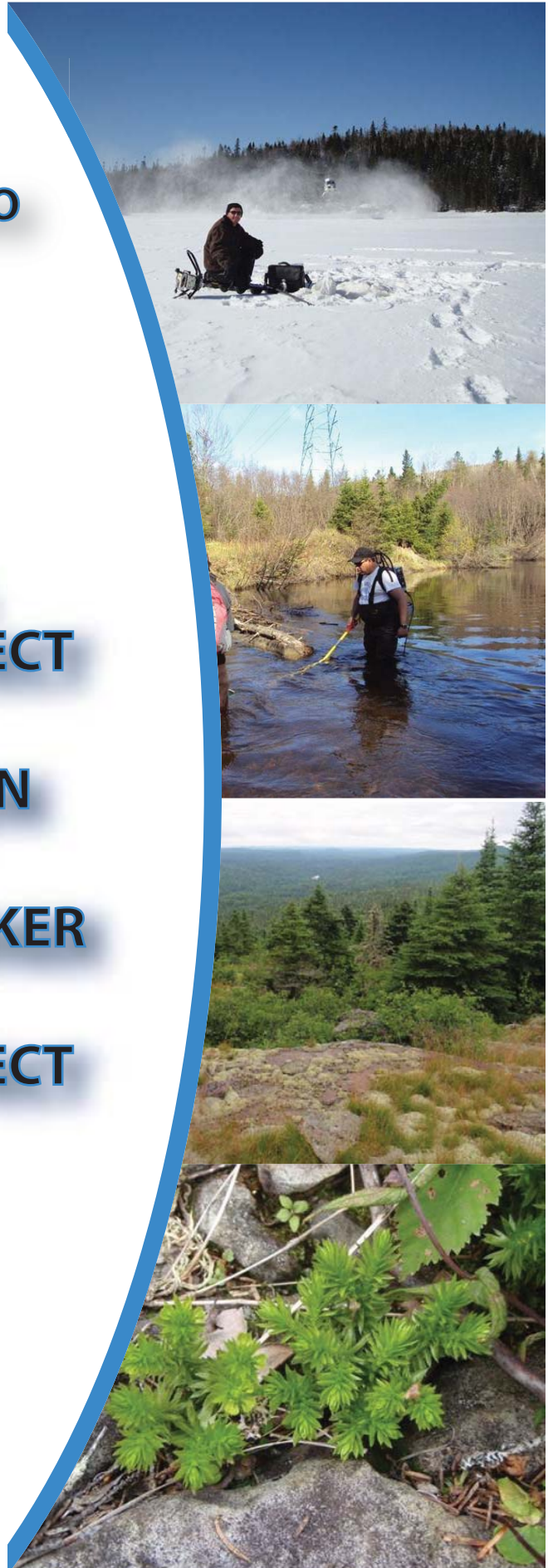


**ENVIRONMENTAL ASSESSMENT
FOR THE MARATHON PGM-Cu
PROJECT AT MARATHON, ONTARIO**

**STILLWATER CANADA INC.
MARATHON PGM-Cu PROJECT**

**SUPPORTING INFORMATION
DOCUMENT No. 19 -
TECHNICAL REPORT - WORKER
HEALTH AND SAFETY -
MARATHON PGM-Cu PROJECT**

**Prepared by:
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Stillwater Canada Inc.

Technical Report – Worker Health and Safety

Marathon PGM-Cu Environmental Assessment

Marathon, Ontario

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1.0 Introduction

Stillwater Canada Inc. (SCI) proposes to develop a platinum group metals (PGMs), copper (Cu) and possibly iron (Fe) open-pit mine and milling operation near Marathon, Ontario. A Notice of Commencement (NoC) of an environmental assessment (EA) in relation to the proposed Marathon PGM-Cu Project (the "Project") was filed by the Canadian Environmental Assessment Agency (CEA Agency) under Section 5 of the Canadian Environmental Assessment Act on April 29, 2010 (updated July 19, 2010).

The EA was referred to an independent Review Panel by the Minister of the Environment on October 7, 2010. On March 23, 2011 SCI entered into a Voluntary Agreement (VA) with the Province of Ontario to have the Project subject to the Ontario Environmental Assessment Act (OEA Act). This agreement was the instrument that permitted provincial government to issue a Harmonization Order (HO) under Section 18(2) of the Canada-Ontario Agreement on Environmental Assessment Cooperation to Establish a Joint Review Panel for the Project between the Minister of the Environment, Canada and the Minister of the Environment, Ontario.

The HO was issued on March 25, 2011. The Terms of Reference (ToR) for the Project Environmental Impact Statement (EIS) and the agreement establishing the Joint Review Panel (JRP) were issued on August 8, 2011.

The following provides an overview of the proposed development including its location, surrounding land uses, the exploration history of the site and the primary features of the mining and milling facilities. The information provided below, in the Environmental Impact Statement Report and supporting technical studies is based on the conceptual mine design for the Project. The conceptual design provides planning level information for the environmental assessment process. Detailed design will commence following EA approval in concordance with the concepts presented herein.

1.1 Project Location

The Project is located approximately 10 km north of the Town of Marathon, Ontario (Figure 1). The town, with a population of 3,353 (2011 Census), is situated adjacent to the Trans-Canada Highway 17 (Hwy 17) on the northeast shore of Lake Superior, about 300 km east and 400 km northwest (by highway) of Thunder Bay and Sault Ste. Marie, respectively.

The centre of the Project footprint sits at approximately 48° 47' N latitude and 86° 19' W longitude. The Project site is in an area characterized by relatively dense vegetation, comprised largely of a birch and, to a lesser extent, spruce-dominated mixed wood forest. The terrain is moderate to steep, with frequent bedrock outcrops and prominent east to west oriented valleys. The climate of this area is typical of northern areas within the Canadian Shield, with long winters and short, warm summers.



Figure 1: Location of the Proposed Marathon PGM-Cu Project Site near Marathon, Ontario

1.2 Surrounding Land Uses

The Project site lies partially within the municipal boundaries of the Town of Marathon, as well as partially within the unorganized townships of Pic, O'Neil and McCoy. The primary zoning designation within the Project Site is 'rural'.

In the immediate vicinity of the Project there are several authorized aggregate sites, including SCI's licensed aggregate site located to the northeast of Hwy 17 along the existing site access road (Camp 19 Road).

The Marathon Municipal Airport (CYSP), which operates as a Registered Airport (Aerodrome class) under the Canadian Aviation Regulations (CARs; Subsection 302), is adjacent to, and south of the Project site. The airport occupies a land area of approximately 219 hectares and is accessed from Hwy 17.

Several First Nations and Métis peoples claim the Project site as falling within their traditional land use boundaries. Based on Aboriginal accounts, prior to the construction of the forestry road, the land and water uses associated with (or close to) the site would have typically been limited to the Pic River corridor, the Bamooos Lake-Hare Lake-Lake Superior corridor and the Lake Superior shoreline and near-shore area, rather than the interior of the Project site. Traditional land and water uses (or rights conferred by Treaty) that can be ascribed to the site could include:

- Hunting;
- Trapping;
- Fishing; and,
- Plant harvesting for food, cultural and medicinal uses.

Primary industries supporting the Town of Marathon, as well as the region, have historically been forestry, pulp and paper, mining and tourism. The Project site is located within the Big Pic Forest Management Area. The Big Pic Forest includes Crown land east and north of Lake Superior and is generally north, south and west of the community of Manitouwadge and includes the communities of Marathon, Caramat and Hillspport.

Until July 2010 the forest was managed under the authority of a Sustainable Forest License (SFL), which was held by Marathon Pulp Inc. This SFL was revoked, with the forest reverting to the Crown as a Crown Forest. Until recently, Marathon Pulp Inc. (MPI) operated a kraft pulp mill in Marathon on the shore of Peninsula Harbour. The mill announced its indefinite shut down (effective at the end of February 2009) on February 11, 2009, and as a result there has been a significant downturn in the local economy. A second mill operated in Terrace Bay was temporarily closed in December 2011.

The Hemlo Mining Camp is located 30 km to the southeast. There are currently two mines in production at the Camp (David Bell Mine, Williams Mine), which are estimated to be in operations until 2025.

1.3 Exploration History of the Site

Exploration for copper and nickel deposits on the Project site started in the 1920s and continued until the 1940s with the discovery of titaniferous magnetite and disseminated chalcopyrite occurrences. During the past four decades, the site has undergone several phases of exploration and economic evaluation, including geophysical surveys, prospecting, trenching, diamond drill programs, geological studies, resource estimates, metallurgical studies, mining studies, and economic analyses. These studies have successively enhanced the knowledge base of the deposit.

In 1963, Anaconda acquired the Marathon property and carried out systematic exploration work including diamond drilling of 36,531 m in 173 drill holes. This culminated in the discovery of a large copper-PGM deposit. Anaconda discontinued further work on the project in the early 1980s due to low metal prices at the time.

In 1985, Fleck purchased a 100% interest in the Marathon PGM-Cu Project with the objective of improving the project economics by focusing on the platinum group element (PGE) values of the deposit. The Fleck drilling totaled 3,615 m in 37 diamond drill holes. In 1986, H.A. Symons carried out a feasibility study for Fleck based on a 9,000 tonnes per day conventional flotation plant with marketing of copper concentrate and Kilborn Limited carried out a prefeasibility review for Fleck that included preliminary results from the Lakefield pilot plant tests (Kilborn Limited, 1987). The feasibility study indicated a low internal rate of return which was confirmed by Teck Corporation who concluded the project was uneconomic due to low metal prices at the time. On June 10, 1998, Fleck changed its name to PolyMet Mining Corp.

In 2000, Geomaque acquired certain rights to the Marathon PGM-Cu Project through an option agreement with Polymet. Geomaque and its consultants carried out a study of the economic potential of the Marathon PGM-Cu Project. The study included a review of the geology and drill hole database, interpretation of the mineralized zones, statistics and geostatistics, computerized block model, resource estimation, open pit design and optimization, metallurgy, process design, environmental aspects, capital and operating cost.

Marathon PGM Corp. acquired the Marathon PGM-Cu deposit from Polymet in December 2003. Marathon PGM Corp. funded programs of advanced exploration and diamond drilling on a continuous basis between June 2004 and 2009. Approximately 320 holes and 65,000 m were drilled from 2007 to 2009 to define and expand the resource and for condemnation holes outside of the pit area. A feasibility study was published in 2008 and updated in January 2010.

Stillwater Mining Company (SWC) and Marathon PGM entered into an agreement on September 7, 2010 pursuant to which SWC would acquire all of the outstanding shares of Marathon PGM. The acquisition agreement received ministerial approval under the Investment Canada Act on November 24, 2010 and the agreement closed on November 30, 2010. On December 31, 2010 Stillwater Mining Company formed a Canadian corporation, Stillwater Canada Inc. In March 2012, MC MINING LTD (MC) purchased 25% interest in Stillwater Canada Inc. who is the proponent of the Marathon PGM-Cu Project.

1.4 Project Overview

The Project is based on the development of an open pit mining and milling operation. The conceptual general layout of the components of the mine site, the transmission line corridor and access road is provided in Figure 3 below. One primary pit and a satellite pit complex to the south (currently envisaged to be comprised of four satellite pits) are proposed to be mined. Ore will be processed (crushed, ground, concentrated) at an on-site processing facility. Final concentrates containing copper and platinum group metals will be transported off-site via road and/or rail to a smelter and refinery for subsequent metal extraction and separation. The total mineral reserve (proven and probable) is estimated to be approximately 91.5 million tonnes. It is possible that an iron concentrate may also be produced, depending upon the results of further metallurgical testing and market conditions at that time.

During the operations phase of the Project, ore will be fed to the mill at an average rate of approximately 22,000 tonnes per day. The operating life of the mine is estimated to be approximately 11.5 years. The construction workforce will average approximately 400 people and will be required for between 18 and 24 months. During operations the work force will comprise an estimated 365 workers. The mine workforce will reside in local and surrounding communities, as well as in an Accommodations Complex that will be constructed in the Town of Marathon.

Approximately 288 million tonnes of mine rock¹ will be excavated. It is estimated that between eighty five to ninety percent of this material is non-acid generating (NAG) and will be permanently stored in a purposefully built Mine Rock Storage Area (MRSA) located east of the primary pit. The NAG or so-called Type 1 mine rock will also be used in the construction of access roads, dams and other site infrastructure as needed. Drainage from the MRSA will be collected, stored, treated and discharged as necessary to the Pic River. During mine operations, about 20 million tonnes of mine rock could have the potential to generate acid if left exposed for extended periods of time. This mine rock is referred to as Type 2 mine rock or potentially acid generating (PAG). The Type 2 mine rock will be managed on surface during mine operations in temporary stock piles with drainage directed into the open pits. This material will be relocated to the bottom of the primary and satellite pits and covered with water to prevent potential acid generation and covered with Type 1 materials.

¹ Mine rock is rock that has been excavated from active mining areas but does not have sufficient ore grades to process for mineral extraction.

Process solids² will be managed in the Process Solids Management Facility (PSMF), as well as in the satellite pit complex. The PSMF will be designed to hold approximately 61 million m³ of material, and its creation will require the construction of dams. Two streams of process solids will be generated. An estimated 85 to 90% of the total amount of process solids produced will be non-acid generating, or so-called Type 1 process solids. The remaining ten to fifteen percent of the process solids could be potentially acid generating and referred to as Type 2 process solids. The Type 2 process solids will be stored below the water table in the PSMF or below water in the pits to mitigate potential acid generation and covered with Type 1 materials. Water collected within the PSMF, as well as water collected around the mine site other than from the MRSA will be managed in the PSMF for eventual reclamation in the milling process. Excess water not needed in the mill will be discharged, following treatment as is necessary, to Hare Lake.

Access to the Project site is currently provided by the Camp 19 Road, opposite Peninsula Road at Hwy 17. The existing road runs east towards the Pic River before turning north along the river to the Project site (approximately 8 km). The existing road will be upgraded and utilized from its junction with Hwy 17 for approximately 2.0 km. At this point a new road running north will be constructed to the future plant site. The primary rationale for developing the new road is to move traffic away from the Pic River. The new section of road will link two sections of forest access roads located on the site.

Power to the Project site will be provided via a new 115 kV transmission line that will be constructed from a junction point on the Terrace Bay-Manitouwadge transmission line (M2W Line) located to the northwest of the primary pit. The new transmission line will run approximately 4.1 km to a substation at the mill site. The width of the transmission corridor will be approximately 30 m.

Disturbed areas of the Project footprint will be reclaimed in a progressive manner during all Project phases. Natural drainage patterns will be restored as much as possible. The ultimate goal of mine decommissioning will be to reclaim land within the Project footprint to permit future use by resident biota and as determined through consultation with the public, Aboriginal peoples and government. A certified Closure Plan for the Project will be prepared as required by Ontario Regulation (O.Reg.) 240/00 as amended by O.Reg.194/06 "Mine Development and Closure under Part VII of the Mining Act" and "Mine Rehabilitation Code of Ontario".

Maps showing the existing features and topography of the site, as well as the proposed conceptual development of the site are provided in Figure 2 and 3 below.

² Process solids are solids generated during the ore milling process following extraction of the ore (minerals) from the host material.

