a seasonal basis (May–October) and directed by onsite manager. A caretaker will remain onsite following seasonal closure of the site.

The work force requirements for the decommissioning, end early and late closure phase are provided in Table 3.4-3.

Table 3.4-1 Site Decommissioning, Closure and Reclamation Work Force Requirements (Seasonal and Permanent)

Personnel	Decommissioning Period 2019	Early Closure Period 2020-2	Late Closure Period 2003-9
Project Manager	1	1	1
Mine Engineer	1	-	-
Environmental Coordinator/Kaska Monitor	2	2	2
Construction Supervisor	1	1	1
Equipment Operators	12	3	3
Facility Staff, Equipment Mechanics/Welders/Electricians	5	3	2
General Labourers	5	3	2
Camp Support Staff	9	6	3
Total Seasonal	**36**	**19**	**14**
Total Off-Season (Caretaker)	**1**	**1**	**1**

3.4.3.2 Activities and Timelines

The activities outlined below set out to address the long-term physical, chemical and biological requirements of the site through the decommissioning of infrastructure and the reclamation of surface disturbances. All decommissioning, closure and reclamation activities will be properly supervised and documented to ensure that works are constructed according to design plans and as per industry practice and legal requirements. Cost estimates for these activities are provided in Section 3.4.6.

The timing of facility closures is dependent on a number of factors including the purpose of the facility and its future use and environmental considerations. Table 3.4-1 provides a list of anticipated activities that will be required during the one year decommissioning period and the ten year closure period.

Table 3.4-2 Activities Associated with the Decommissioning and Closure Phases

Component	Decommissioning Activities (2018-2019)	Closure Activities (2019-2029)
Mine workings	Seal all openings; mine will naturally flood	Monitoring of water quality as required; mine will continue to flood
Onsite roads	Reclaim unused roads	Performance monitoring of reclaimed areas
Industrial complex area	Remove mill and all process support infrastructure; Water treatment plant and infrastructure will remain operational; conduct remediation programs where necessary; reclaim disturbed areas	Performance monitoring of remediation reclaimed areas; Water treatment plant will be removed at end of closure period
Mine access road	In use for removal of material and import of supplies	In use - deactivation is not planned pending further consultation with the RRDC
Tailings facility	Will remain operational; regular inspections and monitoring, diversion ditches will be decommissioned	Permanent structure to mitigate acid rock drainage from mine wastes. Once the tailings pond water meets discharge criteria, the pipelines to the water treatment plant and the seepage dam will be decommissioned and removed.
Water treatment plant	In use for treatment of tailings effluent	Decommissioned only after tailings pond water meets discharge criteria
Camp	In use; downsize	Remove structures not required to support ongoing activities.
Airstrip	Will not be deactivated	Will not be deactivated
Power generation area	Assess future power requirements; deactivate most gensets and leave adequate capacity for the operation of the camp, and water treatment facility and pipeline pumps.	Remove remaining gensets once all activities are complete
Equipment	Market all mining and mill equipment. Assess equipment needs for closure period.	Market and dispose of all assets unless required to support water treatment and reclamation activities.
Water supply systems	To be decommissioned once not required	To be decommissioned once not required
Landfill, land farm and incinerator	In use	To be decommissioned once not required

Prior to undertaking closure activities as part of a comprehensive environmental site assessment, areas of suspected oil, chemical, or other contaminant spills will be tested to confirm locations and quantities requiring clean-up.

Once tailings supernatant water quality is deemed suitable for discharge without treatment, the water treatment plant will be decommissioned. Upon completion of all activities proposed, a final site plan report will be prepared to document the facilities remaining on site. The plan will detail the locations of buried concrete foundations, as well as scrap and landfill disposal areas. It is anticipated that the final site plan will accompany the application for a *Certificate of Closure* under the Yukon Quartz Act.

