Freeze ring technology, which is a proven technology and has been utilized in 16 North American projects, has the advantage of cutting groundwater infiltration through the formation of an ice wall or curtain around the ore deposit. It drastically reduces the need to pump water out of mine areas leading to reduction of mine water treatment and discharge. It also alleviates the potential of aquifer draw down since groundwater would flow around the freeze curtain. Other advantages include working in all types of soil and groundwater conditions, it is less affected by power outages and it can be removed after mining is completed. Vertical conveyor systems, which are also proven technology and currently in use in several mines, have the advantage of being a continuous process, have lower power requirements and do not need in shaft infrastructure. Dense media separation is a proven metallurgical process that uses inert, environmentally friendly substances to separate the ore from waste material. The use of this technology also has the benefit of reducing the size of the processing facility which in turn means less of a mining footprint on the environment.

3.0 History

The Lynne deposit is the last major base-metal deposit to be discovered in Wisconsin due to the State's mining moratorium. Prior to its discovery by Noranda, two other companies had been aware of the Lynne airborne E.M. anomalies. Exxon Minerals identified isolated anomalies over what is now the Lynne deposit from an airborne E.M. survey flown in the mid 1970's. At the time, the mineral rights covering the anomalies, which are owned by Oneida County, were unattainable and no further interest to the anomalies was given. Kerr McGee conducted an airborne E.M. survey over the area in the early to mid- 1980's following up on anomalous lake sediment samples taken about two miles southeast of the deposit. That survey also detected the Lynne E.M. response, however, as with Exxon, the mineral rights were still not available for leasing. It was not until 1989 that Oneida County made their mineral lands available for lease through competitive sealed bids. By that time neither Exxon nor Kerr McGee were actively exploring in Wisconsin. Noranda elected to continue exploring in Wisconsin and their perseverance paid off when, in May 1989, they were the successful bidder on four sections on Oneida County mineral lands in Lynne Township.

Upon acquisition of the mineral rights, Noranda conducted a ground based geophysical survey over the Lynne airborne E.M. anomalies. The results revealed a moderate strong ground based E.M. anomaly with an associated strong out-of-phase E.M. component which was originally attributed to overburden response. A gravity survey was also conducted and indicated a relatively low, but anomalous, gravity response of about 0.8 milligals (Adams, 1996). On January 6, 1990, after two failed attempts to penetrate 56 feet of glacial overburden, the Lynne massive sulfide deposit was intersected in the first of two initial drill holes (Adams, 1990).

Discovery hole W90-1 intersected 128 feet of zinc-rich massive sulfides followed by a second hole, drilled 150 feet to the north of the first hole, which intersected 375 feet of massive sulfide.

On June 19, 1990, Noranda publicly announced the discovery of the Lynne deposit. Noranda reported reserves of 5.61 million tons grading 9.27% Zn, 0.47% Cu, 1.71% Pb, 2.38 opt Ag and 0.021 opt Au, recoverable by open pit methods.

In 1990, Noranda flew a more detailed airborne E.M. survey over the Lynne deposit and surrounding region to define additional targets. No other discoveries were made although the results of the E.M. survey suggested that the exploration potential was favorable.

In January, 1992, Noranda filed a Notice of Intent To Collect Data and a Proposed Scope of Study with the Wisconsin DNR as the initial step in the Wisconsin mine permitting process. The deposit is overlain by an area of wetlands that would be disturbed by mining. On October 23, 1993, Noranda suspended all permitting activity, citing uncertainties surrounding DNR wetlands and lake-bed designation issues and low metal prices. All surface disturbances related to the exploration and initial permitting processes were reclaimed as of January, 1996.

4.0 Geology

4.1 Regional Geology

The Lynne deposit is located in the central part of the Rhinelander-Ladysmith greenstone belt, a belt of Proterozoic, volcanic and sedimentary rocks within the Southern Province of the Canadian Shield (Figure 4.1.1). The Rhinelander-Ladysmith greenstone belt is an informal designation for the northern part of the Pembine-Wausau terrane of Sims et al (1989). It is approximately 50 miles wide and extends roughly 150 miles in an east-west direction across northern Wisconsin and the central Upper Peninsula of Michigan. Rocks within the belt range in age from 1,860 Ma to 1,889 Ma (Sims et al, 1989), and have been affected by the Penokean Orogeny, resulting in locally intense folding, major faulting, thermal metamorphism and granitic plutonism. Widespread Pleistocene glacial deposits mantle much of the greenstone terrane resulting in minimal outcrop exposure. On the west the greenstone belt is overlain by Late Proterozoic quartzite and Paleozoic sandstones, while on the east there is an on lap of Early Paleozoic sandstone and carbonate rocks.