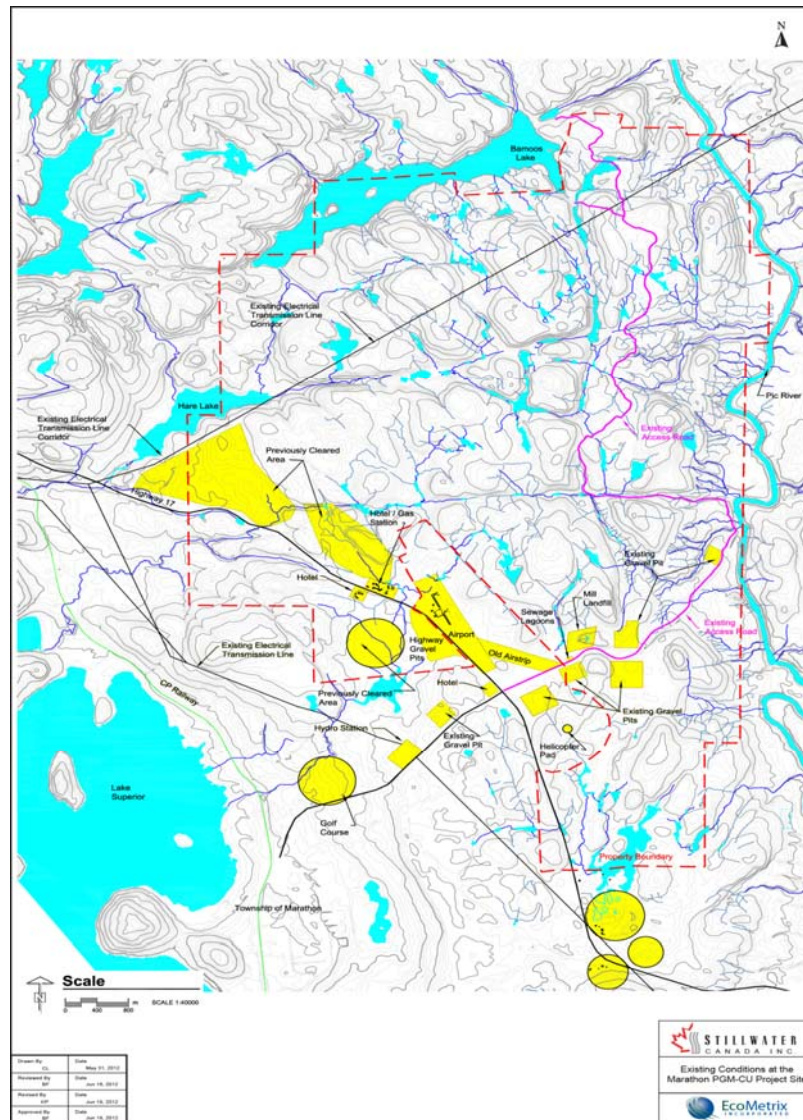
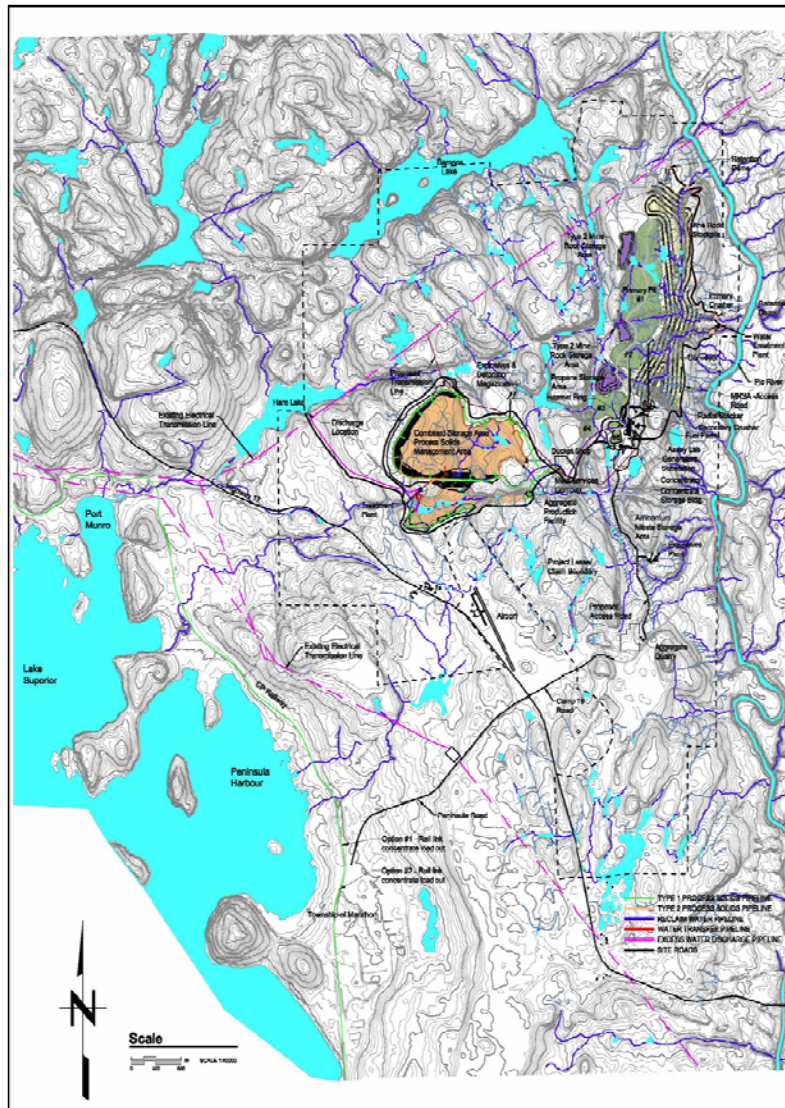


Figure 2: Existing Conditions at the Marathon PGM-Cu Project Site



2.0 Summary Statement

In order to adequately address health and safety issues during all phases of development and operations at the Project the existing SCI health and safety policy will be implemented, expanded through the development of a program and maintained throughout the life of the Project. Planning of the health and safety program for the Project will best take place through the efforts of a joint task force of labour and management parties working together as equal partners in keeping with the principles of Ontario's internal responsibility system. The health and safety program will meet or exceed all of the provincial and federal legislative requirements and it will guide health and safety practices during all phases of the Project.

This report outlines the requirements for a functioning health and safety program that will address hazards identified using a hazard assessment methodology. A review of the Project from the perspective of health and safety history and industry standards for construction and mining was completed and significant Project hazards were identified. Action plan elements for each significant hazard were developed in the context of a proposed health and safety program for the Project.

The proposed health and safety program deals with the identified significant Project hazards through the use of the following action plan items: safe work procedures, training, policies/programs and clearly defined roles and responsibilities for all workplace parties.

The proposed health and safety program references the sections of relevant legislation and best practices and can be used by a joint task force of labour and management parties under the guidance of a designated safety and training co-ordinator for the Project to prepare a functional health and safety program. The following key actions should be part of the final planning process for health and safety at the Project:

1. Determine the best strategies and establish an action plan for program development.
2. Define ways to measure the success of the proposed health and safety program in reaching objectives.
3. Outline procedures to;
 - a. implement the program,
 - b. monitor the program and evaluate how well it meets the objectives, and
 - c. adjust the program content where necessary.

Items 3 (b) and (c) above will be extremely important. A mine is very much an ongoing construction project because the workplace is changing every day as the mine is developed and adaptive management is key. An internal responsibility system of labour and management working together to monitor safety at the workplace and ensure that the health and safety program meets the changing needs will be vital to providing a safe workplace for all employees at the Project.

The measures and plans outlined in this report will facilitate the safe operation of the mine during all phases of development.

3.0 Methodology

3.1 Data Gathering

The proposed processes for all aspects of the Project were systematically reviewed to identify potential worker HS issues. A review of industry standards, basic operating procedures and industry accident records was also completed. The results of the review were combined to assign a risk rating to each identified potential worker safety hazard. A summary of literature and company documentation reviewed is provided in Appendix A.

3.2 Regulatory Review

Worker HS will be governed at the Project by the Ontario Occupational Health and Safety Act (OHSA) and the Regulations made under that Act. In most cases, the Mines and Mining Plants Regulation, Ontario Regulation 854/90 (O. Reg. 854), will be the governing regulation; however, in some cases where there is no specific mention of a particular safety hazard in O. Reg. 854, then either the general duty clause of the OHSA (Section 25(2)) or an applicable section in another regulation, will be applied.

The following regulations, guidelines and best practices were consulted as part of this report:

- Occupational Health and Safety Act (Ontario)
- Ontario Regulation 213, Regulation for Construction Projects (O. Reg. 213)
- Ontario Regulation 490, Designated Substances (O. Reg. 490)
- Ontario Regulation 572, Training Requirements for Certain Skill Sets and Trades (O. Reg. 572)
- Ontario Regulation 833, Control of Exposure to Biological or Chemical Agents (O. Reg. 833)
- Ontario Regulation 851, Industrial Establishments (O. Reg. 851)
- Ontario Regulation 854, Mines and Mining Plants (O. Reg. 854)
- Ontario Regulation 860, Workplace Hazardous Materials Information System (WHMIS) Regulation (O. Reg. 860)
- Ontario Ministry of Labour (MOL) – Guidelines for the Forestry Pit and Road Construction Equipment Operator Training Program #600100
- Required Training – Construction Health and Safety, Construction Safety Association Ontario
- Posting Requirements in the Mining Regulation, Ontario Ministry of Labour
- MOL Safe at Work Sector Plans
- MOL How to Prepare an Occupational Health and Safety Policy: A Guide to the Occupational Health and Safety Act
- Ontario Ministry of Labour, Health and Safety Requirements for Mineral Projects

- Federal Regulatory Requirements for the Mineral Industry
- Explosives Act (Canada)
- Transportation of Dangerous Goods Act (Canada)

3.3 Hazard Identification

A list of potential hazards was prepared based on the description of the process and tasks to be performed as part of the Project. Once the potential hazards were identified then an assessment or risk evaluation was completed. The primary goal of the assessment was to create a baseline list of hazards along with a severity rating in order to identify the most significant hazards associated with the process.

A matrix based risk assessment tool was used to rank the hazards (Appendix B). The criteria used in this assessment included: likelihood of exposure, likelihood of occurrence and potential consequences of injury. Industry experience was used as the basis in determining a rating for each of these three criteria as follows:

- Likelihood of exposure was ranked numerically from 1 to 6 with a ranking of 1 indicating that exposure to the hazard is continuous and a ranking of 6 indicating that the likelihood of exposure is very rare. All other rankings fall on a continuum between 1 and 6.
- Likelihood of occurrence was similarly ranked numerically from 1 to 6 with a ranking of 1 indicating that occurrence is very likely and a ranking of 6 indicating that occurrence is practically impossible. All other rankings fall on a continuum between 1 and 6.
- The numerical rankings for exposure and occurrence were combined in a matrix to produce an estimation of probability. Probability is expressed in terms of an alphabetical ranking from A to E with a ranking of A indicating that the probability of occurrence is very high and a ranking of E indicating that the probability of occurrence is extremely low (practically impossible). All other rankings fall on a continuum between A and E.
- The consequences of an occurrence were ranked numerically from 1 to 5 with a ranking of 1 indicating a very severe consequence of a fatality or permanent disability and a ranking of 5 indicating a non-severe consequence of no injury, illness, lost time or other loss. All other ranking fall on a continuum between 1 and 5.
- The alphabetical ranking for probability and the numerical ranking for consequence were combined in a matrix to produce a numerical ranking for risk from 1 to 25.
- The risk rankings are rated as high risk for rankings from 1 – 6, medium risk for rankings from 7 – 15 and low risk for rankings from 16 – 25.

Based on these ratings, each hazard was identified as a high, medium, or low risk. The risk rating helps to determine the priority for development of controls. Hazards that were rated as high risks as a result of this assessment were considered significant hazards. Each significant hazard requires immediate controls or elimination to protect worker safety (see Appendix B for completed Hazard Assessment Worksheets).

3.4 Mitigation

All of the identified significant hazards are dealt with in the context of the development of a proposed health and safety program for the Project. Current legislative requirements and industry best practices

were used to develop action plan elements to control each identified significant hazard. Action plan elements include safe work practices, workplace duties and responsibilities, record keeping, workplace inspections, emergency planning, orientation and training and workplace health and safety administration.

3.5 Policy and Program

Beyond the specifics of hazard assessment and control, SCI requires a general statement summarizing the Corporation's intent to protect worker health and safety, i.e. a health and safety policy, and a program or a series of phase specific programs to realize the policy. SCI has an existing corporate health and safety policy as follows:

Stillwater Canada, Inc. (the "Company") Vision, Mission, and Values promote the development and implementation of the best health and safety system possible with the objective of eliminating hazards or exposures which may result in personal injuries or illnesses.

To achieve this objective, the Company will provide a working environment that is conducive to personal health, mental alertness, and safety awareness in accordance with standard industry practices, and in full compliance with the Occupational Health and Safety Act.

The Company's management is vitally interested in the health and safety of its employees, and fully acknowledges and accepts its responsibility for maintaining a proactive health and safety system to reduce occupational injuries or illnesses and to promote innovation and continuous improvement. Supervisors will be held accountable for the health and safety of workers under their supervision. All Employees and Contractors have a personal responsibility to work in such a manner as to safeguard themselves and fellow workers.

Only through Management commitment with active Employee involvement can the Company continue to develop and implement the best health and safety systems to ensure its position as a premier company providing sustainable growth.

An MOL guideline for preparation of corporate health and safety policy statements will be used as a guide to review the existing policy on an annual basis (please refer to Appendix C). A draft of proposed HS program elements is presented in Appendix D.

4.0 Results

4.1 Hazard Assessment

The hazard assessment process was applied to each phase of the Project.

4.1.1 Phase 1 - Site Preparation

Phase 1 of the project is the site preparation. It will involve clearing of the site, felling of trees, clearing of brush, levelling the site and road building and maintenance. The following work processes and activities were considered as part of the hazard assessment process for the site preparation phase:

- Chain saw operation
- Chipper operation
- Drilling, blasting and use of actuated fastening tools
- Equipment maintenance/vehicle re-fuelling
- Excavating and trenching
- Felling trees
- Fuel storage
- Hand tool operation
- Heavy equipment operation
- Lifting/materials handling
- Road maintenance
- Sewage/waste transport and disposal
- Storing explosives
- Transporting explosives
- Transporting heavy/large loads
- Welding/cutting activities
- Working at heights
- Working in remote wilderness locations
- Working near water

The site preparation phase of the Project combines elements of a construction project and a logging operation. Each of these comes with unique worker health and safety issues which must be addressed. The hazard assessment considered all aspects of workplace activity. The MOL and Workplace Safety and Insurance Board (WSIB) have identified injuries or illness related to ergonomics and overexertion, falls, and entanglement in machinery as the most prominent and costly injuries involved in the logging sector in Ontario. For the construction sector, the most prominent and costly injuries identified were falls, moving equipment, material handling, electrical hazards, drowning, occupational disease, excavation and traffic protection.

Fourteen significant hazards for the site preparation phase of the Project and the activities from which they arise are identified in Table 4.1.

Table 4.1 Significant Hazards Identified in the Site Preparation Phase of the Project

Activity	Significant Hazard													
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Early Detonation/No Detonation	Slip and Fall	Laceration and/or amputation	Eye Injuries	Entanglement	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica and other designated substances)
Chain saw operation		•				•	•				•		•	•
Chipper operation		•			•	•	•	•			•			
Drilling and blasting operations		•	•	•		•	•				•		•	•
Equipment maintenance					•			•						•
Excavating and trenching					•				•	•				•
Explosives storage			•											
Fuel storage			•											
Hand tool operation														
Heavy equipment operation	•	•	•		•						•		•	•
Road Maintenance	•	•			•		•				•	•	•	•
Lifting/materials handling**					•			•			•		•	
Transporting explosives			•											
Transporting heavy/large loads	•													
Tree Felling	•				•		•				•			
Vehicle maintenance and re-fuelling		•	•		•								•	•
Welding/cutting activities							•							•
Working at heights					•									
Working in remote wilderness locations												•		
Working near water					•					•				
NOTES: * Includes collisions, crushing, tire change outs and other vehicle maintenance activities; roll over, tipping, loss of brakes, etc. ** Includes manual material handling, conveyors, crushers, grinders, etc.														

4.1.2 Phase 2 - Construction

Phase 2 of the project is the construction phase. It will involve the construction of the buildings that will house the mine and milling processes, installation of process equipment, dam construction and damming operations to deal with potential water accumulation at the site and related maintenance activities. The following work processes and activities were considered as part of the hazard assessment process for the construction phase:

- Compressed gas storage
- Concrete batch plant operation
- Construction traffic
- Crane operation
- Dewatering operations
- Drilling and blasting operations
- Electrical installations on site
- Equipment maintenance
- Excavating and trenching
- Explosives storage
- Fuel storage
- General construction
- Hand tool operation
- Heavy equipment operation
- Lifting/materials handling
- Plumbing activities
- Road maintenance
- Scaffold use
- Sewage/waste transportation and disposal
- Stockpiled rock and quarry operations
- Transportation of dangerous goods

- Transportation of explosives
- Vehicle maintenance and re-fuelling
- Water management and damming operations
- Welding/cutting activities
- Working at heights
- Working in remote wilderness locations
- Working on roads and highways
- Working near open pits
- Working near water

The MOL and the WSIB have identified the following as the most prominent and costly hazards/injury causes in the construction industry: falls, moving equipment, material handling, electrical hazards, drowning, occupational disease, excavation and traffic protection.

Seventeen significant hazards identified for the facilities construction phase of the Project and the activities from which they arise are listed in Table 4.2.

Table 4.2 Significant Hazards Identified in the Facilities Construction Phase of the Project

Activity	Significant Hazard																
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Early Detonation/No Detonation	Slip and Fall	Laceration and/or amputation	Confined Space Hazards	Early detonation/no detonation	Electrical hazards	Eye Injuries	Entanglement	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica and other designated substances)
Compressed gas storage			•													•	•
Concrete batch plant operation	•	•			•	•	•			•	•					•	•
Construction traffic	•				•	•											
Dewatering operations (includes water management and damming operations)					•								•				
Drilling and blasting operations		•	•	•		•		•	•	•				•		•	•
Electrical installations on site					•				•							•	
Equipment maintenance***					•		•				•					•	•
Excavating and trenching	•	•			•	•						•				•	
Explosives storage			•			•										•	•
Fuel storage			•													•	•
Hand tool operation						•				•						•	

Table 4.2 Significant Hazards Identified in the Facilities Construction Phase of the Project

Activity	Significant Hazard																
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Early Detonation/No Detonation	Slip and Fall	Laceration and/or amputation	Confined Space Hazards	Early detonation/no detonation	Electrical hazards	Eye Injuries	Entanglement	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica and other designated substances)
Heavy equipment operation (on roads and in and near open pit)	•	•			•	•			•							•	•
Lifting/materials handling**																•	
Road Maintenance	•	•			•	•				•				•	•	•	•
Scaffold use					•												
Stockpiled rock and quarry operation												•					
Transporting explosives	•		•													•	
Transporting heavy/large loads (equipment being brought to site)	•															•	
Vehicle maintenance and re-fuelling		•	•		•											•	•
Water management and damming operations													•				
Welding/cutting activities		•	•							•						•	•
Working at heights					•												

Table 4.2 Significant Hazards Identified in the Facilities Construction Phase of the Project

Activity	Significant Hazard																
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Early Detonation/No Detonation	Slip and Fall	Laceration and/or amputation	Confined Space Hazards	Early detonation/no detonation	Electrical hazards	Eye Injuries	Entanglement	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica and other designated substances)
Working in remote wilderness locations															•		
Working near open pit (potential for unstable earth)					•							•					
Working near water													•				
NOTES: * Includes collisions, crushing, tire change outs and other vehicle maintenance activities; roll over, tipping, loss of brakes, etc. ** Includes manual materials handling, conveyors, crushers, grinders, etc. *** Includes entry into tanks, silos and other areas meeting the definition or confined space (eg. drum on cement mixer).																	

