



## Draft Proposal: Petition to Open Oneida County Forest Land to Mineral Leasing

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Senior Geologist  
April 6<sup>th</sup>, 2009

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## 1.0 Introduction

Tamerlane Ventures Inc. is a publicly traded mining company engaged in exploration and development of mineral properties in North America and internationally. Tamerlane proposes to re-evaluate the economic potential of the former Noranda Lynne Zn-Pb-Au deposit located in Lynne Township, Oneida County, Wisconsin. Tamerlane would like to petition the Oneida County Board to re-examine the possibility of opening up the County Forest Lands overlying and surrounding the Lynne deposit to conduct mineral exploration, and possibly future mining. The areas of interest include all of Section 15 exclusive of the NE/4 NE/4, all of Section 16 exclusive of the NW/4 NW/4 and all of Sections 21 and 22, T37N R4E. Tamerlane Ventures would like to acquire these properties to confirm the existence of Zn-Pb-Au mineralization, conduct additional exploration work and determine the potential to conduct underground mining of the Lynne deposit.

Tamerlane Ventures Inc. has developed this Draft Proposal to support its petition to the Oneida County Board for consideration of opening the aforementioned parcels of land for public bid to conduct mineral exploration and potential mining. This report provides the information required for the technical review of the proposed evaluation of the Lynne Deposit. It identifies the technical aspects and environmental interactions the project may have during its initiation. It also delineates the mitigation measures proposed to effectively address these matters.

### 1.1 Corporate Overview

Tamerlane Ventures Inc. is a publicly traded mineral resource company engaged in the exploration and development of mineral properties in North America and internationally. The share structure and listing information for the company is as follows:

Name:	Tamerlane Ventures Inc.
Symbol:	TAM
Exchange:	TSX Ventures
Incorporation:	May 16, 2000
Records:	Lang Michener, Toronto
Shares Outstanding:	49,521,508
Date Listed:	August 10, 2001
Year End:	December 31

**Project Management Team:****Ross F. Burns, B.Sc., P.Geo, LG  
President and CEO**

Ross Burns has served as a director and officer of numerous junior public mining companies in Canada. Mr. Burns has 30 years of Pb-Zn exploration experience and has found numerous Pb-Zn deposits. He has also held positions as exploration geologist and open pit mine geologist at a major Canadian Pb-Zn mining company. He is a renowned expert in all facets of Pb-Zn exploration and has extensive experience in the Arctic exploring for and mining lead and zinc deposits. In addition, Mr. Burns has directed exploration programs for base metals throughout North America and has been responsible for the replacement and estimation of ore reserves at several mines.

**David D. Swisher, B.Sc.  
Vice President**

David Swisher has underground and surface mining experience in precious (hard rock) and industrial (soft rock) mineral operations, including the study of underground and surface mining techniques in Sweden. He has held positions of increasing responsibility in all facets of mining at the mine manager level. His experience includes the evaluation and implementation of mining methods, environmental, health and safety processes, maintenance best practices, operations optimization as a Six Sigma Black Belt, feasibility assessment and advanced behavioral instruction. Mr. Swisher has also successfully led numerous Labor Union and Native American negotiations to mutually agreeable results. Since joining Tamerlane in January of 2006 as Senior Project Manager, and then as Vice President, Mr. Swisher has significantly advanced the Pine Point Project through full environmental assessment and permitting process faster than any other company operating in the Northwest Territories.

**Wolfgang Schleiss, B.Sc. Geology, M.Sc. Geology, P.Geo  
Senior Geologist**

Wolf Schleiss, a native of Wisconsin, has over 25 years experience in Pb-Zn exploration in Precambrian terranes. The majority of his Pb-Zn exploration efforts have focused on the Precambrian of the upper Midwest, primarily in Wisconsin. While working for Phelps Dodge in Wisconsin, he evaluated numerous potential massive sulfide targets and is an expert on the geology of northern Wisconsin. In addition, he has worked in the Precambrian of northern Minnesota for Duval Corporation where he drilled the largest massive sulfide zinc occurrence in the state. Throughout his career he has held positions of increasing responsibility at several major U.S. mining companies. Mr. Schleiss has directed Pb-Zn exploration programs and been involved in major base metal property acquisitions and evaluations throughout North America, Europe and Russia. He has also been responsible for the replacement and estimation of resources/reserves at several mines. Mr. Schleiss is also a Fellow in the Society of Economic Geologists and a registered Professional Geologist in the State of Wisconsin.