3.4.3.3 Water Management and Treatment

At closure the water treatment plant will remain in operation to treat the tailings facility effluent. The following infrastructure and equipment will remain operational or onsite to support water treatment plant operations:

- onsite roads to the camp, tailings facility and water treatment plant
- light duty vehicles
- reclaim and discharge pipelines and pumps
- fuel storage facility
- power generating facility with adequate capacity to power the water treatment plant, pumping systems, and camp
- small maintenance workshop
- laboratory and reagent storage facility
- communication system

The water treatment plant and the tailings facility diversion ditches and seepage dam will be decommissioned when the effluent quality from tailings facility is in compliance with Type A Water License requirements and suitable for direct discharge. A closure spillway and channel will be constructed.

Dewatering of the mine will cease at the end of underground activities and the working will flood over an estimated 2.5 year period (Section 7.6: Groundwater). Preliminary geochemical analyses (Section 2.4: Rock Characterization) indicate that there could be high metal concentrations and the hydrogeological model have estimated that groundwater discharge will take and 13 years to discharge to Wolverine Creek (therefore 16 years post operations, approximately year 2034). The level of contamination at this time is uncertain, and additional assessments are underway. Predictive modeling and monitoring will continue for the life of mine to ascertain additional water treatment requirements.

3.4.3.4 Mine Openings

All openings exposed to the surface will be capped or blocked. The 1360 and 1345 Portals will be sealed off by a barrier constructed of tires and course riprap to prevent access by the public and wildlife. It is proposed to construct the barriers of used heavy machinery tires, a technique used in Alberta and British Columbia. The tires would be compressed by an excavator equipped with a thumb attachment and wedged into the opening. Figure 3.4-1 illustrates the barrier proposed.