4.1.3 Phase 3 - Operations

Phase 3 of the project is the operations phase. It will involve the open pit mining extraction process and activities related to the processing of the mined product. The following work processes and activities were considered as part of the hazard assessment process for the operations phase:

- Assay lab operations
- Ball mill operation
- Compressed gas storage
- Conveyor operations
- Dewatering operations
- Drilling and blasting operations
- Equipment maintenance
- Excavating and trenching
- Explosives storage
- Fuel storage
- General housekeeping concerns
- Hand tool operation
- Hauling
- Heavy equipment operation
- Lifting/materials handling
- Maintenance activities
- Milling equipment operation
- Pit operations
- Rail systems
- Road maintenance
- Scaffold use
- Stockpiled rock and quarry operation
- Transporting explosives

- Transporting heavy/large loads
- Transporting sewage/waste and disposal
- Vehicle maintenance and re-fuelling
- Water management and damming operations
- Welding/cutting activities
- Working at heights
- Working in remote wilderness locations
- Working near water
- Working on ledges and benches
- Working on or around electrical installations on site
- Working on roads and highways

The MOL and the WSIB have identified the following as the most prominent and costly hazards/injury causes in the mining industry: falls of person, vehicle worker contact and falls of ground. Other hazards identified include noise, entanglement and engulfment. Major causes of occupational illness include inhalation of dusts and other substances resulting in cancers and other respiratory illnesses.

Sixteen significant hazards identified for the mining operations phase of the Project and the activities from which they arise are listed in Table 4.3.

Table 4.3 Significant Hazards Identified in the Mining Operations Phase of the Project

Activity	Significant Hazard															
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Early Detonation/No Detonation	Slip and Fall	Laceration and/or amputation	Electrical Hazards	Confined Space Hazard	Exposure to hot surfaces	Entanglement	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica, lead and other designated substances)
Assay lab operations		•	•												•	•
Ball mill operation		•	•			•				•			•		•	•
Compressed gas storage			•												•	•
Conveyor operations						•				•						
Dewatering operations												•				
Drilling and blasting operations		•	•	•		•					•		•		•	•
Equipment maintenance					•	•			•	•						
Excavating and trenching					•	•					•	•			•	
Explosives storage			•													
Fuel storage			•												•	•
General housekeeping concerns					•											
Hand tool operation													•		•	
Hauling	•	•									•		•		•	•

Table 4.3 Significant Hazards Identified in the Mining Operations Phase of the Project

Activity	Significant Hazard															
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Early Detonation/No Detonation	Slip and Fall	Laceration and/or amputation	Electrical Hazards	Confined Space Hazard	Exposure to hot surfaces	Entanglement	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica, lead and other designated substances)
Heavy equipment operation****	•	•	•		•		•	•	•	•					•	•
Lifting/materials handling**	•	•								•			•		•	•
Maintenance activities***					•	•	•	•								
Milling equipment operation		•	•		•	•			•	•			•			•
Pit operations					•	•					•	•				
Rail Systems	•	•			•	•									•	
Road maintenance	•	•			•								•	•	•	•
Scaffold use					•											
Stockpiled rock and quarry operations					•	•					•					
Transporting explosives	•		•												•	
Transporting heavy/large loads	•														•	
Vehicle maintenance and re-fuelling		•	•		•				•						•	•
Water management and damming operations												•				

Table 4.3 Significant Hazards Identified in the Mining Operations Phase of the Project

Activity	Significant Hazard															
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Early Detonation/No Detonation	Slip and Fall	Laceration and/or amputation	Electrical Hazards	Confined Space Hazard	Exposure to hot surfaces	Entanglement	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica, lead and other designated substances)
Welding/cutting activities			•			•									•	•
Working at heights					•	•										
Working in remote wilderness locations														•		
Working near water												•				
Working on ledges and benches		•			•						•					
Working on or around electrical installations on site							•									

NOTES: * Includes collisions, crushing, tire change outs and other vehicle maintenance activities; roll over, tipping, loss of brakes, etc.

** Includes manual material handling, conveyors, crushers, grinders, etc.

*** Includes entry into tanks, silos and other areas meeting the definition of confined space (eg. drum on cement mixer).

**** Heavy equipment operation includes, but is not limited to, operation of mine vehicles, mobile crusher units and chippers.

4.1.4 Phase 4 - Decommissioning/Mine Closure

Phase 4 of the project is the decommissioning and mine closure phase. It will involve construction activities related to the dismantling/demolition of building and equipment on site, reclamation of the land with significant earth moving and dewatering activities involved. The following work processes and activities were considered as part of the hazard assessment process for the decommissioning and mine closure phase:

- Compressed gas storage
- Construction traffic
- Demolition activities
- Dewatering operations
- Electrical installations on site
- Equipment maintenance
- Fence installation
- Fuel storage
- Hand tool operation
- Heavy equipment operation
- Housekeeping concerns
- Ladder use
- Lifting/materials handling
- Scaffold use
- Stockpiled rock and quarry operations
- Transporting explosives
- Transporting heavy/large loads
- Vehicle maintenance and re-fuelling
- Water management and damming operations
- Welding/cutting activities
- Working at heights

- Working in remote wilderness locations
- Working near open pits
- Working near water
- Underground lines

Decommissioning of the mine will be a construction project and will be governed by the same regulations as the construction phase of the project. Many of the same hazards can be expected with the exception of blasting, drilling and the use of explosives which should not be necessary for the decommissioning phase.

Fifteen significant hazards identified for decommissioning phase of the Project and the activities from which they arise are listed in Table 4.4.

Table 4.4 Significant Hazards Identified in the Decommissioning Phase of the Project

Activity	Significant Hazard														
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Slip and Fall	Laceration and/or amputation	Confined Space Hazards	Electrical hazards	Eye Injuries	Entanglement	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica and other designated substances)
Compressed gas storage			•											•	•
Construction traffic	•														
Demolition activities		•		•	•	•	•	•	•			•		•	•
Dewatering operations											•				
Electrical installations on site (including buried utilities) (removal)				•			•								
Equipment maintenance		•		•		•			•					•	•
Fuel storage			•												
Hand tool operation		•			•			•						•	
Heavy equipment operation (on roads and in and near open pit)	•	•												•	•
Ladder use				•											
Lifting/materials handling**				•										•	
Scaffold use				•											

Table 4.4 Significant Hazards Identified in the Decommissioning Phase of the Project

Activity	Significant Hazard														
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Slip and Fall	Laceration and/or amputation	Confined Space Hazards	Electrical hazards	Eye Injuries	Entanglement	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica and other designated substances)
Stockpiled rock and quarry operations				•	•					•					
Transporting explosives	•		•		•									•	•
Transporting heavy/large loads (equipment being brought to site)	•														
Vehicle maintenance and re-fuelling	•	•	•	•										•	•
Water management and damming operations				•							•				
Welding/cutting activities			•					•						•	•
Working at heights				•											
Working in remote wilderness locations													•		
Working near open pit (potential for unstable earth)										•	•				
Working near water											•				
NOTES: * Includes collisions, crushing, tire change outs and other vehicle maintenance activities; roll over, tipping, loss of brakes, etc. ** Includes manual materials handling, conveyors, crushers, grinders, etc.															

4.2 Mitigation

Significant hazards will be controlled as part of a comprehensive health and safety program for the Project. The health and safety program will be designed for the entire life of the Project and, as such, it will be constantly monitored, evaluated and adjusted where new or unforeseen significant hazards arise (see Appendix D for an outline of proposed Health and Safety Program elements for the Project).

Each phase of the project was assessed separately for significant hazards; however, many of the hazards are common to more than one phase of the project. Significant Project hazards are summarized and elements proposed for inclusion in the action plans to control them are outlined in Table 4.5.

Table 4.5 Summary of Proposed Action Plan Elements for Identified Significant Hazards in All Phases of the Project

Action Plan Elements	Significant Hazard																
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Entanglement	Early Detonation/No Detonation	Exposure to Hot Surfaces	Slip and Fall	Laceration/amputation	Electrical hazards**	Confined Space Entry Hazards	Eye Injuries	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica, lead, and other designated substances)
Confined Space Entry Policy and Program										•							
Designated Substance Policy and Program																	•
Drilling and Blasting Policy and Program			•		•									•			
Emergency Response Policy and Program	•		•	•	•		•	•	•	•	•	•	•	•	•		•
Ergonomics Policy and Program						•										•	
Excavating/Trenching Policy and Program												•					
Explosives Policy and Program			•		•												
Fire Plan Policy and Program			•		•	•											
Fuel Storage Policy and Program			•														
Guarding and Lockout Policy and Program				•			•	•	•					•			
Hazardous Atmosphere Control Policy and Program										•							•
Hygiene and Housekeeping at the Workplace Policy and Program				•	•	•	•										•
Noise Control Policy and Program		•															
Operation of Vehicles and Heavy Equipment Policy and Program	•						•									•	•

Table 4.5 Summary of Proposed Action Plan Elements for Identified Significant Hazards in All Phases of the Project

Action Plan Elements	Significant Hazard																
	Vehicle/Worker Contact*	Noise Exposure	Fire/Explosion Hazard	Entanglement	Early Detonation/No Detonation	Exposure to Hot Surfaces	Slip and Fall	Laceration/amputation	Electrical hazards**	Confined Space Entry Hazards	Eye Injuries	Cave-in/suffocation	Drowning	Injury from Flying Debris	Encounters with Wildlife	Musculoskeletal disease and injury	Exposure to Hazardous Materials (including silica, lead, and other designated substances)
Personal Protective Equipment Policy and Program		•								•	•		•	•	•		•
Roles and Responsibilities for all workplace parties including contractors	•	•	•				•	•	•	•	•	•	•	•	•	•	•
Safe Work Practices (SWP)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Training	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Working Near Water Policy and Program													•				
Workplace Hazardous Materials Information System (WHMIS) Policy and Program			•							•							•
NOTES: *In addition to vehicle/person and vehicle/vehicle contact this includes collisions, crushing, tire change outs and other vehicle maintenance activities; roll over, tipping, loss of brakes, etc. ** This includes electrical hazards associated with the operation of overhead cranes.																	

5.0 Discussion

A mine site is constantly changing and, in many ways, it resembles an ongoing construction project because the mine is under constant development. In this respect, health and safety hazards are constantly changing. A static health and safety program based only on significant hazards identified at a single point in time will not serve to keep the workforce safe. That is why the focus of this report is the development of a health and safety program using the identified significant hazards as a starting point while acknowledging that the program will continually evolve and change to meet the needs of the Project.

5.1 Description of Identified Significant Hazards

Seventeen significant hazards were identified as part of the hazard assessment for the Project. Mitigation of each significant hazard was addressed through action plan elements. Following is a brief description of each of the seventeen identified significant hazards, the phase or phases of the project which the hazard is associated with, and proposed hazard mitigation strategies.

5.1.1 Cave-in/Suffocation

Potential for injury due to cave-in and/or suffocation was identified for all four phases of the Project (site preparation, construction, operations and site closure). Unstable earth or materials can collapse, killing or injuring workers by suffocation or crushing. Activities and situations which may present potential for injury or fatality due to cave-in or suffocation on the Project include excavation and trenching, drilling and blasting, pit instability and work around stock piles and hoppers. Mitigation strategies include policies and programs to cover emergency response planning and excavating and trenching, as well as safe work practice development, training, and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.2 Confined Space Entry

Potential for injury due to confined space entry was identified for the construction and operations phases of the Project. Hazards in confined spaces can include: poor air quality, chemical exposures, entanglement, slips and falls, temperature extremes, shifting or collapse of bulk material, uncontrolled energy including electrical shock, visibility and biological hazards. Activities and situations which may present potential for injury due to confined space entry on the Project include cleaning and maintenance activities, especially for equipment related to the operation of the concrete batch plant or hoppers and bins. Mitigation strategies include policies and programs to cover confined space entry, emergency response, hazardous atmosphere control and personal protective equipment, as well as safe work practice development, training, and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.3 Drowning

Potential for injury due to drowning was identified for all four phases of the Project (site preparation, construction, operations and site closure). Anyone who works near or above water is at risk of falling into the water and drowning. Activities and situations which may present potential for injury due to drowning on the Project include excavating, dewatering, damming and bridge construction. Mitigation strategies include policies and programs to cover emergency response, working near water, and personal protective equipment, as well as safe work practice development, training, and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.4 Early Detonation/No Detonation

Potential for injury due to early detonation of explosives or no detonation (e.g. misfires) was identified for the site preparation, construction and operations phases of the Project. Early detonation of explosives, which may be due to carelessness, accidental percussion, a faulty fuse, or degenerated explosives, can kill or injure blasters or operators. Additionally, when a charge fails or partially fails to explode as planned the explosive or pyrotechnical products that remain in the ground or in the muckpile can be triggered by any mechanical effect during the digging, milling or crushing stages of the mining process, causing injuries or fatalities to blasters or operators. Drilling and blasting activities which are part of the Project present potential for injury due to early detonation or no detonation of explosives. Mitigation strategies include policies and programs to cover drilling and blasting, emergency response, use of explosives, fire plan, hygiene and housekeeping at the workplace, and workplace hazardous materials information system (WHMIS), as well as safe work practice development, training, and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.5 Electrical Hazards

Potential for injury due to electrical hazards was identified for the construction, operations and site closure phases of the Project. Accidental contact with live electrical equipment can be fatal or cause injuries due to electrocution or burning. Installation and decommissioning of electrical lines and equipment, maintenance and use of electrically operated equipment and operation of machinery in the vicinity of overhead electrical lines all present potential for accidental contact and resultant injury. Mitigation strategies include policies and programs to cover emergency response and guarding and lockout procedures, as well as safe work practice development, training, and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.6 Encounters with Wildlife

Potential for injury due to encounters with wildlife was identified for the site preparation phase of the Project. Unexpected encounters between humans and wildlife can cause potentially dangerous circumstances in which humans may be injured by wildlife who have been startled or who are protecting their habitat or young. Mitigation strategies include policies and programs to cover emergency response and use of personal protective equipment, as well as safe work practice development, training, and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.7 Entanglement

Potential for injury due to entanglement was identified for all four phases of the Project (site preparation, construction, operations and site closure). Working near moving machinery with drives, gears and moving and rotating parts, presents a hazard for employees and/or their clothing or body parts to become entangled and cause significant injury or even fatality. Mitigation strategies include policies and programs to cover emergency response, guarding and lockout procedures, and hygiene and housekeeping at the workplace, as well as safe work practice development and training.