**Justin Smoak, B.A. Economics, B.Sc. Mining Engineering, M. Eng.  
Mine Finance Engineer**

Justin Smoak has over 5 years experience working in the mining industry. He has held various engineering roles in project management, mine planning and mine feasibility. His operations experience includes supervisory positions in underground production as well as surface packaging and bulk transportation. During his Master's studies at the University of the Witwatersrand in Johannesburg, Mr. Smoak was also involved in national mineral policy research and life-of-mine studies for deep level gold mines. Mr. Smoak is experienced with engineering design and financial risk modeling software.

**Albert Siega, B.Sc. Mining Engineering, M.B.A.  
Mining Engineer & Resource Modeler**

Albert Siega has over 15 years engineering experience in the mining industry. During his career, he has held various engineering roles at several major Canadian mining companies. His experience includes open pit and underground mine planning, mine design and resource block modeling. Mr. Siega has also conducted mine feasibility work, lead compliance initiatives and directed the economic analysis of potential North American acquisitions.

## 1.2 Corporate Governance

The Board of Directors (Board) and management team of Tamerlane Ventures Inc. are committed to a high standard of corporate governance. Effective corporate governance ensures shareholder accountability through the use of specified reporting structures, business processes, a formalized strategic plan, and a commitment to adhere to them.

The Board believes that sound corporate practices ensure continued creation of shareholder value and continued shareholder trust and confidence in the Company. The Board is ultimately responsible under law for the stewardship and business affairs of Tamerlane.

## 1.3 Environmental Policy

Tamerlane Ventures Inc. is dedicated to high moral and ethical standards of conduct and will conduct its business with honesty, integrity and a strong commitment to compliance with all applicable laws. The Company is committed to protecting the environment, health and safety of its employees, their families, their communities and the public through continuous performance improvement.

1.4 Tamerlane Exploration Experience

Tamerlane Ventures Inc. has successfully permitted a massive sulfide Zn-Pb underground mine in the Northwest Territories of Canada known as the Pine Point Project. The Company is also exploring for additional resources in the area. The proposed mine, lies approximately 9 miles south of the Great Slave Lake (Figure 1.4.1). Physiographically, the area is similar to northern Wisconsin, consisting of areas of fens, marshes and swamps interspersed with low lying ridges composed of glacial sands and gravels. The Project itself is overlain by an ecologically and environmentally sensitive fen area which Tamerlane successfully mitigated any potential impacts during all of its drilling programs (Figure 1.4.2).