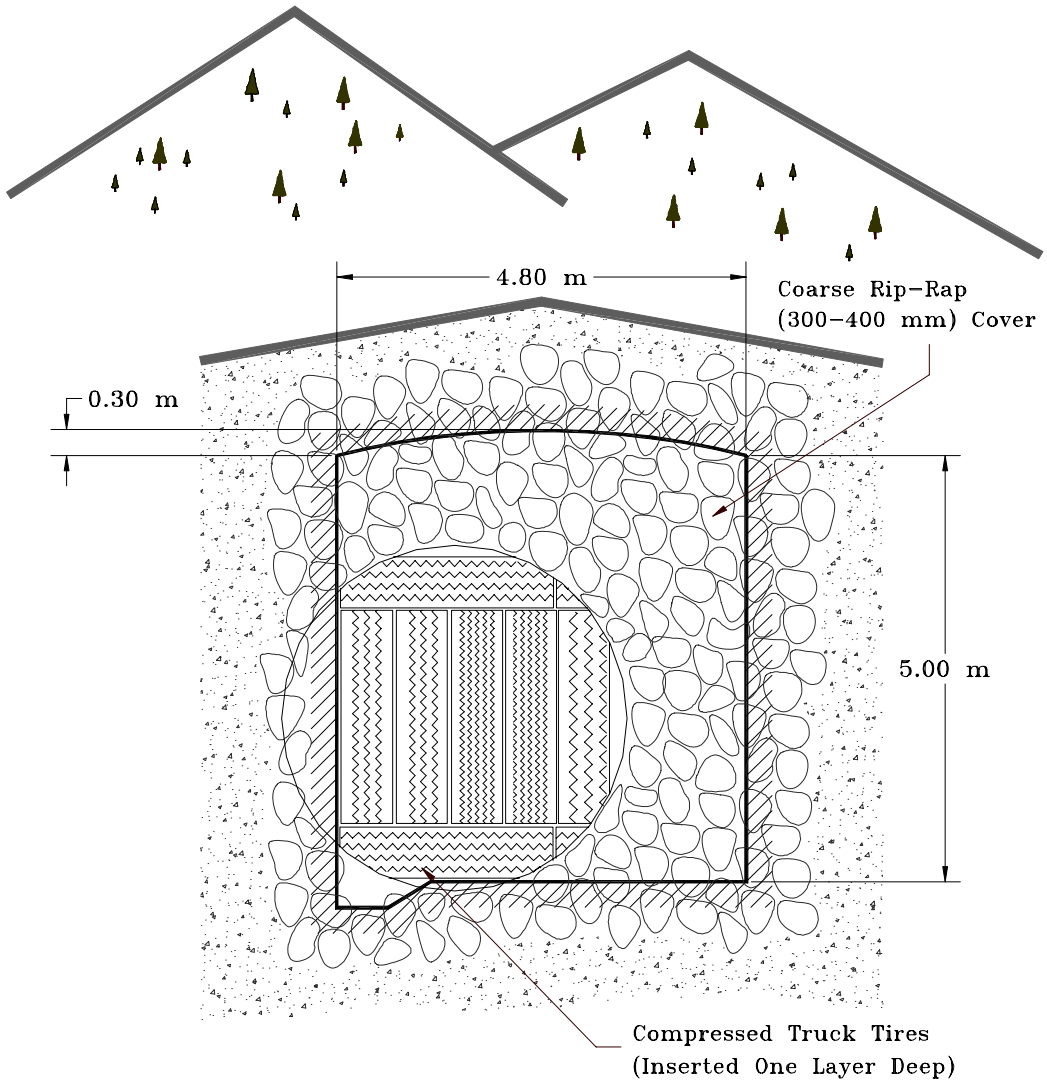


Figure 3.4-1 Tire and Rock Composite Portal Barrier

This type of portal barrier has several advantages:

- in the absence of sunlight, the rubber will take a long time to degrade
- the compression of the tires ensures the tires are locked tight against the rock wall of the portal. If over time these rock wall surfaces loosen, the tires will have some expansion to maintain the tight fit
- the configuration of tires (placed on edge) has enough gaps to ensure that it is permeable to water without permitting access by people or animals

A cap of coarse waste rock will be placed over the tires to control degradation of the tires by sunlight and to provide a permeable barrier. As both portal locations are above the pre-mining groundwater table (Section 7.6: Groundwater), there is no concern that water will build up in the mine, and cause a potential safety hazard with this type of barrier.

The cap of waste rock over the portal will be contoured to restore the natural slope of the surrounding terrain.

The ventilation raises will pose safety hazards public and wildlife if left unattended at closure. The ventilation raises will be sealed with reinforced concrete plugs in accordance with the mine safety regulations.

3.4.3.5 Borrow Areas

During construction, aggregate material will be required for the construction of the tailings dams and facility foundations. Runoff from the borrow areas will be controlled with ditches, sediment fences and settling ponds during operations. Progressive reclamation is anticipated for these are years following decommissioning. The slopes surrounding the borrow areas will be sloped for stability and re-vegetated using a custom seed mixture. The seed mixture will be developed during the operational phase as part of a revegetation research program.

3.4.3.6 Tailings Facility

A water cover will be maintained in perpetuity to limit the potential for acid rock generation and metal leaching within the tailings facility. During the operations phase, the tailings water balance will be fine tuned and revised as necessary. The long-term physical stability of the tailings dam and the geochemical stability of the tailings and tailings effluent are key critical components (Section 2.8: Tailings Disposal). The layout of tailings storage facility complete with associated appurtenances is shown in Figures 2.8-1 and 2.8-11.

Based on the water balance for closure (Section 2.9: Site Water Balance) diversion ditches associated upslope of the tailings facility will be decommissioned to ensure there is adequate water cover and the slopes re-contoured to minimize surface erosion.

Following the cessation of water treatment, the three pipelines, seepage recovery dam, and pumping facilities will be removed and disposed of in a proper manner.

3.4.3.7 Industrial Complex Infrastructure

Closure issues related to infrastructure include public health and safety, site stabilization aesthetics, and restoration of disturbed lands. By the end of the closure period (post water treatment) all materials from industrial complex buildings will be completely removed with the exception of concrete foundations, which will be demolished and buried in situ.

It is expected that there will be salvage value for much of the materials particularly structural steel and other crushing, grinding and processing equipment from the mill. The industrial complex buildings and facilities will be decommissioned in stages, with the water treatment plant and supporting infrastructure (listed above) removed last.

Equipment with marketable value will be sold, and the remaining assets will be disposed of through demolition and salvage contracts. It is not impossible to accurately predict the residual values of these assets as their value will depend upon supply and demand economics for salvage at the time. However, assumptions have been made based on current market conditions. In the event that it is not economical to remove non-hazardous material from the site, it will be buried in the landfill.