5.1.8 Exposure to Hazardous Materials

Potential for injury or illness due to exposure to hazardous materials was identified for the site preparation, construction and operations phases of the Project. Workers at the Project will potentially be exposed to two materials which are designated substances in Ontario: silica and lead. Exposure to silica and lead has been shown to cause illness and disease in workers. Workers may also be exposed to other hazardous materials such as adhesives, corrosive chemicals and solvents, which can also cause illness, injury or disease. Mitigation strategies include policies and programs to cover designated substances, emergency response, hazardous atmosphere control, hygiene and housekeeping in the workplace, operation of vehicles and heavy equipment, use of personal protective equipment and workplace

hazardous materials information system (WHMIS), as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.9 Exposure to Hot Surfaces

Potential for injury or illness due to exposure to hot surfaces was identified for the construction and operations phase of the Project. A concrete batch plant will be operated on site and installed during the construction phase. The concrete batching process involves potential for worker exposure to hot surfaces. Additionally, operations in the assay laboratory will involve the use of high temperature procedures where workers will potentially be exposed to illness and injury through contact with hot surfaces. Heat can adversely affect workers through burns to the skin through direct contact with a hot surface as well as through radiant heat from ovens and furnaces (eye injury and disease). Mitigation strategies include policies and programs to cover ergonomics, fire safety planning, hygiene and housekeeping in the workplace, as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.10 Eye Injuries

Potential for eye injuries was identified for the site preparation, construction and operations phases of the Project. Drilling and blasting operations can present potential for exposure to flying debris if careful controls are not in place. Similarly chain saw and chipper operations present potential for exposure to flying debris which can cause eye injury. Mitigation strategies include policies and programs to cover emergency response and personal protective equipment use, as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.11 Fire and Explosion Hazards

Potential for injury due to fire and explosion hazards was identified for all four phases of the Project (site preparation, construction, operations and site closure). Any activities involving the use, transport or storage of explosive materials, fuels, or compressed gases, present a potential for injury or fatality due to accidental explosions and/or associated fires. During the operations phase of the Project the potential use of gyratory crushers present an additional explosion hazard related to steel ball explosions. Mitigation strategies include policies and programs for drilling and blasting activities, emergency response planning, explosives use, fire planning and fuel storage activities, as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.12 Injury From Flying Debris

Potential for injury due to hazards from flying debris was identified for all four phases of the Project (site preparation, construction, operations and site closure). Use of chain saws, chippers, milling equipment, grinders, conveyors, hoppers and bins, all present potential for injury or fatality due to flying debris. Mitigation strategies include policies and programs for drilling and blasting activities, emergency response planning, guarding and lockout procedures and personal protective equipment use, as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.13 Laceration/Amputation Hazard

Potential for laceration and/or amputation injuries was identified for all four phases of the Project (site preparation, construction, operations and site closure). Use of chain saws and chippers, maintenance of equipment and vehicles, drilling and blasting activities and operation of the concrete batch plant all present potential for injury or fatality to workers from laceration and/or amputation. Mitigation strategies

include policies and programs for emergency response planning and guarding and lockout procedures, as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.14 Musculoskeletal Disease and Injury

Potential for injury due to musculoskeletal hazards was identified for all four phases of the Project (site preparation, construction, operations and site closure). Musculoskeletal disease and injury includes disease or injury to muscles, tendons and nerves. It is associated with work patterns that include fixed or constrained body positions, continual repetition of movement, forces concentrated on small parts of the body (e.g. hand or wrist), and/or a pace of work that does not allow for sufficient recovery between movements. Musculoskeletal disease and injury hazards would typically be associated with work involving the operation of heavy equipment, hand tools, drilling rigs and materials handling. Mitigation strategies include policies and programs for ergonomics strategies and operation of vehicles and heavy equipment, as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.15 Noise Exposure

Potential for injury and illness due to noise exposure was identified for all four phases of the Project (site preparation, construction, operations and site closure). Noise exposure is one of the most common and widespread health hazards in construction and mining and is responsible for noise induced hearing loss (NIHL) for workers. Examples of activities at the Project that can create a potential for exposure of workers to elevated sound levels are blasting, drilling, heavy vehicle operation, crushing, screening, loading and unloading, material transfer and belt/motor operation. Mitigation strategies include policies and programs to address noise control and the use of personal protective equipment as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.16 Slip and Fall Hazard

Potential for injury due to slip and fall hazards was identified for all four phases of the Project (site preparation, construction, operations and site closure). Falls of person continues to be one of the major causes or serious injury in both the mining and construction sectors. Examples of activities at the Project that can expose workers to slip and fall hazards are working on heavy equipment, working at heights and near openings in the ground and equipment, and working and travelling on wet and/or uneven surfaces. Mitigation strategies include policies and programs to address emergency response planning, guarding and lockout procedures, hygiene and housekeeping at the workplace, and operation of vehicles and heavy equipment, as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.1.17 Vehicle/Worker Contact

Potential for injury or fatality due to vehicle/worker contact hazards was identified for all four phases of the Project (site preparation, construction, operations and site closure). Included in this hazard are collisions of vehicles with workers and other vehicles, crushing incidents, tire change out hazards and other vehicle maintenance activities as well as roll over, tipping and loss of brakes. Accidents involving vehicle and worker contact have consistently been among the leading causes of serious injuries and fatalities related to mining. Mitigation strategies include policies and programs to address emergency response and planning and operation of vehicles and heavy equipment, as well as safe work practice development, training programs and clearly defined roles and responsibilities for all workplace parties including contractors.

5.2 Health and Safety Program Elements

Individual action plan elements were combined to produce an outline for a proposed health and safety program for the Project. The proposed health and safety program also includes key components that are standard to any functioning program and while these components are not specifically identified as part of the action plans they are vital to the successful implementation of the program. Key components are discussed below.

5.2.1 Health and Safety Policy

Every company in Ontario must have a written health and safety policy. The policy is a statement expressing senior management's active commitment to health and safety (Section 3.5). It should be broad enough to cover all aspects of the company's activities.

5.2.2 Roles and Responsibilities

The detailed listing of responsibilities for every company employee lies at the heart of the successful safety program. Individual responsibilities must be clearly stated for every level of employee including management and subcontractors.

The roles and responsibilities must be outlined to:

- define scope and substance,
- meet the requirements of the Occupational Health and Safety Act, and
- emphasize the importance of each party meeting its responsibilities.

It is also important to spell out any special responsibilities for a person assigned to coordinate health and safety functions (safety and training co-ordinator). All employees will then know exactly what their roles are in implementing the health and safety program.

The health and safety program for the Project should include roles and responsibilities for the following employee positions:

- senior management
- superintendents
- supervisors (forepersons)
- workers
- contractors
- subcontractors
- health and safety representatives
- joint health and safety committee
- worker trades committee (for phases 1, 2, and 4)

- certified members of joint health and safety committee
- safety and training co-ordinator

5.2.3 Policies, Programs and Rules

Policies and related programs will be necessary to implement rules to establish a safe workplace. The mining and construction regulations set out minimum requirements. Below are some guidelines for establishing rules.

- The joint health and safety committee should participate in formulating rules.
- Rules should be stated in clear, easily understood terms.
- Rules are best expressed in positive terms.
- Where the intent is not obvious, reasons for each rule should be stated.
- The rules must be enforceable.
- Rules should be provided in writing to all employees.
- Compliance with health and safety rules should be considered a condition of employment. Rules should be explained to new employees when they start work.

The attached proposed outline of health and safety program elements for the Project (see Appendix D) includes all of the recommended policies and procedures. Following is a discussion of some of the specific details that should be incorporated into selected policies and programs.

5.2.3.1 Emergency Response Policy and Program

Key to the safe operation of any mine is an emergency response policy and program. Every mine in Ontario is required to have an emergency response program under O. Reg. 854. Prompt action is required to control mine fires, explosions, entrapments, or inundations. An emergency response plan or program that outlines procedures and is prepared in advance is essential for effective containment of an emergency situation. The emergency response plan is the guide to all procedures and courses of action that should be followed in case of an on-site emergency. It should identify those responsible for taking action immediately after the discovery of and during the response to an emergency, as well as their respective duties. It should be applicable to all possible emergencies and will draw on many different sections of the final health and safety program for the Project including equipment, training and roles and responsibilities.

5.2.3.2 Vehicle and Heavy Equipment Policy and Program

A policy and program for the operation of vehicles and heavy equipment must be developed and must include every stage of the Project. Many significant hazards were identified as a result of the hazard assessment but hazards associated with the operation of heavy equipment were prominent for all phases of the Project. Mobile equipment at mine sites is historically the cause of most accidents and fatalities. Massive vehicles are commonplace in the mining industry and when combined with the environment's natural and man-made hazards the dangers of vehicle operation are magnified. Suggested measures in the action plan to deal with this significant hazard include:

- A policy and program for the operation of vehicles and heavy equipment for each stage of the Project.

- Clearly defined roles and responsibilities for all workplace parties including contractors.
- Safe Work Practices for the operation of vehicles and heavy equipment which include a provision for the use of proximity sensors. These sensors are a relatively new technology and they are useful to inform equipment operators about what may be around from pedestrians to objects or even an open stope.
- Strict training requirements for equipment operators (in accordance with provincial regulations).

5.2.3.3 Noise Control Policy and Program

A noise control policy and program will be required and it should be developed in consultation with a Certified Industrial Hygienist (CIH)/Registered Occupational Hygienist (ROH). A noise control policy and program will ideally be designed to employ engineering, administrative and personal controls. Site visits by or under the supervision of a CIH/ROH will be necessary to conduct sound level surveys under actual operating conditions at the Project.

5.2.3.4 Designated Substance Control Policy and Program

A designated substance control policy and program will be required and should be developed in consultation with a CIH/ROH. Silica is a designated substance and workers at the Project will be exposed to it during all phases of the Project because it is naturally occurring in the earth's crust which will be disturbed. Although the designated substance regulation (O. Reg. 490) will not apply in this case, the construction regulation and the mining regulation both apply and a designated substance control program should be put in place to ensure that workers receive the same standard of protection that would be in place under O. Reg. 490 (as per the general duty clause of the OHSA s. 25(2)).

The designated substance regulation (O. Reg. 490) will be directly applicable if any designated substances are used on site as part of the process (eg. use of lead as a fluxing agent in the assay lab).

5.2.3.5 Training Policy and Program

The training policy and program should ensure that all workers on site receive the required training as specified by O. Reg. 854, O. Reg. 213 and O. Reg. 572, as a minimum. The required training for a mining project includes core training for logging equipment operators during site preparation and core training requirements for mine employees at various positions and levels (refer to Appendix E for information on required training for construction and mining operations).

5.2.3.6 Posting Requirements Policy and Program

Mining and construction sites in Ontario are required to have specific materials posted and available to the workforce. A policy and procedure regarding posting requirements will specify what should be posted on site using the legislative requirements as a minimum (refer to Appendix E for information on requirements for posted materials at construction and mining operations).

5.2.4 Training

Training is crucial to establishing and maintaining standards for job practices and procedures.

Supervisor and worker training should include:

- requirements of the OHSA, mining and construction regulations, and WHMIS,
- specific requirements of the program,

- specific accident procedures,
- first aid, including CPR,
- use and maintenance of personal protective equipment,
- housekeeping procedures, and
- identification of specific occupational health hazards.

Training is indicated:

- when a new employee begins work,
- when an employee is assigned to a new job,
- whenever equipment, materials, processes, or procedures are new to the employee, or
- when inadequate performance is observed.

5.2.5 Safe Work Practices

Significant hazards identified during the hazard assessment will require safe work practices to be developed for the associated job description or activity. As part of the health and safety program, these practices must be explained in detail in writing and communicated to employees. A list of recommended safe work practices is provided as part of the proposed health and safety program elements in Appendix D. For each safe work practice, an applicable legislative reference is provided where available. If there is no specific legislative reference for the safe work practice, a best practice or guide is provided.

5.2.6 Evaluation Tools

An annual review of the health and safety program should be built into the system. The OHSA requires that the health and safety policy be reviewed on an annual basis and revised where necessary. An annual review of the program will provide, at a minimum, the information required to decide on necessary revisions to the policy.

Evaluation of the health and safety program should include a number of key activities.

- Review key elements in the program frequently.
- Identify weaknesses in the health and safety program.
- Ensure prompt follow-up to correct deficiencies.
- Compare accident and injury statistics with previous years and previous jobs.
- Ensure that evaluation is ongoing.
- Ensure that evaluation involves the site supervisor and safety representative or joint health and safety committee.

6.0 Conclusions

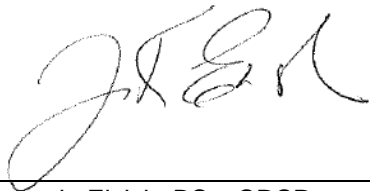
Based on the hazard assessment completed for the Project the following conclusions are presented:

- Seventeen potential significant worker safety hazards were identified for the Project.
- A comprehensive health and safety program will mitigate the identified significant hazards.
- A health and safety program, especially one for a mine site, is a constantly evolving entity and it will be necessary to monitor the performance of the program and make changes as necessary.

7.0 Closure

Respectfully submitted by:

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Appendix A: References



Following is a list of sources used to identify potential worker HS issues in every phase of the Project. Included are materials used to review industry standards, basic operating procedures and industry accident records and materials specific to Marathon PGM.

Canadian Centre for Occupational Health and Safety (CCOHS), website and publications

Canadian Handbook on Health Impact Assessment, Health Canada

Infrastructure Health and Safety Association website and publications (formerly Construction Safety Association)

Marathon PGM Corporation Project Description, February 2010 (Marathon PGM in association with Ecometrix Incorporated and True Grit Consulting Ltd.).

Marathon PGM Corporation - Updated Feasibility Study for the Marathon PGM-Cu Project, Marathon, Ontario, Canada, November 2009 (Marathon PGM in association with Micon International Ltd.)

Ministry of Labour (MOL) website and publications

Ministry of Northern Development and Mines website and publications

OHS Canada, website and publications

Safe at Work Ontario, Construction Sector Plan 2009-2010, Ontario Ministry of Labour

Safe at Work Ontario, Construction Sector Plan 2010-2011, Ontario Ministry of Labour

Safe at Work Ontario, Industrial Sector Plan 2009-2010, Ontario Ministry of Labour

Safe at Work Ontario, Industrial Sector Plan 2010-2011, Ontario Ministry of Labour

Safe at Work Ontario, Mining Sector Plan 2009-2010, Ontario Ministry of Labour

Safe at Work Ontario, Mining Sector Plan 2010-2011, Ontario Ministry of Labour

Stillwater Mining Company Corporate Safety Policy

Stillwater Mining Company Safety Governance

Stillwater Mining Company website

Workplace Safety and Insurance Board (WSIB) (Ontario) website and publications

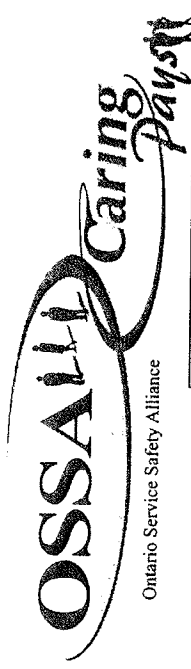
Workplace Safety North website and publications (formerly Mines and Aggregates Safety and Health Association) (including serious accident/incident bulletins).



Appendix B:
Completed Hazard Assessment Worksheets

NOTE: Hazard Assessment method is based on the Ontario Service Safety Alliance (OSSA) Workplace Hazard Analysis Form (included).

Workplace Hazard Analysis Form



INSTRUCTIONS

STEP 1: Complete this form --columns A -- H. Print clearly. Use additional forms if necessary. Refer to Hazard Analysis Resource Guide for definitions, completed examples and additional information. Refer to back of form for the instructions on completing columns C -- G.

STEP 2: Determine the Control(s) for the hazard and complete the Controls Action Plan. Refer to the Hazard Control Resource Guide. Attach Controls Action Plan to this form. (For Workplace Specific Hazard Certification Training, use the Action Plan at the end of each Hazard Training Module.)

☐ Attach Controls Action Plan

Recognize

A – Work Process, Work Area or Job List either a process (ex. shipping), a work area (ex. kitchen) or a job (ex. cashier). Do your homework – look at history, reports, documentation, talk to employees, etc.	B – Potential Hazard/Accident Description Ask yourself – What could happen while doing this job? Ex. fall, cut, burn, struck by object, workplace illness, strain, etc. Identify the potential hazard or accident. A hazard is something with the potential to cause harm or injury. Consider all contributing factors (PEMEP): People, Equipment, Materials, Environment, Process.

Assess

Risk Evaluation (See back of form)					Control	
C	D	E	F	G	Current Controls	
Exposure (1 - 6)	Occurrence (1 - 6)	Probability (A - E)	Consequences (1 - 5)	Risk Rating (H - M - L)	H	
					Identify things in place now which control, eliminate or reduce, the exposure to the hazard -- such as guards, procedures, checklists, training, signs, personal protective equipment, etc. To complete Step 2: Determine Controls - Action Plan -- refer to the Hazard Control Resource Guide.	

Location/Dept.: _____ Completed by: _____ Date: _____

Assessment of Risk: Columns C – G

Columns C & D - Exposure & Occurrence: Select the description (1-6) below that best matches the frequency of exposure and likelihood of occurrence of the hazard.

C. Likelihood of Exposure	D. Likelihood of Occurrence
1 – Continuous	1 – Very likely (has happened/is expected)
2 – Frequent (daily)	2 – Likely (probable - it could happen)
3 – Occasional (once per week)	3 – Rare (seldom but possible)
4 – Unusual (once per month)	4 – Very rare (very seldom but possible)
5 – Rare (few per year)	5 – Very unlikely (slight possibility)
6 – Very rare (yearly or less)	6 – Practically impossible

Exposure (1-6) + Occurrence (1-6)=Probability (A-E)

Column E - Probability is the combination of likelihood of exposure and the likelihood of occurrence. Locate the number (1-6) down the left side of the chart that describes the likelihood of exposure of the hazard. Locate the number that describes the likelihood of occurrence across the top of the chart. The box where they meet (A-E) is the probability rating.

Likelihood of Occurrence

	1	2	3	4	5	6
1	A	A	B	C	C	D
2	A	B	B	C	D	D
3	B	B	C	D	D	D
4	B	C	C	D	D	E
5	C	C	D	D	E	E
6	C	D	D	E	E	E

Likelihood of Exposure

Column F - Determination of Risk is the combination of probability of an injury/illness and the potential consequences if it should occur e.g. loss to people, property or environment. Select the description (1-5) below, that best matches the consequences, if an accident should happen involving the hazard.

E. Probability	F. Consequences
A – common or repeating occurrence	1 – fatality or permanent disability, significant loss
B – known to occur, or "it has happened"	2 – serious injury or illness w/lost time or other loss
C – could occur, or "I've heard of it happening"	3 – moderate injury or illness w/ lost time, or other loss.
D – not likely to occur	4 – minor injury or illness without lost time, or other loss
E – practically impossible	5 – no injury or illness, lost time or other loss

Probability + Consequences= Determination of Risk (1-25)

Probability

	A	B	C	D	E
1	1	2	4	7	11
2	3	5	8	12	16
3	6	9	13	17	20
4	10	14	18	21	23
5	15	19	22	24	25

Consequences

Column G - Risk Rating is the number where the Probability letter meets the Consequences number, on the above chart. The Risk Rating (H, M, L) helps determine the priority for determining controls.

HIGH = 1 – 6

Serious or significant hazard -- a high priority for immediate controls or elimination.

MEDIUM = 7 – 15

Moderate hazard – medium priority for controls as soon as possible.

LOW = 16 – 25

Minor hazard -- lower priority for controls after higher priorities.