Figure 1.4.1  
Location of the Pine Point Project

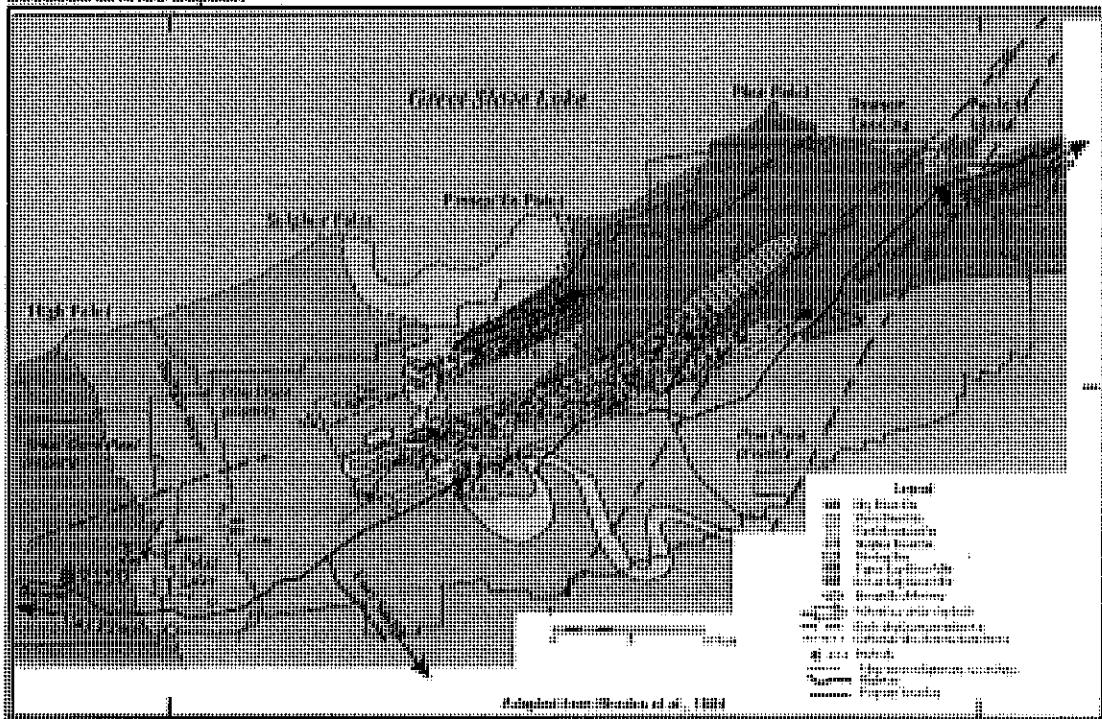


Figure 1.4.2

PHOTO Composite to illustrate adjacent to the area.



Tamerlane went through an extensive Environmental Assessment process with the Mackenzie Valley Environmental Impact Review Board. Because of the Company's willingness and ability to utilize innovative, non-intrusive mining techniques such as Freezing to control ground water intrusion, Dense Media Separation to reduce the amount of material required for processing, Flotation technology using inert additives, and vertical conveyance to quietly and efficiently hoist run-of-mine ore, Tamerlane has met and surpassed the environmental requirements set forth by the Local, Territorial and Federal Canadian regulatory agencies. In a letter dated February 22<sup>nd</sup>, 2008 to the Honorable Chuck Strahl, Minister of Indian and Northern Affairs Canada, the Mackenzie Valley Environmental Impact Review Board stated "It is the Review Board's opinion that the proposed development is not likely to have any significant adverse impacts on the environment or be a cause of significant public concern". This letter is provided in appendix A.

Between 2005 and 2008 Tamerlane Ventures conducted extensive confirmation and exploration drilling campaigns to delineate additional resources and reserves in the vicinity of the Project.



Fifty-nine holes, totaling 26,761 feet were drilled in areas with extensive wetlands. To mitigate any environmental impacts, most of these holes were drilled during the winter months. During the warmer months, drill sites were located on higher ground and angle holes utilized to test the targets, mitigating any environmental impact.

Existing roads, exploration cut-lines and trails were utilized to the greatest extent possible to avoid damaging any part of the ecological environment from rutting or other degradation caused by equipment mobilization. Prior to any drill site being prepared, local and provincial regulatory agencies were contacted and site visits made. This was to ensure that all regulations were being met and, if necessary, allow regulatory personnel to make additional recommendations in the field as to the most environmentally sound way to construct the drill site. In addition to governmental regulatory personnel, local aboriginal bands were informed of any planned work and invited to review the proposed sites and express any concerns and/or recommendations they had prior to site construction. During the course of the drilling, both governmental regulatory personnel and aboriginal representatives visited the drill sites periodically to ensure that the drilling conformed to environmentally safe practices. During Tamerlane's three separate drilling campaigns, no concerns or compliance issues were left unresolved.

At the end of a drill program, all drill sites were inspected by Tamerlane personnel to ensure that they were clean. Any refuse or discarded materials were disposed of in a proper manner. The sites were also inspected by governmental regulatory personnel to ensure they were compliant with environmental regulations. Any concerns expressed by them were acted upon and remedied as per their instructions. Although not mandated by environmental regulations, all drill holes were cemented from the bottom to the top as a matter of course to mitigate ground water contamination. Figures 1.4.3 to 1.4.5 show several of the drill sites after they have been reclaimed.