Power Generation Infrastructure

During the initial closure stage, power requirements will be reduces and only those generators required for ongoing activities will remain operational to support the water treatment plant, pipeline pumps and auxiliary facilities. The excess gensets will be deactivated and removed from the site. Power poles and distribution lines to facilities no longer in use (such as the explosives storage area) will be salvage or buried in the landfill (Section 9.4: Waste Management).

At the end of the closure phase when water treatment is no longer required, the remaining gensets will be removed from the site, and the distribution lines will be re-spooled for salvage or buried in the refuse landfill if in poor condition. Poles will be removed and if that the poles are treated with a preservative such as creosote, the contaminated portion of the poles will be disposed of in accordance with the Yukon Special Waste Regulations.

Explosives and Magazines

Unused explosives and detonation devices will be checked for condition and either returned to the supplier for credit, shipped to another third party user, or destroyed through appropriate procedures. In all cases the explosives will be handled, transported and disposed of in compliance with the Explosive Act. The explosives magazines will be returned to the supplier or to a third party.

Fuel Storage Tanks

Propane tanks used for the storage of propane for underground heating will be removed once underground operations cease by a qualified contractor. Associated fuel delivery lines will be removed and disposed of in an appropriate manner..

Excess fuel storage tanks will be hauled away for salvage. Containment liners will be removed and the berms will be recontoured. Diesel fuel will be required until all site operations cease. All tanks will be emptied of their contents in accordance with the Yukon Environment Act.

3.4.3.8 Water Wells

The water supply wells will be decommissioned once water treatment and camp facilities are no longer required. The pump houses and the buried distribution system will be removed for salvage and or if deemed appropriate, the distribution system will be remain in situ to minimize subsequent surface disturbance associated with removal.

3.4.3.9 Camp

Portions of the modular camp facilities will be removed as onsite personnel requirement decrease. Facilities will remain for care and maintenance staff and for reclamation crews and monitoring crews until all closure objectives have been met.

3.4.3.10 Equipment

All fixed equipment with marketable value will be removed from the underground mine workings and sold. Mobile equipment such as scoop trams, and jumbos will be sold. Materials without any marketable value, which are non hazardous, such as piping, wood, and concrete, etc., will be left in place. Electric installation cables will be left in place

unless it is determined that they contain levels of hazardous materials. Equipment that cannot be sold will be disposed of in a proper manner.

3.4.3.11 Industrial Reagents and Hazardous Products

The inventory of chemicals, reagents and hydrocarbon products will be consumed as mine operations are brought to a close. Any remaining materials will be removed from the mine site and returned to the original supplier for credit and reuse, or sold to a third party user subject to the appropriate regulatory requirements. For specialized products, disposal options may include disposal through a licensed waste disposal firm. It is anticipated that such material will be small in volume.

3.4.3.12 Miscellaneous Materials

All salvageable material will be sold and removed from the site. Material that has no scrap value will be disposed of in the landfill site. Prior to disposal in the landfill all of the materials will be examined to ensure that all hazardous materials have been removed and disposed of in an approved manner.

Decommissioning and demolition activities will generate some non-hazardous waste material that will be disposed of in the landfill area. At the end of closure activities, the landfill area will be covered with a 300 mm thick layer of compactible soil material and graded to encourage the shedding of water. The site will then be revegetated.

3.4.4 Site Remediation

During decommissioning and the early closure periods, hydrocarbon contaminated soils will be isolated and processed for remediation. All fuel storage areas and refueling stations will be assessed for soil contamination. The contaminated soils will be removed from the area and disposed of in the landfarm near the airstrip. The selected disposal method will be in accordance with the Yukon Environment Act and Special Waste Regulation.

3.4.5 Site Reclamation

The primary objectives of land reclamation and revegetation at the Wolverine property will be to provide short and long term erosion control, to ensure land use compatible with surrounding lands, and to leave the area as a self-supporting ecosystem. The overall goal is to prepare the site so that the vegetation returns to a state as near as possible to that in existence prior to mining activities.

3.4.5.1 Progressive Reclamation

The preferred approach to return the site to a productive state is to conduct progressive reclamation throughout the life of the project. The selection criteria for candidate areas for progressive reclamation initiatives will take into account the current use of the sites and the inherent risk to the receiving environment.