Recognize

Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE 1 - Site Preparation							
heavy equipment operation	collision with pedestrians	2	2	B	1	High	O.Reg 213 s.67-69, O.Reg 851 s. 20, O. Reg. 854 s. 105 - 110, 185,
heavy equipment operation	collision with other equipment	2	2	B	1	High	O.Reg 213 s.67-69, O.Reg 851 s. 20, O. Reg. 854 s. 11.2, 105 - 110, 116, 185
heavy equipment operation	noise exposure for operators and by-standers	2	2	B	1	High	O. Reg 851 s.139 (3)
heavy equipment operation	silica exposure for operators and by-standers	2	2	B	1	High	O. Reg 213 s.59, , Occ H&S Act (OSHA) s. 25(2), 30, O. Reg. 490
heavy equipment operation	fire-hazard - hot equipment in contact with brush and other materials	2	2	B	1	High	O.Reg 213 s. 52(1)(2a), O. Reg. 854 s. 41, 105
heavy equipment operation	slip and fall from machine	2	2	B	2	High	O.Reg 213 s. 98, O.Reg 854 s. 47-54
heavy equipment operation	vehicle/equipment tipping or rolling	2	2	B	1	High	O.Reg 213 s.67-69, O.Reg 851 s. 20, O. Reg. 854 s. 11.2, 105 - 110, 116, 119, 185
felling trees	crushing of equipment and people	2	2	B	1	High	O. Reg 851 s. 104 - 106, 108, 109, O.Reg 854 s. 11.2
felling trees	backlash with trees and other vegetation	2	2	B	1	High	O. Reg 851 s. 104 - 106, 108, 109, O.Reg 854 s. 11.2
felling trees	working at heights and associated falls	3	3	C	1	High	O. Reg 851 s. 110 - 111, O. Reg. 854 s. 14, 94
Skidder operations	collision of load with equipment or pedestrian	2	2	B	2	High	O.Reg 851 s. 112, O. Reg. 854 s. 11.2, 110
Skidder operations	dropping load on equipment or people	3	2	B	2	High	O.Reg 851 s. 112, O. Reg. 854 s. 110, 118

1. 1 (continuous exposure) to 6 (very rare)

2. 1 (very likely) to 6 (practically impossible)

3. A (common) to E (practically impossible)

4. 1 (fatality or permanent disability) to 5 (no injury, illness or other loss)

5. High = Significant Hazard

Recognize

Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE 1 - Site Preparation							
Skidder operations	upending or overturning machine due to load and swing	1	1	A	2	High	O.Reg 851 s. 112, O. Reg. 854 s. 11.2, 118
logging trucks	rolling vehicle, collision with equipment or pedestrians	1	2	A	1	High	O.Reg 851 s. 113 - 115, O. Reg. 854 s. 105 - 110, 118, 119
logging trucks	unsecure load falling damaging property or injuring people	2	2	B	1	High	O.Reg 851 s. 116, O. Reg. 854 s. 110, 118
chain saw operation	laceration and/or amputation hazard for operator	2	2	B	2	High	O. Reg 213 s. 112, O.Reg 851 s. 39
chain saw operation	eye injury for operator and by-standers	2	2	B	1	High	O. Reg 213 s. 112, O.Reg 851 s. 39, O.Reg 854 s. 12
equipment maintenance	hazards assoc. with tire change out, filling,	3	2	B	1	High	O. Reg 213 s.93, 110, 111, O.Reg 572,).Reg 854 s. 107 (4)(5)
equipment maintenance	hazards assoc. with entrapment by moving gears, machinery	3	2	B	2	High	O. Reg 213 s.93, O. Reg. 854 s. 185, 193, 196, 159 (3)
equipment maintenance	working at heights and associated falls (large heavy equipment eg. Euclid trucks)	3	2	B	2	High	O.Reg 213 s. 141, 137, 138
equipment maintenance	moving parts while working on vehicle causing entrapment or lacerations	4	3	C	2	Medium	O.Reg 851 s. 74 - 76, O.Reg 572, O.Reg 213 s. 93, O.Reg 854 s. 185, 193, 196
equipment maintenance	too much weight for jack causing collapse of hoist or jack	3	3	C	1	High	O.Reg 213 s. 110, 111
equipment maintenance	release of fuel or other contaminants to environment	1	1	A	5	Medium	O. Reg. 854 s. 42-43, 266-270
fuel storage	fire hazard	1	2	A	1	High	O.Reg 217, TSSA. O. Reg. 854 s. 42-43, 120, O. reg. 213 s. 43

1. 1 (continuous exposure) to 6 (very rare)

2. 1 (very likely) to 6 (practically impossible)

3. A (common) to E (practically impossible)

4. 1 (fatality or permanent disability) to 5 (no injury, illness or other loss)

5. High = Significant Hazard

Recognize

Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE 1 - Site Preparation							
chipper operation	entrapment hazard	2	2	B	1	High	O.Reg 851 s. 26, O. Reg. 854 s. 11.2, 159(3), 185, 193, 196
chipper operation	laceration and/or amputation hazard for operator	2	2	B	1	High	O. Reg 851 s. 26, O. Reg. 854 s. 11.2, 159(3), 185, 193, 196, O.Reg 213 s. 93,
chipper operation	noise exposure for operators and by-standers	2	1	A	1	High	O. Reg 851 s. 139
chipper operation	potential hazard from flying debris for operators and by-standers	2	1	A	2	High	O. Reg 851 s. 26, O. Reg. 854 s. 11.2, 12
excavating	potential cave in and suffocation hazard	3	1	B	1	High	O.Reg 213 Part III, O. Reg. 854 s. 11, 26, 27, 61, 84, 88, 93
excavating	drowning hazards (water accumulation as pit is dug)	2	2	B	1	High	O.Reg 213 s. 230, O. reg. 851 s. 86, O. Reg. 854 s. 18, 59, 90
working near water	drowning hazards (bridge construction for access roads)	2	2	B	1	High	O.reg 851 s. 86, O.Reg 213s230, 26, 27
sewage/waste transport and disposal	exposure to biohazards	3	2	B	3	Medium	O. Reg 347
Drilling and blasting, use of actuated fastening tools	shrapnel and debris injuring operator	1	2	A	3	High	O.Reg 213 s. 117, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and blasting, use of actuated fastening tools	barrel obstructed or defective tool causing injury during firing	3	1	B	2	High	O.Reg 213 s. 118, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and blasting, use of actuated fastening tools	too heavy a charge for material causing damage to work and possible by-standers and operator	3	2	B	1	High	O.Reg 213 s. 119 (2) (3), O. Reg. 854 s. 93, Parts VI and VIII
Drilling and blasting, use of actuated fastening tools	mis-use of tool by untrained personnel	4	2	C	1	High	O.Reg 213 s. 117, 120, O. Reg. 854 s. 11.2, 93, Parts VI and VIII

1. 1 (continuous exposure) to 6 (very rare)

2. 1 (very likely) to 6 (practically impossible)

3. A (common) to E (practically impossible)

4. 1 (fatality or permanent disability) to 5 (no injury, illness or other loss)

5. High = Significant Hazard

Recognize**Risk Evaluation**

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE 1 - Site Preparation							
Drilling and Blasting	cable breaking and slashing operators	3	3	C	2	Medium	O. Reg 213 s. 22 - 23, O.Reg 854 s. 201
Drilling and Blasting	entanglement of clothing and hair	3	3	C	3	Medium	O. Reg 213 s. 21 - 23, O.Reg 854 s. 11.2, Parts VI and VIII
Drilling and Blasting	injury from boom or augers	1	2	A	3	High	O.Reg 213 s. 21 - 23, O.Reg 854 s. 11.2, Parts VI and VIII
Drilling and Blasting	drilling into previous boreholes with explosives causing explosion	1	2	A	1	High	O. Reg 213 s. 204, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and Blasting	early detonation/no detonation	1	2	A	1	High	O. Reg 213 s. 205 - 206, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and Blasting	silica exposure	1	1	A	2	High	O. reg 213 s. 59, O. Reg. 490, O. Reg. 854 s. 266-270
Drilling and Blasting	noise exposure for operators and by-standers	1	1	A	2	High	O. Reg. 851 s. 139
Transporting explosives	fire/explosion hazard	1	3	B	1	High	O. Reg 213 s. 318, O. Reg. 854 Parts VI and VIII
Storing explosives	fire/explosion hazard	1	3	B	1	High	O. Reg 213 s. 120 (1), 121, O. Reg. 854 Parts VI and VIII
general construction/clearing work	Working in heat or cold	2	2	B	3	Medium	
general construction/clearing work	encounters with wildlife	2	2	B	1	High	OSHA S. 25(2)

1. 1 (continuous exposure) to 6 (very rare)

2. 1 (very likely) to 6 (practically impossible)

3. A (common) to E (practically impossible)

4. 1 (fatality or permanent disability) to 5 (no injury, illness or other loss)

5. High = Significant Hazard

Recognize

Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE II - Site Construction							
heavy equipment operation	collision with pedestrian	2	2	B	1	High	O.Reg 213 s.67-69, O.Reg 851 s. 20, O. Reg. 854 s. 105-110, 185
heavy equipment operation	collision with other equipment	2	2	B	1	High	O.Reg 213 s.67-69, O.Reg 851 s. 20, O. Reg. 854 s. 11.2, 105-110, 116, 185
heavy equipment operation	noise exposure for operators and by standers	2	2	B	1	High	O.Reg 851 s. 139
heavy equipment operation	silica exposure for operators and by-standers	2	2	B	1	High	O. Reg 213 s.59, , Occ H&S Act (OSHA) s. 25(2), 30, O. Reg. 490
heavy equipment operation	fire hazard - hot equipment in contact with brush and other materials	2	2	B	3	Medium	O. Reg 213 s. 52 - 56, O. Reg. 854 s. 41, 105
heavy equipment operation	slip and fall from machine	2	2	B	2	High	O.Reg 213 s. 98, O.Reg s. 47-54
heavy equipment operation	vehicle/equipment tipping or rolling	2	2	B	1	High	O.Reg 213 s.67-69, O.Reg 851 s. 20, O. Reg. 854 s. 11.2, 105-110, 119, 116, 185
equipment maintenance	hazard assoc. with tire change out, filling	3	2	B	1	High	O. Reg 213 s. 93, 110, 111, O.Reg 854 s. 107(4)(5)
equipment maintenance	hazards with entanglement by moving gears, machinery	3	2	B	2	High	O. Reg 213 s.93, O. Reg. 854 s. 185, 193, 196, O.Reg 851 s. 74-76
equipment maintenance	working at heights and associated falls	3	3	C	1	High	O. Reg. 854 s. 14, 94,
equipment maintenance	moving parts while working on vehicle causing entrainment or lacerations	4	3	C	2	Medium	O.Reg 851 s. 74 - 76, O.Reg 572, O. Reg 213 s. 92, O.Reg 854 s. 185, 193, 196
equipment maintenance	too much weight for jack causing collapse of hoist or jack	3	3	C	1	High	O.Reg 213 s.110, 111

1. 1 (continuous exposure) to 6 (very rare)

2. 1 (very likely) to 6 (practically impossible)

3. A (common) to E (practically impossible)

4. 1 (fatality or permanent disability) to 5 (no injury, illness or other loss)

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Recognize

Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE II - Site Construction							
equipment maintenance	release of fuel or other contaminants to environment	1	1	A	5	Medium	O.Reg 854 s. 266-270, 42 - 43, 120
fuel storage	fire hazard	1	2	A	1	High	O.Reg 217, TSSA. O. Reg. 854 s. 42 - 43, 1120 O. Reg. 213 s. 43
fuel storage	release of fuel or other contaminants to environment	1	1	A	5	Medium	O.Reg 854 s. 266-270, 42 - 43, 120
excavating	potential cave-ins and suffocation hazard	3	1	B	1	High	O.Reg 213 Part III, O. Reg. 854 s. 11, 26, 27, 61, 84, 88, 93
excavating	drowning hazards (water accumulation as pit is dug)	2	2	B	1	High	O.Reg 213 s. 230, O. reg. 851 s. 86, O. Reg. 854 s. 18, 59, 90
working near water	drowning hazards (water accumulation as pit is dug)	2	2	B	1	High	O.Reg 851 s. 86, O.Reg 213 s. 26, 27, 23, O.Reg 854 s. 18, 59, 90
sewage/waste transport and disposal	exposure to biohazards	3	2	B	3	Medium	O.Reg 347
Drilling and blasting, use of actuated fastening tools	shrapnel and debris injuring operator	1	2	A	3	High	O.Reg 213 s. 117, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and blasting, use of actuated fastening tools	barrel obstructed or defective tool causing injury during firing	3	1	B	2	High	O.Reg 213 s. 118, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and blasting, use of actuated fastening tools	too heavy a charge for material causing damage to work and possible by-standers and operator	3	2	B	1	High	O.Reg 213 s. 119 (2) (3), O. Reg. 854 s. 93, Parts VI and VIII
Drilling and blasting, use of actuated fastening tools	mis-use of tool by untrained personnel	4	2	C	1	High	O.Reg 213 s. 117, 120, O. Reg. 854 s. 11.2, 93, Parts VI and VIII
Drilling and Blasting	cable breaking and slashing operators	3	3	C	2	Medium	O. Reg 213 s. 22 - 23, O.Reg 854 s. 201

1. 1 (continuous exposure) to 6 (very rare)

2. 1 (very likely) to 6 (practically impossible)

3. A (common) to E (practically impossible)

4. 1 (fatality or permanent disability) to 5 (no injury, illness or other loss)

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Recognize

Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE II - Site Construction							
Drilling and Blasting	entanglement of clothing and hair	3	3	C	3	Medium	O. Reg 213 s. 21 - 23, O.Reg 854 s. 11.2, Parts VI and VIII
Drilling and Blasting	injury from boom or augers	1	2	A	3	High	O.Reg 213 s. 117, 120, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and Blasting	drilling into previous boreholes with explosives causing explosion	1	2	A	1	High	O. Reg 213 s. 204, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and Blasting	early detonation/no detonation	1	2	A	1	High	O. Reg 213 s. 205 - 206, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and Blasting	silica exposure	1	1	A	2	High	O. reg 213 s. 59, O. Reg. 490, O. Reg. 854 s. 266-270
Drilling and Blasting	noise exposure for operators and by-standers	1	1	A	2	High	O. Reg. 851 s. 139
Transporting explosives	fire/explosion hazard	1	3	B	1	High	O. Reg 213 s. 120 (1), 121, O. Reg. 854 Parts VI and VIII
Storing explosives	fire/explosion hazard	1	3	B	1	High	O. Reg 213 s. 120 (1), 121, O. Reg. 854 Parts VI and VIII
electrical work	electrocution hazard	1	2	A	3	High	O.Reg 854 Part VI, O.Reg 572, O.Reg 213 s. 181
electrical work	working at heights and associated falls	3	2	B	2	High	O. Reg. 854 s. 14, 94, O. Reg. 213 s. 78-84, 125-136
electrical work, material handling	musculoskeletal disorder (MSD)	1	1	A	3	High	O.Reg 213 s. 37, OHSA s. 25(2)(h)
electrical work	fall from ladder due to improper use, improper ladder, or defective equipment	2	2	B	2	High	O. Reg. 854 s. 14, 94, O. Reg. 213 s. 78-84, 47-54

1. 1 (continuous exposure) to 6 (very rare)

2. 1 (very likely) to 6 (practically impossible)

3. A (common) to E (practically impossible)

4. 1 (fatality or permanent disability) to 5 (no injury, illness or other loss)

5. High = Significant Hazard

Recognize

Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE II - Site Construction							
plumbing - materials handling	Musculoskeletal disorder (MSD)	1	1	A	3	High	O.Reg 213 s. 37
plumbing	electrical hazards	1	3	B	2	High	O.Reg 854 s. VI, O.Reg 213 s. 181-195, O.Reg 5
plumbing	contact with chemical (adhesive/caustic/acidic) plumbing pastes	1	1	A	3	High	O.Reg 860
general construction	working in heat/cold	2	2	B	3	Medium	
general construction	encounters with wildlife	2	2	B	3	Medium	
general construction - materials handling	Musculoskeletal disorder (MSD)	1	1	A	3	High	O.Reg 213 s. 37
general construction - hand tools	Musculoskeletal disorder (MSD), traumatic injury	1	1	A	3	High	OSHA s. 25(2), O.Reg 854 s. 11
general construction	working at heights and associated falls	3	2	B	2	High	O. Reg. 854 s. 14, 94, O. Reg. 213 s. 78-84, 125-136
general construction	trip/fall hazards associated with housekeeping	1	1	A	3	Medium	O.Reg 213 s. 37
general construction	Fall from ladder due to improper use, improper ladder, or defective equipment	2	2	B	2	High	O.Reg 213 s. 78 - 84, O.Reg 854 s. 47-54
Transporting Dangerous Goods	Vehicular accident causing release of dangerous goods to environment or explosion	1	1	A	4	Medium	O.Reg 347, Spills Action Centre
Storing explosive	explosion/fire	1	2	A	1	High	O. Reg 213 s. 120 (1), 121, O. Reg. 854 Parts VI and VIII

1. 1 (continuous exposure) to 6 (very rare)

2. 1 (very likely) to 6 (practically impossible)

3. A (common) to E (practically impossible)

4. 1 (fatality or permanent disability) to 5 (no injury, illness or other loss)