Figure 1.4.3

Reclaimed Drill Site

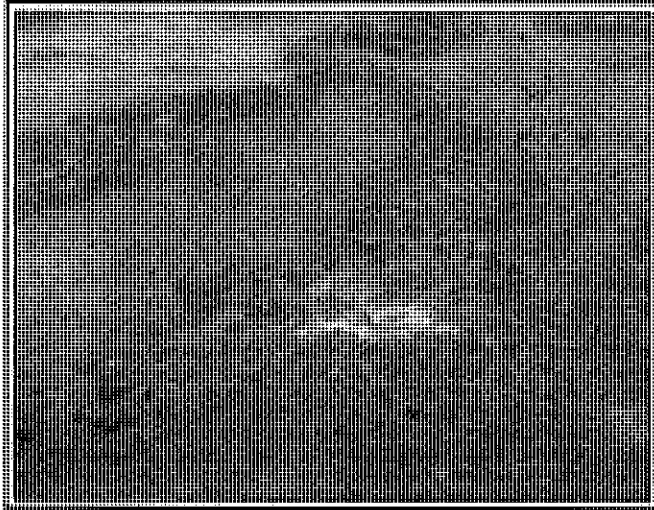
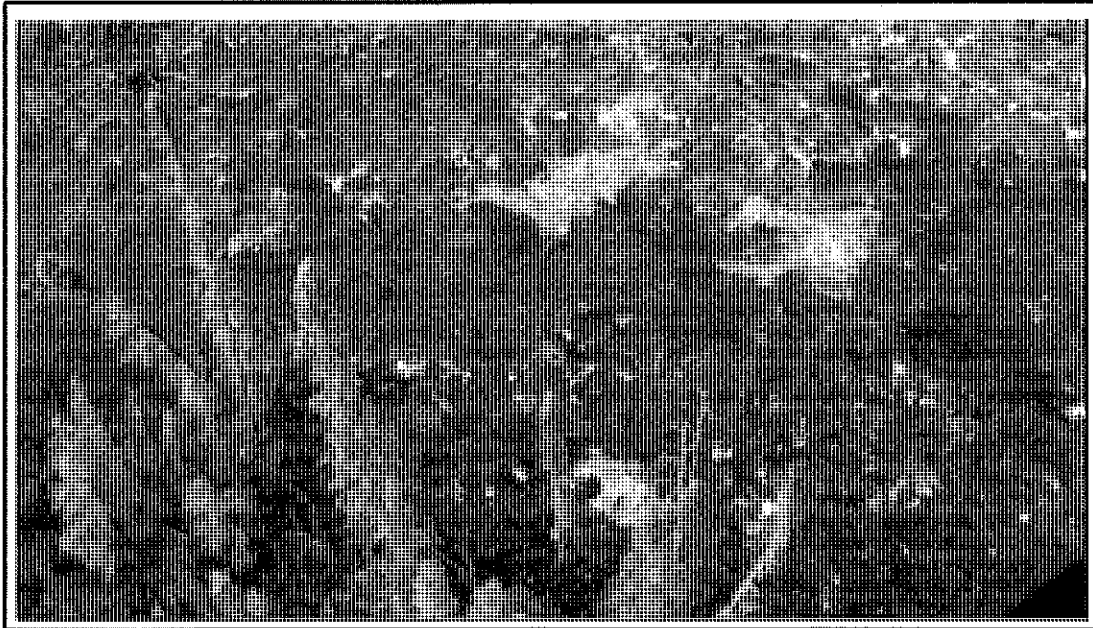


Figure 1.4.4  
P-100 Reclaimed Core Sites



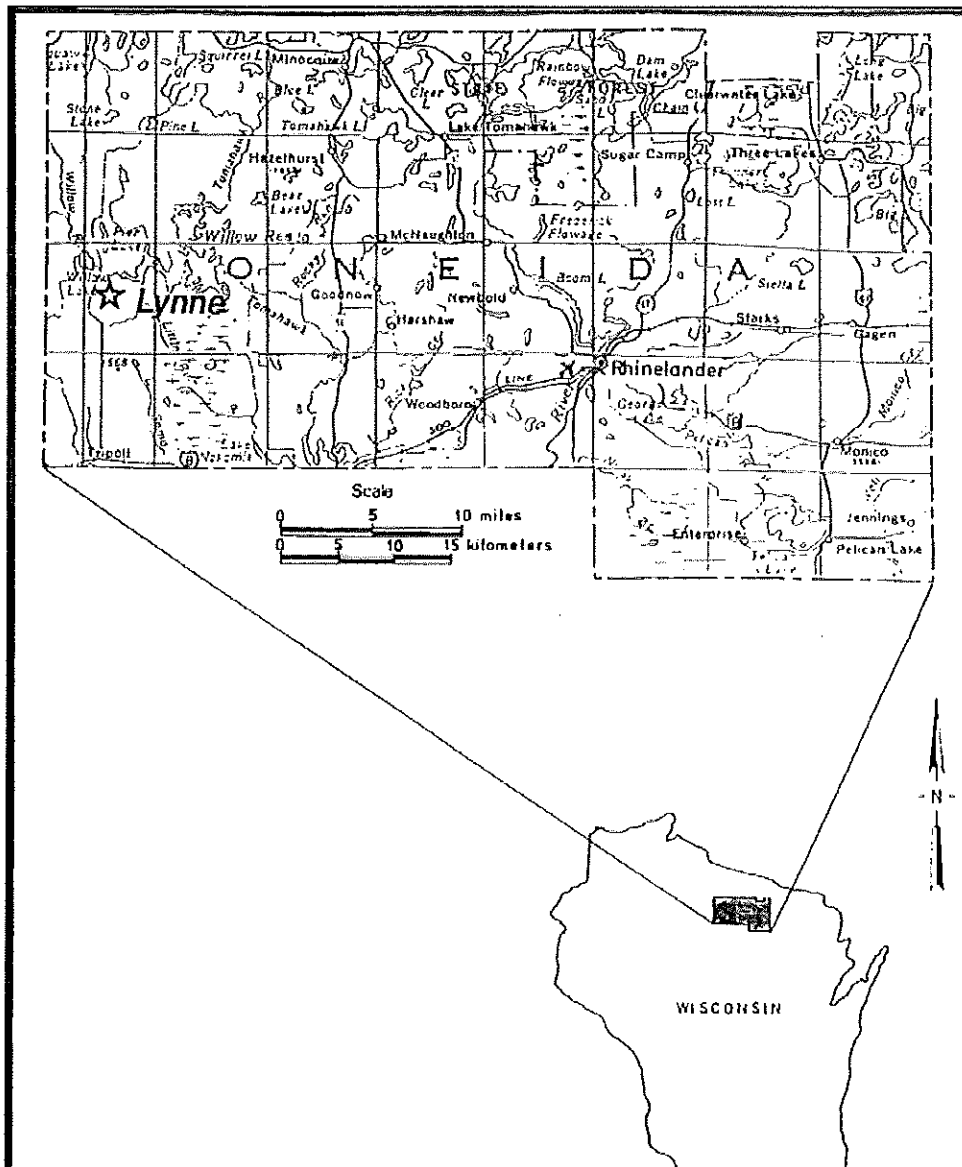
Figure 1.4.6  
X25 Reclaimed Drill Sites



