

MINING INDUSTRY OVERVIEW

This chapter provides general information on mining practices typically conducted in Nova Scotia. It is intended to assist in the understanding of the general nature and origin of potential hazards associated with abandoned mine sites. To assist in understanding, a glossary of common mining terms is presented in Appendix A.

Mineral commodities can be grouped into three broad categories: metallic minerals, nonmetallic or industrial minerals, and solid energy fuels. Examples of metallic minerals include precious metals such as gold and base metals such as copper, lead and zinc. Nonmetallic and industrial minerals include asbestos, gypsum and limestone. Solid energy fuels include coal and peat. Minerals from all three groups have been produced at some time in Nova Scotia.

Mineral exploration activities are generally carried out prior to mining. These include mapping, prospecting and diamond drilling; however, exploration activities can also result in unsecured openings from trenching, adits, and shaft sinking.

If an exploration program identifies a sufficient quantity of mineralization which can be economically mined, mining activity generally follows. There are two basic mining methods - surface and underground.

Surface Mining

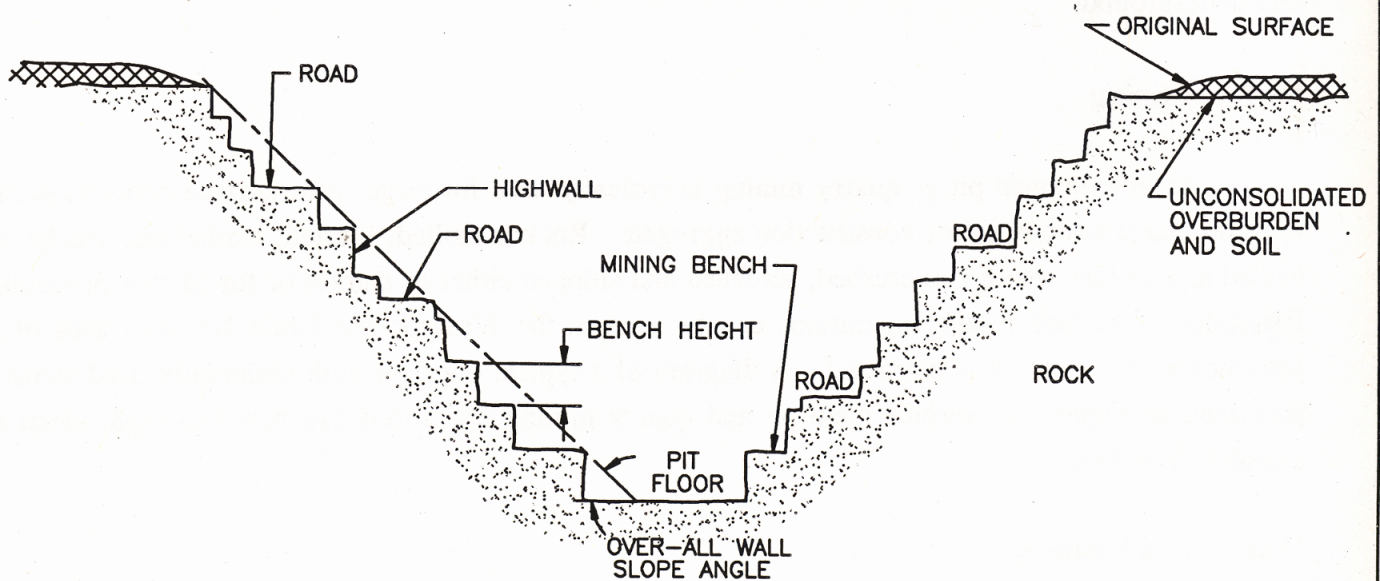
Surface or open pit or quarry mining is typically used for large, near-surface deposits such as gypsum and limestone or for construction aggregate. Rock is drilled, blasted, loaded into trucks, and hauled to a facility where it is crushed, screened and shipped either to market or for further processing. Examples of surface mining operations can be seen in the Windsor and Little Narrows area of the province where gypsum is extracted. A diagram of a typical open pit with commonly used terms, is presented in Figure 2. Surface open pit and quarry mining operations can result in high, steep and unstable rock faces.