5. High = Significant Hazard

Recognize

Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE II - Site Construction							
Storing Compressed Gas	explosion/fire hazard	1	2	A	1	High	O.Reg 213 s. 42, O. Reg. 854 s. 194
Storing Compressed Gas	exposure to gas	1	2	A	1	High	O.Reg 213 s. 42, O. Reg. 854 s. 194
Construction Site Traffic	collision with person or equipment	1	1	A	1	High	O.Reg 213 s. 67 - 69, O.Reg 854 s. 105 - 110
Working on roads and Hwy	collision with pedestrians, vehicles, workers and equipment, while directing traffic	1	1	A	1	High	O.Reg 213 s. 67 - 69
Transporting Equipment	collision with pedestrians, vehicles, workers and equipment	1	1	A	1	High	O.Reg 213 s. 67 - 69
Transporting Equipment	loose load falling off causing injury to property or person	1	1	A	1	High	O.Reg 851 s. 116, O.Reg 854 s.110
Crane Operation	collision of load with by-standers or other equipment	1	1	A	1	High	O. Reg. 854 s. 201, O.Reg 572
Crane Operation	crushing person or equipment	1	1	A	1	High	O. Reg. 854 s. 201, O.Reg 572
Dewatering	drowning hazards	1	1	A	1	High	O.Reg 213 s. 26, 27, 230 O. Reg. 854 s. 18, 59, 60
Dewatering	slip and fall on wet surfaces	1	1	A	3	High	O.HSA s. 25(2)
Welding and Cutting	exposure to welding fumes and gas	1	2	A	3	High	O. Reg. 854 s. 194
Welding and Cutting	dropping cylinder (possible explosion)	2	1	A	3	High	O. Reg. 854 s. 194

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Recognize**Risk Evaluation**

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE II - Site Construction							
	leaving valve open	2	1	A	2	High	O. Reg. 854 s. 194
Welding and Cutting	fire hazard	2	2	B	3	Medium	O. Reg. 854 s. 194
Welding and Cutting	confined space entry hazards	2	3	B	1	High	O.Reg 854 Part XII
Concrete batch plant maintenance and cleaning	potential exposure to caustic, silica, chromium and other aggregate additives	2	2	B	2	High	O. Reg. 860, O. Reg. 833
Concrete batch plant operation	working at heights and associated falls	2	2	B	2	High	O. Reg. 854, O. Reg. 213
Concrete batch plant operation	musculoskeletal disorder, traumatic injury	2	2	B	2	High	OSHA s. 25(2), O.Reg 854 s. 11
Concrete batch plant operation	noise exposure	2	2	B	2	High	O. Reg. 851 s. 139
Concrete batch plant operation	hot surfaces	2	2	B	2	High	O. Reg. 213, O. Reg. 854
Concrete batch plant operation	potential to be struck by pieces of the equipment, entanglement, pinch points	2	2	B	2	High	O. Reg. 213, O. Reg. 854
Concrete batch plant operation	potential for cuts, lacerations, amputations, fracture, eye injury	2	2	B	1	High	O. Reg. 213, O. Reg. 854

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Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE III - Mine operation							
Open Pits	falls from ledges or benches	1	1	A	2	High	O. Reg 213 s. 26, 27, O. Reg. 854 s. 18, 88-94, 118, 119
Open Pits	falling rocks and debris from above	1	1	A	2	High	O.Reg 854 s.93
Open Pits	cave in	1	2	A	1	High	O.Reg 854 s.88 - 93
Open Pits	water infiltration causing collapse or cave in	1	1	A	1	High	O. Reg 213 s. 230
Open Pits	fall from ladder due to improper use, improper ladder, or defective equipment	2	2	B	2	High	O.Reg 213 s. 78 - 84, O. Reg. 854 s. 47
Drilling and Blasting	cable breaking and slashing operators	3	3	C	2	Medium	O. Reg 213 s. 22 - 23, O.Reg 854 s. 201
Drilling and Blasting	entanglement of clothing and hair	3	3	C	3	Medium	O. Reg 213 s. 21 - 23, O.Reg 854 s. 11.2, Parts VI and VIII
Drilling and Blasting	injury from boom or augers	1	2	A	3	High	O.Reg 213 s. 117, 120, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and Blasting	drilling into previous boreholes with explosives causing explosion	1	2	A	1	High	O. Reg 213 s. 204, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and Blasting	early detonation/no detonation	1	2	A	1	High	O. Reg 213 s. 205 - 206, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and Blasting	flying debris	3	2	B	1	High	O.Reg 213 s. 117, O. Reg. 854 s. 93, Parts VI and VIII
Drilling and Blasting	silica exposure	1	1	A	2	High	O. reg 213 s. 59, O. Reg. 490, O. Reg. 854 s. 266-270

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Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE III - Mine operation							
Drilling and Blasting	cave in of face on adjacent workers	1	3	B	1	High	O.Reg 854 s. 93, Parts VI and VIII
Transporting explosives	fire/explosion hazard	1	3	B	1	High	O. Reg 213 s. 120 (1), 121, O. Reg. 854 Parts VI and VIII
Storing explosives	fire/explosion hazard	1	3	B	1	High	O. Reg 213 s. 120 (1), 121, O. Reg. 854 Parts VI and VIII
heavy mobile equipment	collision with pedestrians and other equipment	2	2	B	1	High	O.Reg 213 s.67(4)(5), O.Reg 851 s. 20, O.Reg 854 s.11.2, 105 - 110, 116, 185
heavy mobile equipment	noise exposure	2	2	B	1	High	O.Reg 851 s.139
vehicle maintenance	working at heights and associated falls	3	2	B	2	High	O.Reg 851 s 110 - 111, O.Reg 854 s. 74-76
vehicle maintenance	equipment falling from heights (hoist break)	3	2	B	2	High	O.Reg 213 s.93, O.Reg 854 s. 201
vehicle maintenance	tires change outs/repair/filling	3	2	B	1	High	O.Reg 213 s. 93, 95
vehicle maintenance	contact with oils and lubricants	2	2	B	4	Medium	O.Reg 213 s.93, 110, 111, O.Reg 854 s. 107 (4)(5)
Road maintenance	collision with pedestrians and other equipment	2	2	B	1	High	O.Reg 213 s. 67, 69, O.Reg 854 s. 105 - 110
Milling processes, conveyors	entanglement of clothing and hair with conveyor systems	3	2	B	2	High	O.Reg 851 s. 33, O. reg. 854 s. 185, 193, 196
Milling processes, conveyors	pinching	3	2	B	3	Medium	

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Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE III - Mine operation							
Milling processes, conveyors	overhead falling debris from conveyors	1	1	A	2	High	O.Reg 854 s. 196
Milling processes, conveyors	injury to workers during start-up of conveyors	3	2	B	3	Medium	O.Reg 854 s. 196, 185
Milling processes, gyratory crusher	entanglement of clothing and hair with gyratory crusher	3	2	B	2	High	O. Reg. 854 s. 185, 193, 196
Milling processes, gyratory crusher	steel ball explosion	1	1	A	1	High	O. Reg. 854 s. 7-10, 185
Milling processes, tumbling mill or dryer	injury to worker during loading or unloading	2	2	B	2	High	O.Reg 851 s.32
Milling processes, chemicals	chemical contact, inhalation, ingestion, absorption	1	2	A	2	High	O. Reg. 854 s. 266-270. O. Reg. 860
Milling processes, housekeeping	slip and fall hazards	2	2	B	4	Medium	
Milling processes, general machinery and equipment	flying debris from emptying bins on to conveyors and or feeders	1	1	A	4	Medium	
Milling processes, general machinery and equipment	unauthorized, misuse of operating controls for equipment and machinery	6	5	E	1	Medium	
Milling processes, general machinery and equipment	moving parts of equipment in workers space	1	2	A	4	Medium	
Milling processes, general machinery and equipment	falling into machines or equipment (sumps, hopper etc.)	1	3	B	1	High	O.Reg 854 s.59, 185
Milling processes, general machinery and equipment, grinding and crushing	flying debris	1	1	A	4	Medium	

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Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE III - Mine operation							
Milling processes, general machinery and equipment, grinding and crushing	dust and or silica exposure	1	1	A	1	High	O. Reg. 490, O. Reg. 854 s. 266-270
Milling processes, working around stock piles	avalanche causing engulfment and suffocation	2	4	C	1	High	O.Reg 854 s.61, 84, 88, 93
Milling processes, maintenance	moving gears/parts while working on machinery	2	2	B	1	High	O.Reg 854 s. 185
Milling processes, maintenance	temporarily elevated parts or structures collapsing on workers	5	4	D	1	Medium	
Milling processes, maintenance	maintenance completed incorrectly causing equipment damage or injury to worker	5	6	E	1	Medium	
Milling processes, maintenance (hopper, stock piles etc.)	falling debris, load dump, material removal causing possible suffocation	3	2	B	1	High	O.Reg 854 s. 185, 193, 196
Milling processes, maintenance (gas lines, pipelines, steam lines, drum	spill/leak causing hazardous atmosphere, fire or explosion, wet surfaces	5	3	D	1	Medium	
Laboratory	puncture or cut caused by faulty glassware	3	1	B	4	Medium	
Laboratory	chemical contact, inhalation, ingestion, absorption, including lead and silica	1	1	A	1	High	O. Reg. 854 s. 266-270. O. Reg. 860, O. Reg. 490
loading and hauling	falling debris during loading and hauling, striking bystanders	3	2	B	2	High	O.Reg 851 s. 113, O.Reg 854 s. 110
loading and hauling	silica exposure	2	2	B	1	High	O. Reg. 490, O. Reg. 854 s. 266-270
Waste hauling	exposure to biohazards	3	2	B	3	Medium	

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Recognize**Risk Evaluation**

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure ¹	Occurrence ²	Probability ³	Consequences ⁴	Risk Rating ⁵	Legal Requirements
PHASE III - Mine operation							
Waste hauling	encounters with wildlife at landfills	2	2	B	3	Medium	
Rail Systems	collision of rail cars with other cars, vehicles, and pedestrians	2	2	B	1	High	O. Reg. 854 Part IX
Rail Systems	track dismounts	3	2	B	1	High	O. Reg. 854 Part IX
Rail Systems	exposure to noxious gasses	2	2	B	3	Medium	O. Reg. 854 Part IX
Laboratory - assay furnaces	heat and ultra violet exposure	2	2	B	3	Medium	
Laboratory - sample prep	noise exposure	2	2	B	2	High	O.Reg 851 s.139
Heavy mobile equipment - operation	vehicle equipment tipping/rolling/faulty brakes	1	1	A	1	High	O.Reg 854 s. 119, 118, 105 - 110
Maintenance Activities - emptying tanks	confined space entry	3	2	B	1	High	O.Reg 854 Part XII

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Recognize

Risk Evaluation

Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure	Occurrence	Probability	Consequences	Risk Rating	Legal Requirements
PHASE IV - Site Decommissioning							
Transporting equipment to and from site	collision with pedestrian, equipment, vehicles	2	2	B	1	High	O.Reg 213 s. 67 - 69, O.Reg 851 s.20, O.Reg 854 105 - 110, 185
Installing fencing - material handling	Musculoskeletal disorders (MSD)	2	2	B	2	High	O.Reg 213 s. 37
Installing fencing - hand tool use	Musculoskeletal disorders (MSD), and traumatic injury	2	2	B	2	High	O.HSA s. 25(2), O.Reg 854 s. 11
Fence installation at open pits	working near water, drowning hazard	3	3	C	1	High	O.Reg 851 s. 86, O.Reg 213 s. 26, 27, 23, O.Reg 854 s. 18, 59, 50
working near/in open pits and area	instability of open pit material, cave in and collapse	3	3	C	1	High	O.Reg 213 s.226-227, O.Reg 854 s. 88-93
Building demolition	falling debris	2	2	B	2	High	O.Reg 854 s. 93
Building demolition	dust exposure	2	2	B	3	Medium	O.Reg 213 s.59
Building demolition - materials handling	Musculoskeletal disorders (MSD)	2	2	B	2	High	O.Reg 213 s. 37
Building demolition - use of hand tools	MSD and traumatic injuries	2	2	B	2	High	O.HSA s. 25(2), O.Reg 854 s. 11
Building demolition - use of scaffolds	falling hazard	2	2	B	1	High	O.Reg 213 s. 125 - 136
Building demolition - dismantling process equipment	moving gears/parts while working on machinery	2	2	B	1	High	O.Reg 854 s.185
Building demolition - dismantling hopper, stock piles etc	falling debris, load dump, material removal causing possible suffocation	2	2	B	1	High	O.Reg 854 s.61, 84, 88, 93

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Risk Evaluation


Work Process, Work Area or Job	Potential Hazard/Accident Description	Exposure	Occurrence	Probability	Consequences	Risk Rating	Legal Requirements
PHASE IV - Site Decommissioning							
Building demolition - dismantling process equipment lines (fuel and mobile equipment)	spill/leak causing hazardous atmosphere, fire or explosion, wet surfaces	2	3	B	1	High	O.Reg 854 s. 56, 266 - 270, 42-43
house keeping	collision with pedestrian, equipment, vehicles	2	2	B	1	High	O.Reg 213 s.67-69, O.Reg 851 s. 20, O.Reg 854 s. 11.2, 116, 185, 105 - 110
loading debris	trip and fall hazards	2	2	B	2	High	O.Reg 213 s.37, O. Reg. 854 s.54
hauling waste debris	falling debris	2	3	B	2	High	O.Reg 854 s. 110, 196
removal of power lines and electrical equipment	collision with pedestrian, equipment, vehicles	2	2	B	1	High	O.Reg 213 s.67, O.Reg 851 s. 20, O.Reg 854 s. 11.2, 116, 185, 105 - 110
removal of power lines and electrical equipment	electrocution hazard	2	2	B	1	High	O.Reg 854 Part VI, O.Reg 572
removal of power lines and electrical equipment	working at heights and associated falls	2	2	B	2	High	O.Reg 213 s.3, O.Reg 213 s. 125 - 136
removal of power lines and electrical equipment	working on ladders	2	2	B	3	Medium	
restoration vegetation use of heavy equipment	collision with pedestrian, equipment, vehicles	2	2	B	1	High	O.Reg 213 s.67(4)(5), O.Reg 851 s. 20
underground lines	spill/leak causing hazardous atmosphere, fire or explosion	2	3	B	1	High	O.Reg 854 s. 41-43, 281

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Appendix C:
MOL Guideline for Preparation of a Corporate Health and Safety Policy Statement

Appendix A: How to Prepare an Occupational Health and Safety Policy | A Guide to the Occupational Health and Safety Act

- Revised: June 2002
- Content last reviewed: June 2009
- PDF Version  [313 KB / 88 pages | Download Adobe Reader]

How to Prepare an Occupational Health and Safety Policy

A policy statement by senior management is an effective way to communicate the organization's commitment to worker health and safety. Senior management attitudes, relationships between management and labour, community interests and technology all combine to play a part in determining how health and safety are viewed and addressed in the workplace.

Workplaces with exceptional health and safety records have established a clear line of responsibility for correcting health and safety concerns. This action enhances working relationships between management and labour.

Under the Occupational Health and Safety Act, an employer must prepare and review at least annually a written occupational health and safety policy, and must develop and maintain a program to implement that policy [section 25(2)(j)].

A clear, concise policy statement should reflect management's commitment, support and attitude to the health and safety program for the protection of workers. This statement should be signed by the highest level of management at the workplace, thus indicating senior management commitment.

An example of a good health and safety policy follows:

Health and Safety Policy

Management of [] is vitally interested in the health and safety of its employees. Protection of employees from injury or occupational disease is a major continuing objective. [] will make every effort to provide a safe, healthy work environment. All supervisors and workers must be dedicated to the continuing objective of reducing risk of injury.

[] as employer, is ultimately responsible for worker health and safety. As president (or owner/operator, chairperson, chief executive officer, etc.) of [], I give you my personal promise that every reasonable precaution will be taken for the protection of workers.

Supervisors will be held accountable for the health and safety of workers under their supervision. Supervisors are responsible to ensure that machinery and equipment are safe and that workers work in compliance with established safe work practices and procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.

Every worker must protect his or her own health and safety by working in compliance with the law and with safe work practices and procedures established by the company.

It is in the best interest of all parties to consider health and safety in every activity. Commitment to health and safety must form an integral part of this organization, from the president to the workers.

Signed: []
President

In addition to preparing a health and safety policy like the one above, the employer must also have a program in place to implement that policy. This program will vary, depending upon the hazards encountered in a particular workplace. Program elements may include all or some of the following:

1. Worker training (e.g., new employees, WHMIS, new job procedures)
2. Workplace inspections and hazard analysis
3. Analysis of the accidents and illnesses occurring at the workplace
4. A health and safety budget
5. A formal means of communication to address promptly the concerns of workers
6. Confined space entry procedure
7. Lock-out procedure
8. Machine guarding
9. Material-handling practices and procedures
10. Maintenance and repairs
11. Housekeeping
12. Protective equipment
13. Emergency procedures
14. First-aid and rescue procedures
15. Electrical safety
16. Fire prevention
17. Engineering controls (e.g., ventilation)

This is not a comprehensive list.