1.5 Property

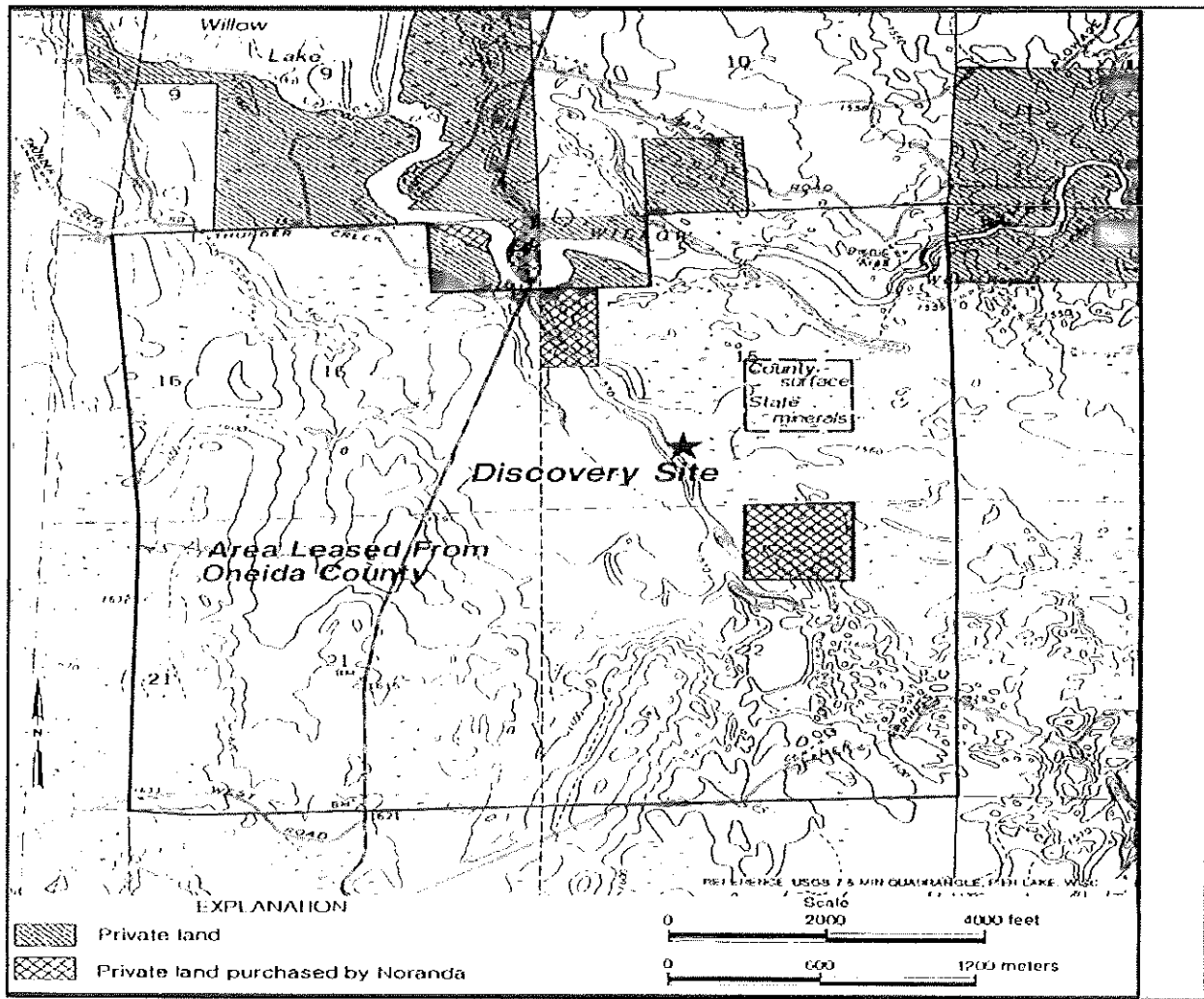
The Lynne deposit is located in Lynne Township approximately 25 miles west-northwest of Rhinelander and approximately 9 miles north of State Highway 8 and the small town of Tripoli (Figure 1.5.1). All-weather paved and gravel roads access the deposit area and the Wisconsin Central Railway has a siding in Tripoli.