Areas that may be considered for progressive reclamation include:

- construction laydown areas
- temporary structures and redundant components

- disturbed areas such as borrow sites

3.4.5.2 Site-specific Reclamation Research

During the operations phase, additional site information will be acquired to develop a comprehensive closure plan that will be cost effective, environmentally and technologically feasible. To ensure that reclamation activities have greater success, the results of reclamation research will be incorporated into the plan. Proposed areas of research include the following activities:

- investigate the availability of natural seed or the availability of productive seed material from local surroundings
- develop a custom seed mixture specific to the local conditions
- undertake vegetative trials using native plant species
- undertake clean fill investigations to determine potential sources of non acid generating material for closure
- inventory all organic stockpile areas created during the exploration and construction periods to determine the availability of soils for reclamation cover
- assess nutrient level deficiencies in the available soils to determine necessary amendments
- determine appropriate seed mixes for reclamation through the experimentation of test plots
- determine the potential metal uptake by the plants

The above studies are planned to be implemented during the operational phase to establish the site-specific plans for progressive reclamation and for closure. YZC will work with consultants and other technical groups to address the environmental constraints associated with aspects such as acid rock draining/metal leaching areas and the overall site issues of concern. Reclamation plans will be revised to ensure that the land is restored to a productive state for alternate future uses.

A summary of projected spatial disturbances for the project are provided in Table 3.4-2. The total disturbed footprint is estimated to be 64 ha.

Table 3.4-3 Summary of Projected Disturbance Areas and Reclamation Activities

Component	Estimated Area (ha)	Approach
Slope on side of the tailings pond	3.9	Recontour slope and seeded with shallow rooted grass
Landfill and land farm	0.5	Decommission and cover the dump with a 300 mm soil layer and revegetate
Borrow areas	6.7	Scarify, recontour, cover with organic matter and revegetate
Tailings area, slurry, reclaim and discharge pipelines	20	Remove the pipelines, scarify and revegetate corridor and general areas

Table 3.4-3 Summary of Projected Disturbance Areas and Reclamation Activities (cont'd)

Component	Estimated Area (ha)	Approach
Camp	1.2	Demolish portions of the camp progressively and reclaim areas not in use
Industrial complex area	7.8	Isolate contaminated areas and demolish buildings and infrastructure and scarify, recontour and revegetate
Seepage dam and collection pond	1.0	Remove operational spillway and dam regrade and install geotextile and riprap
Organic Material Stockpile	0.5	Remove material, assess for soil contamination and reclaim
Mine Access Road Embankments	20.0	Stabilize slopes, revegetate and fertilize
Onsite Roads	2.4	Stabilize slopes, revegetate and fertilize

The revegetated areas will be subject to periodic inspections that include the monitoring of the metal uptake in vegetation, the inspection of native plant invasion, and the evaluation of plant growth.

Success of the revegetation program will be determined by measuring a number of aspects including growth, survival, density and diversity of perennial species. Monitoring locations will include randomly allocated plots located within areas representative of the reclaimed lands.

Monitoring reports will be submitted to the regulatory agencies, the RRDC and the communities of interest as required to obtain feedback on the success of the reclamation program.

Once all reclamation program objectives have been met and external reviews are complete, YZC will submit an application for a Certificate of Closure under the Yukon Quartz Act.

3.4.6 Reclamation and Decommissioning Cost Estimates

Financial security will be required to ensure that the cost of reclamation and closure is covered. The cost summaries provided below include costs associated with project shutdown, the decommissioning of facilities and support infrastructure, reclamation activities, and compliance and reclamation monitoring. The estimated costs are based on the following assumptions, rationale and information:

- Funding for temporary closure will come from the operating budget of the day and therefore, no cost estimates have been assigned.
- Decommissioning and closure phases are assumed to be phased out within a ten year period.
- Best efforts will be made to control acid rock drainage during construction and operations and therefore, no funds have been assigned to deal with acid rock drainage (ARD) issues beyond the closure phase.