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Appendix D:
Proposed Health and Safety Program Elements – SCI Marathon PGM-Cu

Proposed Health and Safety Program Elements for SCI Marathon PGM-Cu

- 1. Health and Safety Policy** (Occupational Health and Safety Act of Ontario (OHSA) – Part III)
- 2. Roles and Responsibilities for Workplace Parties** (OHSA – Part II)
 - a. Senior management
 - b. Superintendents
 - c. Supervisors (forepersons)
 - d. Workers
 - e. Contractors
 - f. Subcontractors
 - g. Health and Safety Representative
 - h. Joint Health and Safety Committee
 - i. Worker Trades Committee (for phases 1, 2 and 4)
 - j. Certified member of Joint Health and Safety Committee
 - k. Safety and Training Co-ordinator
- 3. Emergency Response Policy and Program** (O. Reg. 854 sections 41, 281) (Emergency Response Planning for Construction Projects, MOL)
- 4. Posted Health and Safety Materials Policy and Program** (O. Reg. 854, OHSA, O. Reg. 213) (list of posting requirements attached in Appendix E)
- 5. Health and Safety Program Annual Review/Audit Policy and Program** (OHSA – Part III)
- 6. Discipline Policy and Program**
- 7. Joint Health and Safety Committee Policy and Program** (OHSA – Part II)
- 8. Hazard Recognition Programs**
- 9. Refusal to Work Policy and Program** (OHSA – Part V)
- 10. Violence Prevention Policy and Program** (OHSA – Part III.0.1)
- 11. First Aid Policy and Program** (O. Reg. 1101)
- 12. Reporting and Investigating Accidents Policy and Program** (OHSA – Part VII)
- 13. Fire Plan Policy and Program** (O. Reg. 854 section 41)
- 14. Explosives Policy and Program** (O. Reg. 854 Part VI)
- 15. Drilling and Blasting Policy and Program** (O. Reg. 854 section 93 and Parts VI and VIII)
- 16. Inspections Policy and Program** (O. Reg. 854 sections 105-110, 201)
- 17. WHMIS Policy and Program** (O. Reg. 860)
- 18. Training Policy and Program** (O. Reg. 854 s. 11, 201; O. Reg. 572; O. Reg. 213)
- 19. Personal Protective Equipment Policy and Program** (O. Reg. 854 section 12)
- 20. Noise Control Policy and Program** (O. Reg. 851 section 139)
- 21. Designated Substance Control Policy and Program** (O. Reg. 490; O. Reg. 854 sections 266-270)
- 22. Hazardous Atmosphere Control Policy and Program** (O. Reg. 854 sections 266-270)
- 23. Confined Space Policy and Program** (O. Reg. 854 Part XII)
- 24. Fuel Storage Policy and Program** (O. Reg. 854 sections 42, 43, 120; O. Reg. 213 section 43)
- 25. Guarding and Lockout Policy and Program** (O. Reg. 854 sections 159(3), 185, 193, 196)
- 26. Fencing/barricades Policy and Program** (O. Reg. 854 sections 18, 59, 90)
- 27. Operation of Vehicles and Heavy Equipment Policy and Program** (O. Reg. 854 sections 11, 105-108, 110, 112, 116-119, 185)
- 28. Excavating and Trenching Policy and Program** (O. Reg. 854 section 88)
- 29. Ergonomics Policy and Program** (OHSA Sections (25)(2)(d), (25) (2)(h) and O. Reg. 851 Section (45))
- 30. Hygiene and Housekeeping Policy and Program** (O. Reg. 854 sections 276-281)

31. Working Near Water Policy and Program (O. Reg. 213 sections 26, 27, 230; O. Reg. 854 sections 18, 59, 90)

32. Working Alone and/or in Remote Locations Policy and Program (OHSA Section (25)(h))

33. Safe Work Procedures

- a. Working around heavy equipment (O. Reg. 854 sections 185).
- b. Traffic protection/control planning (O. Reg. 213 sections 67-69).
- c. Heavy Equipment operation (special requirements for equipment operators clearing at a mine site, per O. Reg. 851 sections 105, 106, O. Reg. 854 section 11.2 – module 600100).
- d. Safe work procedure for vehicle checks (reg. 854, section 119 (10))
- e. Working at heights (O. Reg. 854 sections 14, 94).
- f. Chainsaw operation (O. Reg. 213 section 112).
- g. Tire change-out (O. Reg. 213 section 110, 111).
- h. Working around stockpiles (O. Reg. 854 section 61, 84, 93) (see OHS Canada article re: combination of truck and dozer)
- i. Working in and around open pits (O. Reg. 854 sections 18, 88-94, 118, 119).
- j. Working in/around/near water (O. Reg. 213 section 26, 27, 230; O. Reg. 854 sections 18, 59, 90)
- k. Excavating/trenching (O. Reg. 213 Part III, O. Reg. 854 section 88)
- l. Working with compressed gases (O. Reg. 854 section 194, O. Reg. 213 section 42)
- m. Safe work procedure for ladders and scaffolding (O. Reg. 854 sections 47-54; O. Reg. 213 sections 125-136)
- n. Safe work procedure around electrical utilities (overhead and/or buried lines) and equipment (O. Reg. 854 Part VII; O. Reg. 213 sections 181-195; O. Reg. 851 section 60)
- o. Overhead crane operation (O. Reg. 854 section 195).
- p. Working around conveyors (O. Reg. 854 section 196).
- q. Welding and cutting (O. Reg. 854 section 194).
- r. Grinding (O. Reg. 854 section 193).

**Appendix E:
Additional Information**

**Ontario Ministry of Labour – Guidelines for the Forestry Pit and Road Construction
Equipment Operator Training Program #600100**

**Ontario Regulation 251/01 made under the Occupational Health and Safety Act, amending
Regulation 854, Mines and Mining Plants**

**Required Training – Construction Health and Safety, Construction Safety Association
Ontario**

Posting Requirements in the Mining Regulation, Ontario Ministry of Labour



Effective April 01, 2009

**GUIDELINES FOR THE FORESTRY PIT AND ROAD CONSTRUCTION EQUIPMENT
OPERATOR TRAINING PROGRAM #600100**

The Forestry Pit and Road Construction Equipment Operator (FPRCEO) Training Program #600100 is intended for all forestry workers and their supervisors engaged in a pit as part of a logging operation. (This program is optional for road construction workers who never work in a pit area)

The Forestry Pit and Road Construction Equipment Operator Training Program is enforced by the MOL under the Mining and Mining Plants Regulation (Ontario Regulation. 854) of the *Occupational Health and Safety Act (OHSA)*. It is a forestry equivalent to the Surface Miner Program #770210, which is the mandatory program for Surface Mining Operations. If you are unsure whether or not you are engaged in the activity of forestry surface mine operation (pit), please consult your local Ministry of Labour Office for clarification.

The Forestry Pit and Road Construction Equipment Operator Training Program is organized for accreditation of supervisors and certification of operators under the following programs:

SUPERVISOR TRAINING PROGRAM #600101

U6353	Protect Self and Others
U6354	Protect the Environment
U6355	Perform Operational Checks and Safety Procedures

HYDRAULIC EXCAVATOR OPERATOR TRAINING PROGRAM #600102

U6353	Protect Self and Others
U6354	Protect the Environment
U6355	Perform Operational Checks and Safety Procedures
U6356	Operate Hydraulic Excavator

BULLDOZER OPERATOR TRAINING PROGRAM #600103

U6353	Protect Self and Others
U6354	Protect the Environment
U6355	Perform Operational Checks and Safety Procedures
U6357	Operate Bulldozer

FRONT END LOADER OPERATOR TRAINING PROGRAM #600104

U6353	Protect Self and Others
U6354	Protect the Environment
U6355	Perform Operational Checks and Safety Procedures
U6358	Operate Front End Loader

HAULAGE TRUCK OPERATOR TRAINING PROGRAM #600105

U6353	Protect Self and Others
U6354	Protect the Environment
U6355	Perform Operational Checks and Safety Procedures
U6359	Operate Haulage Truck

GRADER OPERATOR TRAINING PROGRAM #600106

U6353	Protect Self and Others
U6354	Protect the Environment
U6355	Perform Operational Checks and Safety Procedures
U6360	Operate Grader

FUEL TRUCK OPERATOR TRAINING PROGRAM #600107

U5353	Protect Self and Others
U6354	Protect the Environment
U6355	Perform Operational Checks and Safety Procedures
U6361	Operate Fuel Truck

SERVICE TRUCK OPERATOR TRAINING PROGRAM #600108

U6353	Protect Self and Others
U6354	Protect the Environment
U6355	Perform Operational Checks and Safety Procedures
U6362	Operate Service Truck

Optional

Any worker in any of the above programs that uses hand tools including electric, hydraulic or pneumatic power tools or flame cutting equipment in a forestry pit operation shall take the appropriate hand tool module(s) noted below.

U6363	Operate Hand and Electrical Power Tools
U6364	Operate Hand and Pneumatic/Hydraulic Power Tools
U6365	Operate Flame Cutting Equipment

A worker is only required to successfully complete the common modules: Protect Self and Others; Protect the Environment; and Perform Operational Checks and Safety Procedures once for any of the Forestry Pit and Road Construction Equipment Operator programs.

A worker, who has successfully completed the common modules in the Mechanical Harvesting Equipment Operator Training Program prior to March 1, 2003, is required to be evaluated for the skills: U6353.17 - Identify and follow emergency procedures, U6353.21 - Lift and carry materials and/or supplies and U6353.22 - Work in elevated areas of the common modules in the Forestry Pits and Road Construction Equipment Operator Training Program.

SIGNING AUTHORITY

The Signing Authority is the person designated by the employer and authorized by the MTCU who will be accountable and responsible for the quality of training, the maintenance of training records, and determining the competency of company workers for modular accreditation or certification.

The Signing Authority application procedure will be as follows:

1. Initial contact between the employer and the local MTCU Apprenticeship Office.
2. The local MTCU staff will review training needs, the Signing Authority application process and program requirements with the employer representative.
3. The employer will forward the completed Signing Authority application to the local MTCU Apprenticeship Office.
4. If an application is not approved, the local MTCU Apprenticeship Office will inform the employer and where appropriate, request modifications or additional information.
5. On approval:
 - a. MTCU will issue an authorization letter, Signing Authority Certificate and number to the employer for the Forestry Pit and Road Construction Equipment Operator Program #600100; and
 - b. the local MTCU Apprenticeship Office will issue the employer a copy of the Modular Training Standard Book, On-Site Orientation/Training Checklists and forms for the modular program, and Signing Authority Guidelines.

OPERATOR TRAINING PROCESS

The Forestry Pit and Road Construction Equipment Operator Training Program #600100 has a mandatory classroom training, that shall be taken prior to operating the equipment.

An approved trainer shall provide the classroom training. (*Note: A list of approved trainers can be found on the OFSWA website (www.ofswa.on.ca) or through the local MTCU Apprenticeship Office.*)

1. The mandatory classroom training consists of the MHEO/FPRCEO Common Core Training Program. It is the same as the Mechanical Harvesting Equipment Operator (MHEO) classroom training providing it includes the three (3) supplement skills: U6353.17 - Identify and follow emergency procedures, U6353.21 - Lift and carry materials and/or supplies and U6353.22 - Work in elevated areas added after March 1, 2003. Workers who have taken the MHEO classroom training prior to March 1, 2003 shall receive training in the three (3) supplement skills.
2. The training will expire after one year if the person has not registered in the FPRCEO or MHEO programs.

3. To register in the program, a worker shall:
 - a. first take the mandatory classroom training,
 - b. receive the mandatory machine specific on-site orientation, and
 - c. sign the Modular Training Application form for the machine specific program.
4. To register a worker in the program, the Signing Authority shall complete a MTCU Modular Training Application form for each trainee and submit it to the local MTCU Apprenticeship Office.

NOTE: Trainees shall not operate equipment until the registration requirements are met.

5. The on-the-job training shall be conducted by a certified forestry pit and road construction equipment operator or a supervisor.
6. The Modular Training Standards book is signed by the worker, the Supervisor, the Approved Trainer/Evaluator and the Signing Authority verifying successful completion of each modular training standard and remains the property of the worker.
7. At the end of the on-the-job training there will be an evaluation of the operator trainee through an on-site demonstration of skills. The evaluation shall be conducted by a Approved Trainer/Evaluator.

Note: Workers shall complete training and evaluation for certification in a machine-specific program within one year of registration in the program. The Approved Trainer/Evaluator, Signing Authority and trainee shall sign and maintain a completed Training Unit Completion Form in the Modular Training Standards book

8. The Signing Authority shall complete, sign and submit to MTCU the Modular Training Report to verify that the worker has successfully completed the on-site demonstration of skills.
9. A wallet card will be issued by MTCU upon successful completion of the program requirements.

SUPERVISOR TRAINING AND ACCREDITATION

1. A supervisor engaged in direct on-site supervision of forestry pit and road construction equipment operations will need to successfully complete an MTCU approved MHEO/FPRCEO Mandatory Classroom Training Program, which includes written, oral or on-site evaluation before performing supervisory work related to the specified pieces of forestry pit and road construction equipment.

2. To register and obtain accreditation in the program for a supervisor, the Signing Authority shall complete and submit a Modular Training Application Form and Modular Training Report under program #600101 upon successful completion of the mandatory classroom training.
3. A transcript will be issued upon successful completion of the program #600101 requirements.
4. Supervisors who have the MHEO Supervisor Accreditation under program #750025 are simply required to register in program #600101.
5. To register and obtain accreditation in the program for a supervisor, the Signing Authority shall complete an MTCU Modular Training Application form and Modular Training Report under Program# 750025

CERTIFIED EQUIPMENT OPERATORS BECOMING SUPERVISORS

1. To become a supervisor, an equipment operator certified in the FPRCEO or MHEO Training Programs will require a transcript under the Supervisor Program #600101.
2. To register and obtain accreditation in the program for an equipment operator who wants to become a supervisor, the Signing Authority shall complete and submit a Modular Training Application Form and Modular Training Report under program #600101.
3. A transcript will be issued upon successful completion of the program #600101 requirements.

APPROVED TRAINERS/EVALUATORS

1. The Approved Trainer/Evaluator:
 - a. will conduct the mandatory classroom training for forestry pit and road construction equipment operators and supervisors utilizing an MTCU approved MHEO/FPRCEO Common Core Training Program;
 - b. will conduct evaluations of workers and supervisors for certification/accreditation; and
 - c. qualifications will include:
 - i. demonstrated knowledge and experience in related forestry pit and road construction operations;
 - ii. successful completion of an MTCU approved MHEO/FPRCEO Common Core Classroom Training Program;
 - iii. successful completion of an MTCU approved MHEO/FPRCEO Train the Trainer Program; and
 - iv. successful completion of a Generic Train-the-Trainer Program.

2. The Approved Evaluator:
 - a. will conduct evaluation of workers for accreditation or certification; and
 - b. his/her qualifications will include:
 - i. demonstrated knowledge and experience and minimum of five years of work experience in related forestry pit and road construction operations;
 - ii. successful completion of an MTCU approved MHEO/FPRCEO Common Core Classroom Training Program; and
 - iii. successful completion of an MTCU approved MHEO/FPRCEO Train-the-Trainer Programs.

MTCU APPROVED MHEO/FPRCEO COMMON CORE TRAINING PROGRAM

1. The Provincial Forestry Tripartite Committee will review and recommend approval of any submission of training program to MTCU.
2. The minimum program requirement will be based on the OFSWA MHEO/FPRCEO Common Core Classroom Training Program.

ONTARIO REGULATION 251/01

made under the

OCCUPATIONAL HEALTH AND SAFETY ACT

Made: June 20, 2001

Filed: June 25, 2001

Printed in *The Ontario Gazette*: July 14, 2001

Amending Reg. 854 of R.R.O. 1990
(Mines and Mining Plants)

Note: Since the end of 2000, Regulation 854 has been amended by Ontario Regulation 174/01. Previous amendments are listed in the Table of Regulations published in *The Ontario Gazette* dated January 20, 2001.

1. Regulation 854 of the Revised Regulations of Ontario, 1990 is amended by adding the following sections:

11.2 (1) Employers engaged in surface mine operations shall establish and maintain the following training programs:

1. Modular Training Standards — Surface Miner (Program #770210) Common Core Modules U5030, U5031, U5032.
2. Modular Training Standards — Surface Miner (Program #770210) Specialty Modules.

(2) Employers shall train workers in the common core modules described in subsection (1),

(a) by September 30, 2002 if the worker commenced employment on or before September 30, 2001; or

(b) within 12 months after commencing employment, if the worker commences employment after September 30, 2001.

(3) Subsection (2) does not apply if the worker successfully completed a program described in subsection (1) before being employed by the employer.

(4) A worker shall be trained in the appropriate common core modules before beginning training in a specialty module.

(5) A certificate of achievement showing that a worker has successfully completed a training program referred to in subsection (1), issued by the Ministry of Training, Colleges and Universities, is conclusive proof for the purposes of this section of the worker's successful completion of the program.

11.3 In accordance with the *Agreement on Internal Trade, 1995* and the *Protocols of Amendment*, a worker shall be deemed to hold a certificate referred to in subsection 11 (4), 11.1 (4) or 11.2 (5) if he or she has successfully completed equivalent training in another province or territory of Canada, as determined by the Director.