Figure 1.5.1  
Location of Lynne Deposit (from Adams, 1996)



The Lynne deposit is situated on Oneida County Forest Lands. The main part of the deposit lies in the SW/4 Sec 15 T37N R4E (Figure 1.5.2). The County holds the majority of the surface and mineral rights within Sec 15. The NW/4 NW/4 of Sec 15 is private property and the State of Wisconsin owns the mineral rights to the NW/4 SE/4 of Section 15. Section 16, which lies immediately to the west of Section 15, is Oneida County land except for the NE/4 NE/4, which is private. The two sections to the southwest and south of Section 15 (Sections 21 and 22, respectively) are Oneida County Forest Land.

Figure 1.5.2  
Location of Oneida County lands with respect to the Lynne Deposit (from Adams, 1896)



Past exploration surface disturbance on the four sections encompasses approximately 80 acres. This disturbance consisted predominantly of drill pads and drill roads to access the drill sites. This prior disturbance was the result of exploration activities conducted by Noranda Exploration, and has subsequently been reclaimed.

## 1.6 Corporate Contractual Relationships

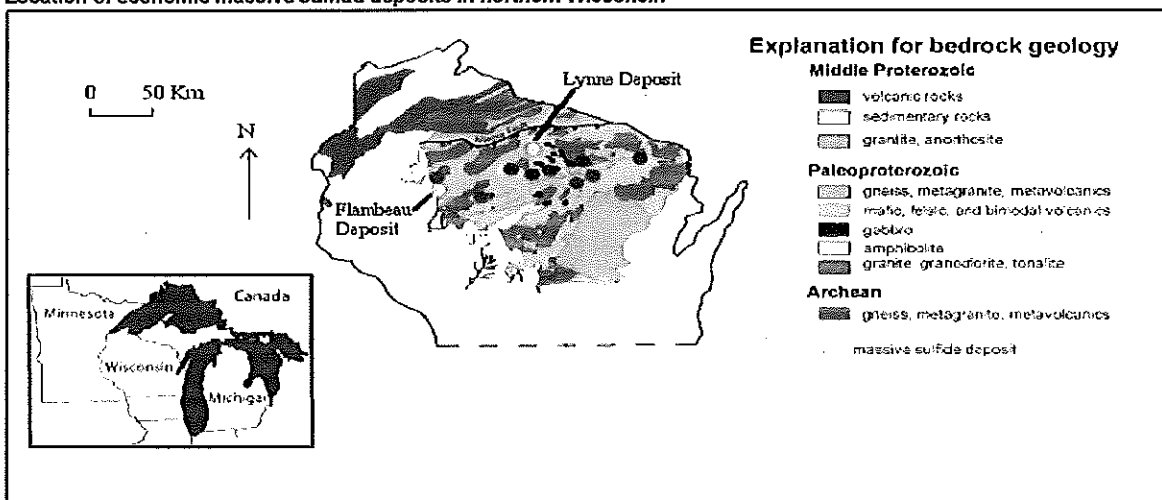
Where necessary, Tamerlane will pursue the assistance of contractors and/or subcontractors during the development of the Lynne deposit. The Company holds an equal expectation of its contractors and/or subcontractors to adhere to all environmental, health and safety practices and policies. In addition, Tamerlane will ensure that all contractors and/or subcontractors comply with all government regulations imposed on the Lynne deposit exploration and development.