Underground Mining

Underground mining methods are generally used when mineralization occurs deep beneath the surface. To access the ore body, remove ore, waste rock and provide ventilation, miners may excavate vertical shafts, raises, adits and inclined shafts, slopes or declines. Once the ore zone has been reached, horizontal tunnels called "drifts" and "crosscuts" are developed at various depths to access mining areas called "stopes". Ore and waste rock are removed from the stopes by mechanical equipment that may



Typical surface mining operation



Typical section through a surface mine

Figure 2

take it directly to the surface or transport it to a shaft where it is hoisted to the surface and sent to a processing facility, which may or may not be located on the mine site. Figure 3 illustrates the general components and common terms of an underground mine.

The majority of unsecured mine openings found in Nova Scotia result from gold exploration and mining activities, many of which date back to the late 1800s. Additionally, the recovery of coal from outcrops and near-surface seams, often without government approval and permits, has resulted in numerous unsecured, abandoned mine openings.

Because of the nature of the geology related to gold and coal deposits, abandoned mine openings in Nova Scotia tend to occur in clusters. If you locate one mine opening be aware of others that may exist in the area. In both historical gold and coal mining districts, there is often a string of openings that follow either the gold bearing veins or the coal seam outcrop.

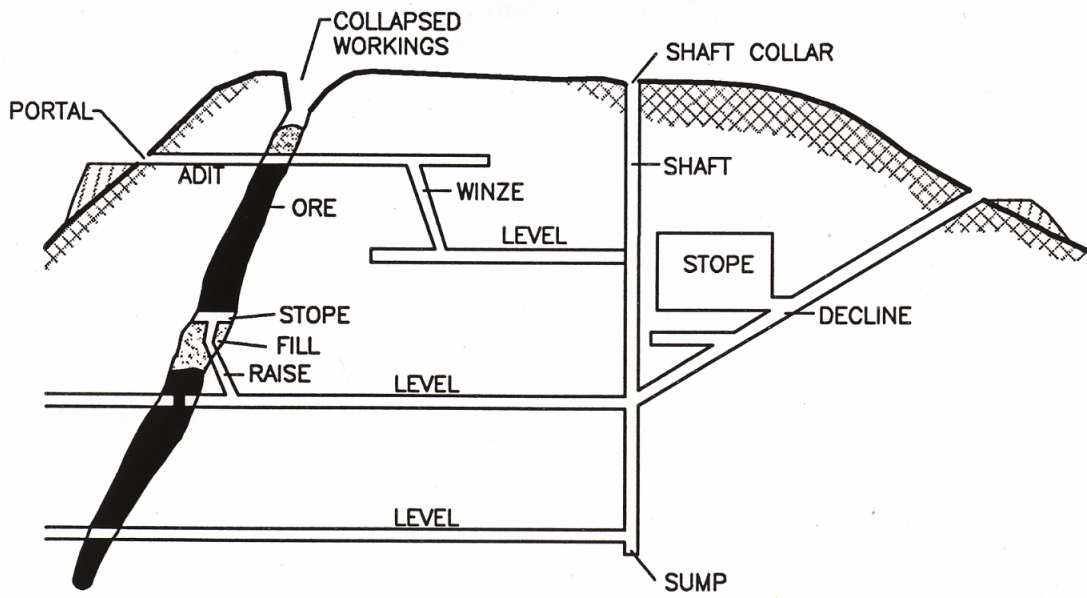
Many of these exploration and mining operations were never documented or recorded, and were simply abandoned according to the practice at that time, with little regard for public safety. These unsecured, abandoned mine openings now present numerous hazards.

New standards for public safety now demand the remediation of these hazards following exploration activities or closure of a mining operation.

• Notes •



Typical underground mining operation



Typical section through an underground mine
Figure 3