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REQUIRED TRAINING – CONSTRUCTION HEALTH AND SAFETY

Topic	Who?	What is required?	Legislation
Asbestos	Worker who works in a Type 1, Type 2, or Type 3 asbestos operation.	Instruction and training in hazards, hygiene, work practices, respirators, protective clothing.	Asbestos Regulation 278/05 section 19
	Worker who is involved in a Type 3 operation.	Asbestos Abatement Worker Training Program, approved by the Ministry of Training, Colleges, and Universities.	Asbestos Regulation 278/05 section 20.
	Supervisor who is involved in a Type 3 operation.	Asbestos Abatement Supervisor Training Program, approved by the Ministry of Training, Colleges, and Universities, OR equivalent training in another Canadian province or territory as determined by an MOL director.	Asbestos Regulation 278/05 section 20.
Certified Member	Members of Joint Health & Safety Committee: at least one representing constructor/employer and at least one representing workers	<ul style="list-style-type: none"> - "Construction Health & Safety Representative" - "Sector-Specific Certification" - "Simulated Hazard Analysis" (CSAO programs) 	<i>Occupational Health and Safety Act</i> , section 9(12)
Chainsaw	Workers who use a chainsaw.	Adequate training in the chainsaw's use.	Construction Regulation section 112 (1.1)
Compressed air	Worker who is appointed by employer as the superintendent of all work in compressed air at a project.	Competent person: knowledge, training, and experience to organize the work.	Construction Regulation section 336 (1)
	Worker who is subjected to compressed air.	Full instruction in hazards and safeguards (signed acknowledgement by worker).	Construction Regulation section 336 (2)
	Worker who is designated as lock tender by the superintendent at a project, and who attends to the controls of an air lock.	Competent worker: knowledge, training, and experience to perform the work.	Construction Regulation section 337 (1)
	Worker (at least one in addition to the lock tender) who can perform the duties of the lock tender in an emergency.	Competent worker.	Construction Regulation section 337 (3)
	Worker who is designated by superintendent to be in charge of the compressors for a work chamber and air lock.	Competent worker, AND either Hoisting Engineer certification (Trades Qualification & Apprenticeship Act) or Stationary Engineer certification (Operating Engineers Act).	Construction Regulation section 359 (1)

REQUIRED TRAINING – CONSTRUCTION HEALTH AND SAFETY

Topic	Who?	What is required?	Legislation
Confined spaces	Firefighter or gas technician who performs emergency work in a confined space.	Training to work safely in confined spaces.	Construction Regulation section 221.3 (2) (b)
	Worker who carries out an assessment of related hazards before a worker enters a confined space.	Competent worker.	Construction Regulation section 221.6 (1)
	Person who develops and implements the written plan for the confined space, including procedures for control of hazards.	Competent person.	Construction Regulation section 221.7 (1)
	Worker who enters a confined space or performs related work.	Adequate training to perform the work safely in accordance with the employer's written plan, including hazard recognition and safe work practices.	Construction Regulation section 221.8
	Person who, before each shift, verifies that the entry permit complies with the relevant plan.	Competent person.	Construction Regulation section 221.9 (3)
	Adequate number of persons who are available for immediate implementation of the on-site rescue procedures.	Training in on-site rescue procedures, first aid, CPR, and the use of rescue equipment in accordance with the employer's written plan.	Construction Regulation section 221.10
	Worker who inspects the rescue equipment as often as necessary to ensure it is in good working order.	Competent worker.	Construction Regulation section 221.11
Cranes, hoisting and rigging (continued on next page)	Worker who performs tests before and while a worker is in a confined space to ensure that acceptable atmospheric levels are maintained.	Competent worker.	Construction Regulation section 221.16 (1)
	Workers who operate a crane or similar hoisting device capable of raising, lowering, or moving material that weighs more than 7,260 kg.	Hoisting Engineer certification training under Trades Qualification & Apprenticeship Act.	Construction Regulation section 150 (1)
	Workers who operate a crane or similar hoisting device capable of raising, lowering, or moving material that weighs less than 7,260 kg.	Training in the safe operation of the crane or similar hoisting device (written proof).	Construction Regulation section 150 (2), (3)
	Worker who is designated by the professional engineer to inspect a crane to ensure structural integrity.	Competent worker.	Construction Regulation section 153 (8)
	Workers involved with the hoisting operation of a cable-supported platform, bucket, basket, etc. that is used as a workplace.	Adequate instructions about requirements, restrictions, hazards of the hoisting operation.	Construction Regulation section 153 (12)
	Worker who visually inspects the crane's structural elements and rigging for defects before each use.	Competent worker.	Construction Regulation section 153 (9)
	Worker who sets-up, assembles, extends, and dismantles a crane or similar hoisting device.	Competent worker.	Construction Regulation section 154 (1)

REQUIRED TRAINING – CONSTRUCTION HEALTH AND SAFETY

Topic	Who?	What is required?	Legislation
Cranes, hoisting and rigging (continued)	Worker who is designated by a professional engineer and who inspects structural elements and components of a tower crane before and after erection, before use, and after any repairs.	Competent worker.	Construction Regulation sections 158 (1) and 159 (1) (3)
	Worker who is designated as a signaller and who warns the operator each time equipment or load may approach the minimum distance when operating near an energized overhead electrical conductor.	Competent worker.	Construction Regulation section 187 (3)
	Worker who performs operational tests on the automatic limit switches and overload limit devices of a tower crane.	Competent worker.	Construction Regulation section 161 (1)
	Worker who visually inspects all cable used by a crane or similar hoisting device when in use (at least once a month).	Competent worker.	Construction Regulation section 170 (1)
Drowning protection	Workers (at least two) who shall be available to perform rescue operations, if a worker may drown.	Training to perform rescue operations.	Construction Regulation section 27 (2) (a)
Electrical hazards	Workers who connect, maintain, or modify electrical equipment or installations.	Electrician certification training under <i>Trades Qualification and Apprenticeship Act</i> , OR permission under the <i>Trades Qualification and Apprenticeship Act</i> or <i>Technical Standards Safety Act</i> .	Construction Regulation section 182 (1)
	Worker who is designated as a signaller and who warns the operator of a crane/similar hoisting device/backhoe/power shovel/other vehicle or equipment each time the equipment or load approaches the minimum distance from an energized overhead electrical conductor.	Competent worker.	Construction Regulation section 188 (8)
	Worker ensures that a circuit (300 to 600 volts) is not inadvertently energized while work is being done on or near electrical equipment/installation that has been disconnected but not locked out.	Competent worker	Construction Regulation section 190 (9) (b) (ii)
	Worker who can perform rescue operations, including CPR, and who can see a worker who is performing work on or near energized exposed parts of electrical equipment/installation.	Competent worker	Construction Regulation section 191 (8)
	Worker who may be exposed to the hazard of electrical shock or burn while performing work.	Training in the proper use, care, and storage of rubber gloves and leather protectors.	Construction Regulation section 193 (6)

REQUIRED TRAINING – CONSTRUCTION HEALTH AND SAFETY

Topic	Who?	What is required?	Legislation
Elevating work platform	<ul style="list-style-type: none"> Workers who will operate an elevating work platform for first time Workers who inspect an elevating work platform each day before use 	Oral and written instruction on the operation AND training in the operation of that class of elevating work platform, including a hands-on demonstration	Construction Regulation section 147 and 144 (3)
Equipment	Worker who inspects mechanically-powered vehicles, machines, tools and equipment (rated at greater than 10 hp)	Competent worker	Construction Regulation section 94 (1)
Explosives	Worker who is designated by the blasting employer to be in charge of the blasting operations	Competent worker	Construction Regulation section 196 (1)
	Worker who handles, transports, prepares, and uses explosives on a project	Competent worker	Construction Regulation section 197
Explosive-actuated fastening tool	Workers who use an explosive-actuated fastening tool	Adequate training in the tool's use (carry written proof)	Construction Regulation section 117 (1), (2)
Excavation	Person who supervises the removal of a support system for the walls of an excavation	Competent person	Construction Regulation section 239 (4)
Fall protection	Workers who use a fall protection system	Training in its use AND adequate oral and written instructions (written records)	Construction Regulation section 26.2 (1)
	Person who trains and gives adequate oral and written instructions to worker who uses a fall protection system	Competent person	Construction Regulation section 26.2 (1)
	Worker who inspects the travel-restraint system before each use	Competent worker	Construction Regulation section 26.4 (3)
	Worker who inspects the fall-restricting system before each use.	Competent worker.	Construction Regulation section 26.5 (2)
	Worker who inspects the fall-arrest system before each use.	Competent worker.	Construction Regulation section 26.6 (6)
	Worker who installs the safety net.	Competent worker.	Construction Regulation section 26.8 (2)
	Person who is under the supervision of professional engineer, and who inspects and tests installation of safety net before it is put in service.	Competent person.	Construction Regulation section 26.8 (3)
	Worker who is designated by a supervisor to inspect the horizontal lifeline system before each use.	Competent worker.	Construction Regulation section 26.9 (8) 5

REQUIRED TRAINING – CONSTRUCTION HEALTH AND SAFETY

Topic	Who?	What is required?	Legislation
Fire safety	Workers who may be required to use fire extinguishing equipment.	Training in its use.	Construction Regulation section 52 (1.1)
	Worker who inspects the fire extinguishers (at least once a month).	Competent worker.	Construction Regulation section 55
First aid	At least one worker for work crew of five or less.	"Emergency First Aid" training program.	First Aid Reg. 1101 sections 8 (2), 9 (2), and 10 (2)
	At least one worker for crew of five or more.	"Standard First Aid" training program.	
Formwork	Worker who is designated in writing by the professional engineer to inspect formwork/falsework before concrete placement.	Competent worker.	Construction Regulation section 89 (3)
Hazardous material	Workers who work with or in proximity to a controlled product.	"Workplace Hazardous Materials Information System" training program.	WHMIS Reg. 860 sections 6 & 7
Helicopter	Ground personnel including a signaller for a helicopter being used to hoist materials.	Competent worker.	Construction Regulation section 167 (3)
PPE	Workers who wear protective clothing or use personal protective equipment or devices.	Instruction and training in the care and use of the clothing, equipment, or device.	Construction Regulation section 21 (3)
Pipeline repair	Worker who carries out hot-tapping and boxing-in when repairing or altering a pipeline, under controlled conditions that provide for the protection of all persons.	Competent worker.	Construction Regulation section 48 (2)
Propane	Workers who use construction heaters and hand-held torches.	"Propane in Construction", CSAO training program, or applicable ROT (record of training).	Propane Storage, and Handling Reg. 211/01 sections 6 & 8
	Workers who use propane-fuelled roofing equipment.	"Propane in Roofing", CSAO program, or applicable ROT (record of training).	

REQUIRED TRAINING – CONSTRUCTION HEALTH AND SAFETY

Topic	Who?	What is required?	Legislation
Roofing	Worker who operates a hoist used on a roof.	Competent worker.	Construction Regulation section 209 (2)
	Worker who operates a hot tar or bitumen road tanker or kettle.	Competent worker.	Construction Regulation section 211 (1)
Scaffolds	Worker who is designated by the project supervisor and who inspects the scaffold before it is used.	Competent worker.	Construction Regulation section 130 (3)
	Worker who supervises the erection, alteration, and dismantling of a scaffold.	Competent worker.	Construction Regulation section 131
	Worker who inspects mechanically-powered suspended platform, suspended scaffold, or boatswain's chair, before use each day.	Competent worker.	Construction Regulation section 137 (11)
Signaller	Worker who is a signaller and who assists the operator of a vehicle, machine, equipment, shovel, backhoe, crane, or similar excavating machines and hoisting devices.	Competent worker AND - Adequate oral training in his or her duties - Adequate oral and written instructions, in a language that he or she understands.	Construction Regulation section 104 (3), (4), 106 (1), (1.5)
Supervision	Person who has been appointed a supervisor by the employer.	Competent person.	Occupational Health and Safety Act, section 25 (2) (c)
	Person who is the supervisor's assistant and who supervises the work in place of the supervisor.	Competent person.	Construction Regulation section 14 (2)
	Person who is appointed by the supervisor and who inspects the project in place of the supervisor.	Competent person.	Construction Regulation section 14 (3)
	Person who performs the necessary tests and observations for detection of hazardous conditions on a project.	Competent person.	Construction Regulation section 14 (5)
Traffic control	Worker who sets up or removes traffic control measures on a roadway or shoulder of a roadway.	Competent worker AND adequate oral and written instruction to set up or remove the traffic control measures, in a language the worker understands.	Construction Regulation section 67 (6)
	Worker who directs vehicular traffic.	Competent worker AND adequate oral and written instruction to direct vehicular traffic, including a description of the signals that are used, in a language the worker understands.	Construction Regulation section 69 (4)

REQUIRED TRAINING – CONSTRUCTION HEALTH AND SAFETY

Topic	Who?	What is required?	Legislation
Tunnels, shafts, caissons, and cofferdams	Workers (at least four) who are readily available to perform rescues of underground workers.	Training (30 days before tunneling begins) to perform rescues of underground workers.	Construction Regulation sections 265 (1) and 265 (5)
	Workers who perform underground rescue on project where tunnel and shaft have combined length exceeding forty-five metres (150 ft).	Training in the proper operation of the provided self-contained breathing apparatus.	Construction Regulation section 266
	Workers who are on a tunnel project.	Instruction in the proper use, care, maintenance, and limitations of their self-rescue respirator.	Construction Regulation section 268 (2)
	Person who is appointed by a Director, and who trains workers to perform underground rescue and to properly operate their self-contained breathing apparatus.	Competent person.	Construction Regulation sections 265 (3) and 266 (3)
	Person who inspects every self-contained breathing apparatus at least once a month, or as required by the manufacturer.	Competent person.	Construction Regulation section 266 (12)
	Worker who will give first aid at a shaft or tunnel project.	Competent worker.	Construction Regulation section 261
	Worker who is appointed by supervisor in charge of project and who operates a hoist in a hoistway or shaft.	Competent worker.	Construction Regulation section 291 (1)
	Worker who uses a device used for firing a charge.	Competent worker.	Construction Regulation section 325 (2)
Vehicle	Worker who tests the air and the mechanical ventilation for an underground workplace.	Competent worker.	Construction Regulation section 330 (2)
	Worker who operates a vehicle at a project.	Competence to operate the vehicle.	Construction Regulation section 96 (1)
	Person who instructs and supervises a worker while the worker is being trained in the operation of a vehicle.	Competent person.	Construction Regulation section 96 (2)
Window cleaning	Workers who use suspended scaffolds, boatswain's chairs or similar single-point suspension equipment while engaged in window cleaning.	Training in common core skills for safe use of suspended scaffolds, boatswain's chairs, and similar single-point suspension equipment.	Window Cleaning Regulation 859, section 45

POSTING REQUIREMENTS IN THE MINING REGULATIONS

WHAT MUST BE POSTED	REFERENCE	WHO MUST POST	WHERE									
			Workplace	Shaft House	Conspicuous Place	On Equipment	Magazine	Accessible to Operator	Mine Site	Hoist Room	Working Level	Landing Deck
Name, business address & business phone number of:	4	Employer	X		X							
Inspector	4 (a)	Employer	X		X							
Person in Charge	4 (b)	Employer	X		X							
Employer of workers	4 (c)	Employer	X		X							
Owner of Mine	4 (d)	Employer	X		X							
Fire procedures and alarm system in underground mine	25 (1)	Supervisor in charge of mine		X	X							
Fire procedures at surface mine or mining plant	41 (2)	Supervisor in charge of mine			X							
Names of trained workers in fire-fighting procedures	41 (3)	Supervisor in charge of mine			X							
Warning signs warning of repairs or hazards shall be posted on workplace, travelway, manway or other areas	68 (b)	Employer	X									
Warning signs indicating the danger or hazard and need to erect barriers to prevent access to area	84 (2) 4	Employer	X									
Maximum number of passengers on vehicle transporting workers posted in or on	110 (1) b	Employer				X						

POSTING REQUIREMENTS IN THE MINING REGULATIONS

WHAT MUST BE POSTED	REFERENCE	WHO MUST POST	WHERE									
			Workplace	Shaft House	Conspicuous Place	On Equipment	Magazine	Accessible to Operator	Mine Site	Hoist	Working Level	Landing Deck
Maximum speed and maximum load of vehicle transporting workers posted on vehicle	110 (6)	Employer			X	X						
Notice given to inspector, JHSC or H&S	123 (3)	Operator of Magazine					X					
Signs warning traffic of impending blast	141 (2)(b)(1)	Blaster			X							
Chart of procedures for use and operation of diesel powered equipment	183 (2)	Employer	X					X				
Professional Engineers written statement of elevators, location, maximum loading, designed and manufactured with appropriate engineering standards	186 (3)	Owner							X			
Maximum load of lifting device	192 (3)	Employer						X				
Load rating plate stating maximum load	195 (5)(c)	Employer				X						
List of active crane operators	195 (14)(b)	Employer	X									
Maximum number of persons or load weight on raise climber	197 (13)	Employer	X			X						

POSTING REQUIREMENTS IN THE MINING REGULATIONS

WHAT MUST BE POSTED	REFERENCE	WHO MUST POST	WHERE									
			Workplace	Shaft House	Conspicuous Place	On Equipment	Magazine	According to Operator	Mine Site	Hoist Room	Working Level	Landing Deck
Professional Engineers statement of location, maximum loading of persons and material and that conveyance has been designed and manufactured with appropriate engineering standard	204 (1)	Owner		X								
Protection procedures for operating intermediate shaft obstruction	210 (4)	Employer						X		X		
Basic code of signals and destination signs	236 (7)	Employer								X	X	X
Notice warning not to speak to hoist operator while hoist is in operation	242 (2)	Employer								X		
Signs warning persons that entry is prohibited	255 (1)(b)	Employer	X									
Signs indicating the sex posted on door of washrooms	276 (2)	Employer	X									
Results of testing for Radon Daughters posted for 14 days	289 (6)	Employer	X		X							
Description of work practices for workplace when airborne concentration of Radon Daughters exceed 0.1 WL	292 (3)	Employer	X		X							