## 2.0 Project Description

### 2.1 Project Rationale

There are many economically viable massive sulfide deposits known to occur within Wisconsin (Figure 2.1.1). Tamerlane is focused on conducting responsible development on the Lynne deposit. The Company feels confident in this approach knowing that a similar deposit, the Flambeau deposit, has been successfully mined and reclaimed by the Flambeau Mining Company. With the present worldwide economic situation, the rise in gold and silver prices and the forecast for increasing base metals prices in the near future, Tamerlane Ventures is actively pursuing the acquisition of known mineral resources/reserves worldwide.

Figure 2.1.1  
 Location of economic massive sulfide deposits in northern Wisconsin



Tamerlane is petitioning the Oneida County Council to open the county lands overlying and surrounding the Lynne deposit for mineral leasing via public auction and bidding as it has done in the past. Should the County Board agree to this, and Tamerlane becomes the successful bidder, a two phase program is envisioned to develop the Lynne deposit.

## 2.2 Phase One

The first phase would consist of confirmation drilling i.e. twinning of select past holes drilled by Noranda to confirm the extent, style and magnitude of mineralization present, and also to provide samples for metallurgical testing. Coincident with the confirmation drilling would be additional exploration work utilizing ground based geophysical techniques to identify mineralized zones which may be present at Lynne along strike and down dip of the main ore body. Dependent on the results of the geophysical survey, additional diamond core holes would be needed to test any anomalous zones. It is envisioned that potentially 12 diamond drill holes would be needed to complete the phase one program. It should be noted that the number of drill holes cited is an estimate based on very limited data. This number could change with the location, procurement and review of Noranda's original data.

Any work conducted by Tamerlane would be done in such a manner as to mitigate potential environmental and surface disturbance to the area. Noranda's geophysical grid, drill roads, access ways and drill sites, if they still exist, would be utilized to the greatest extent possible. A portion of the Lynne deposit is overlain by swamp and/or marsh. Any drilling in these areas would be relegated to the winter months when the ground is frozen to reduce the impact of surface disturbance such as rutting. Also, drilling in these areas during the winter would mitigate the impact on wildlife that would normally be present at other times of the year.

Reclamation of disturbed areas would be conducted in accordance with Oneida County Forestry and Parks Division and/or WIDNR regulations and/or recommendations. Drill holes would be reclaimed by cementing the hole from bottom to the top to mitigate any chance of ground water contamination. Any disturbed land would be reclaimed along County or DNR guidelines.

### 2.2.1 Drill Pad General Arrangement

As stated above, access to each drill pad will be via existing drill roads, if they still exist, from previous work performed at Lynne by Noranda. If new access roads and pads need to be constructed, the dimensions of the roads would be approximately 12 feet wide and drill pads

approximately 50 feet by 50 feet unless otherwise specified by the County or WIDNR. The drill rig will be skid-mounted and a Cat bulldozer or similar equipment will be used to transport it within the site. All accompanying drill pipe and casing will be stored and transported either on the drill rig itself or in a trailer type sloop. Water for the drill will be pumped from a site designated by the Oneida County Forestry and Parks division or WIDNR. Water will be transported either by a water vehicle or hose line. The drill rig will operate from a diesel engine and will be supplied with a shifts worth of fuel by either an internal tank or 55 gallon drum. The internal tank or drum will be refilled by a jockey tank from the drillers or supervisors vehicle as needed. There will also be a small storage or lay down area for supplies such as core boxes or drilling muds. Cuttings will be discharged away from the pad into a settling area to ensure minimal surface impact.

#### 2.2.2 Delivery, Storage and Consumption of Materials

The primary materials that would be consumed during the drilling program include diesel fuel, water, propane, drilling additives and gasoline. Due to the close proximity of the Willow River, secondary and tertiary streams and wetlands, all potentially hazardous materials will be stored in appropriate environmentally approved storage containers. All storage containers will be temporary, and as previously stated, properly designed to mitigate spill potential. All local and State regulations with regard to the transportation and storage of hazardous materials will be followed and Tamerlane's hazardous spills contingency plans will be adhered to and managed by both the drill contractor and Tamerlane. A copy of Tamerlane's corporate spill contingency plan is included in Appendix A.