- ARD and metal leaching control methods will function as per design intent beyond a ten year period (the post closure phase) without requiring any perpetual maintenance.
- The water treatment plant will perform as designed and will produce effluent quality that meets the required criteria.
- The closure phase water balance for the tailings facility will have a net balance of 3 m^3/h and the water will require treatment before being discharged to Go Creek. No funds have been allocated beyond the closure phase.
- Polishing ponds will continue to function as effluent polishing ponds within the 10-year period closure phase.
- Non-acid generating fill and waste rock will be available within the project area for closure activities.
- An Environmental Effects Monitoring program designed to meet MMER requirements will produce positive results.
- Reclamation costs are based on the cost of having the work completed by a third party contractor.
- Scientific and technical information contained in Section 2.4: Rock Characterization; Section 2.5: Mine Plan, Section 2.6: Ore Processing, Section 2.8: Tailings Disposal, Section 2.9: Site Water Management: Section 2.10: Site Facilities and Infrastructure; Section 7.4: Surface Water Hydrology; Section 7.5: Surface Water and Sediment Quality.
- The seed mixes and application rates proposed by Kennedy (1993) for linear developments, and landfill and borrow pit areas were used to estimate seeding costs.

The estimated costs to implement the detailed decommissioning, closure and reclamation plans described above are presented in Table 3.4-4. Tables 3.4-5 and 3.4-6 provide the unit costs associated with decommissioning and reclamation costs, respectively. Based on the plans presented above, the total cost to restore the site to a productive state is estimated to be approximately $5.43 million. All costs are reported in 2005 $CDN.

These costs have not accounted for the closure of the waste rock pad as this will be conducted early in the operations phase and under an operations budget (Section 2.7: Waste Rock Disposal). Costs are not included for closure of the mine access road as further consultation with the RRDC is necessary. At this point, long term use and maintenance of the road is assumed to be the responsibility of the RRDC (post closure).

Table 3.4-4 Estimated Costs to Execute Decommissioning, Closure and Reclamation Plans

Work Item Description	Sub-Total Costs	Sub-Total Costs	Cost
Mine Workings			**$139,458**
1345 and 1360 Portals Barriers	$98,320		
Fresh Air Ventilation Raises (2)	$27,425		
Return Air Ventilation Raise	$13,713		
Tailing Management System			**$238,440**
Remove Operational Spillway & Regrade	$13,920		
Remove Seepage Dam	$50,000		
Construct Closure Spillway and Channel	$39,550		
Decommission Diversion Ditches	$14,400		
Remove Tailings Slurry and Reclaim Pipeline (6 km)	$120,570		
Infrastructure			**$999,736**
Industrial Complex Buildings and Infrastructure	$305,880		
Power House and Power Lines	$95,360		
Water Supply	$53,066		
Industrial Complex Diversion Ditches and Sumps	$19,200		
Explosive and Cap Magazines	$5,000		
Camp, Misc. Structures	$141,230		
Industrial Reagents, Fuels & Waste	$65,000		
Remediation Activities	$200,000		
Demolition Overheads	$115,000		
Land Reclamation and Revegetation			**$490,452**
Main Access Road Slope Stabilization	$224,554		
Onsite Roads	$123,660		
Seepage Recovery Pond Area	$35,377		
Slope on Side of Tailings Facility	$5,167		
Disturbed Sites - Industrial Area, Camp, Borrow Sites	$101,694		
Closure Site Management			**$3,560,500**
Camp and Support Infrastructure Operation	$1,528,400		
Environmental Monitoring	$716,600		
Compliance Monitoring	$801,500		
Site Maintenance	$14,000		
Water Treatment Plant Operation	$500,000		
Estimated Total Closure Costs			**$5,428,586**

Table 3.4-5 presents unit costs that were used to derive the costs for various project components. The costs have been developed using unit rates for Yukon Territory and northern British Columbia construction projects and assumes that all work is conducted by contactors. Therefore, they include charges for overheads and profit.

Table 3.4-5 Estimated Unit Costs

Equipment	All found Rates/hr	Rate/month	Rate/day
D9H dozer	$180		
Haul truck D250E	$120		
Tandem haul truck	$65		
Drill rig	$186		
36" walk behind roller	$40		
Cat 235 excavator	$186		
Cat 16H grader	$108		
Hammer	$40		
988B loader	$110		
Hiab flatdeck truck	$30		
Cat 950 loader	$75		
Light-duty vehicles		$2,000	
Blaster	$50		
Labourer	$40		
Tradesman	$55		
Site supervisor	$80		
Design engineer	$115		
Project manager		$8,800	$400
Camp labourer		$3,000	$250
Site caretaker		$5,500	$150
Environmental monitor		$4,500	

Other Materials		
Revegetation Seed Mix	$8.57	per kg
Fertilizer	$0.80	per kg
Tree Seedlings	$1250	per ha (1,000 seedlings per ha)
Seed/Fertilizer Application	$1325	per ha
Erosion barrier	$1500	per linear km
Contractor Unit Rates and Camp Costs		
Excavation of Soil	$5	per m^3
Supply and place geotextile	$12	per m^3
Haul and place soil cover	$8	per m^3
Haul and place rock cover	$8	per m^3
Drill, Blast and Haul Rip Rap	$14	per m^3
Place Rip Rap	$14	per m^3
Camp Costs	$100	per day per person
Supply and Place Rip Rap	$20	per m^3
Recontouring	$3000	per ha

Table 3.4-6 Estimated Costs for Land Reclamation and Revegetation

Work Item Description	Equipment/Labour	Units	Quantity	Unit Cost	Cost
Mine Access Road					
Stabilize Slopes - Erosion Barrier	Unit Cost Basis	per km	25.2	$1500.00	$37,800.00
revegetate - Seed slopes	Unit Cost Basis	per kg	12,025	$8.57	$103,054.25
revegetate - fertilize	Unit Cost Basis	per kg	71,500	$0.80	$57,200.00
application labour	Unit Cost Basis	ha	20	$1325.00	$26,500.00
Sub Total					**$224,554.25**
Service and Haul Roads within the Project Area					
Road Barriers (3)	Miscellaneous				$3,000.00
Culvert excavation	Cat 235	hrs	200	$186.00	$37,200.00
Culvert removal	haul truck	hrs	200	$65.00	$13,000.00
Scarify	Cat 16H Grades	hrs	128	$110.00	$14,080.00
recontour slopes	D9H Dozer	hrs	120	$180.00	$21,600.00
stabilize slopes - erosion barriers	Unit Cost Basis	per km	8	$1500.00	$12,000.00
revegetate - seed	Unit CostBasis	per kg	1216	$8.75	$10,640.00
revegetate - fertilizer	Unit CostBasis	per kg	11,200	$0.80	$8,960.00
application cost	Unit cost Basis	ha	2.4	$1325.00	$3,180.00
Sub Total					**$123,660.00**
Seepage Pond					
pond clean up	Miscellaneous				$10,000.00
Cover Installation - rock fill for base in wet areas (25% of 1 ha, 1 m depth			2500	$8.00	$20,000.00
Cover Installation - haul soil and spread (300 mm cover on rock cover)			$750.00	$5.00	$3,750.00
revegetate - seed	Unit cost Basis	per kg	18	$8.75	$157.50
revegetate - fertilizer	Unit cost Basis	per kg	180	$0.80	$144.00
application cost	Unit cost Basis	ha	1	$1325.00	$1,325.00
Sub Total					**$35,376.50**
Slope on Side of Tailings Facility					
Seeding and Fertilizer Application	Unit Cost Basis	per ha	3.9	$1325.0	$5,167.50
Sub Total					**$5,167.50**
Disturbed Sites - Industrial Site, Camp, Refuse Areas, Borrow Areas, Pipeline Routes					
recountour refuse, borrow, industrial areas	D9H Dozer	hrs	120	$180.0	$21,600.00
bury debris	DH9 Dozer	hrs	120	$180.0	$21,600.00
revegetate - seed	Unit Cost Basis	per kg	577.5	$8.6	$4,966.50
revegetate - fertilizer	Unit Cost Basis	per kg	6125	$0.8	$4,900.00
application cost	Unit Cost Basis	ha	36.7	$1325.0	$48,627.50
Sub Total					**$101,694.00**
Estimated Cost in Land Reclamation					**$490,452.25**