#### 2.3 Phase Two

The second phase of the program, dependent on the results of the first phase, would be to execute a mining lease option with the County and submit a Notice of Intent to collect data to support a Mining Permit Application with the WIDNR.

Noranda's original plan to mine Lynne was by the utilization of open pit method. Tamerlane, through its exploration program, will evaluate the most sound and viable options for potential future mining of the Lynne deposit. With the Company's underground experience with newer technologies such as freeze ring technology, dense media separation (DMS) and vertical conveyance systems, Tamerlane will focus initially on underground methods for the Lynne deposit.

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.

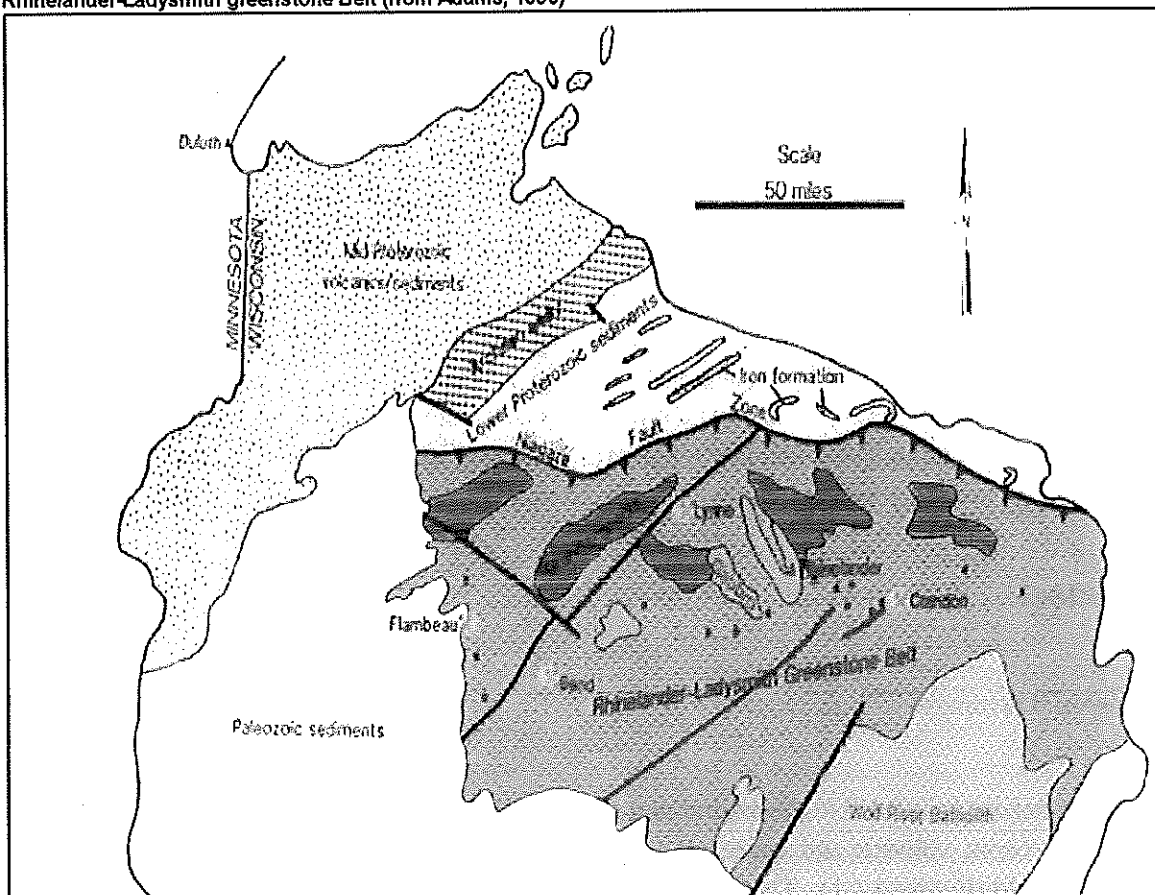
In January, 1992, Noranda filed a Notice of Intent To Collect Data and a Proposed Scope of Study with the Wisconsin DNR as the initial step in the Wisconsin mine permitting process. The deposit is overlain by an area of wetlands that would be disturbed by mining. On October 23, 1993, Noranda suspended 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

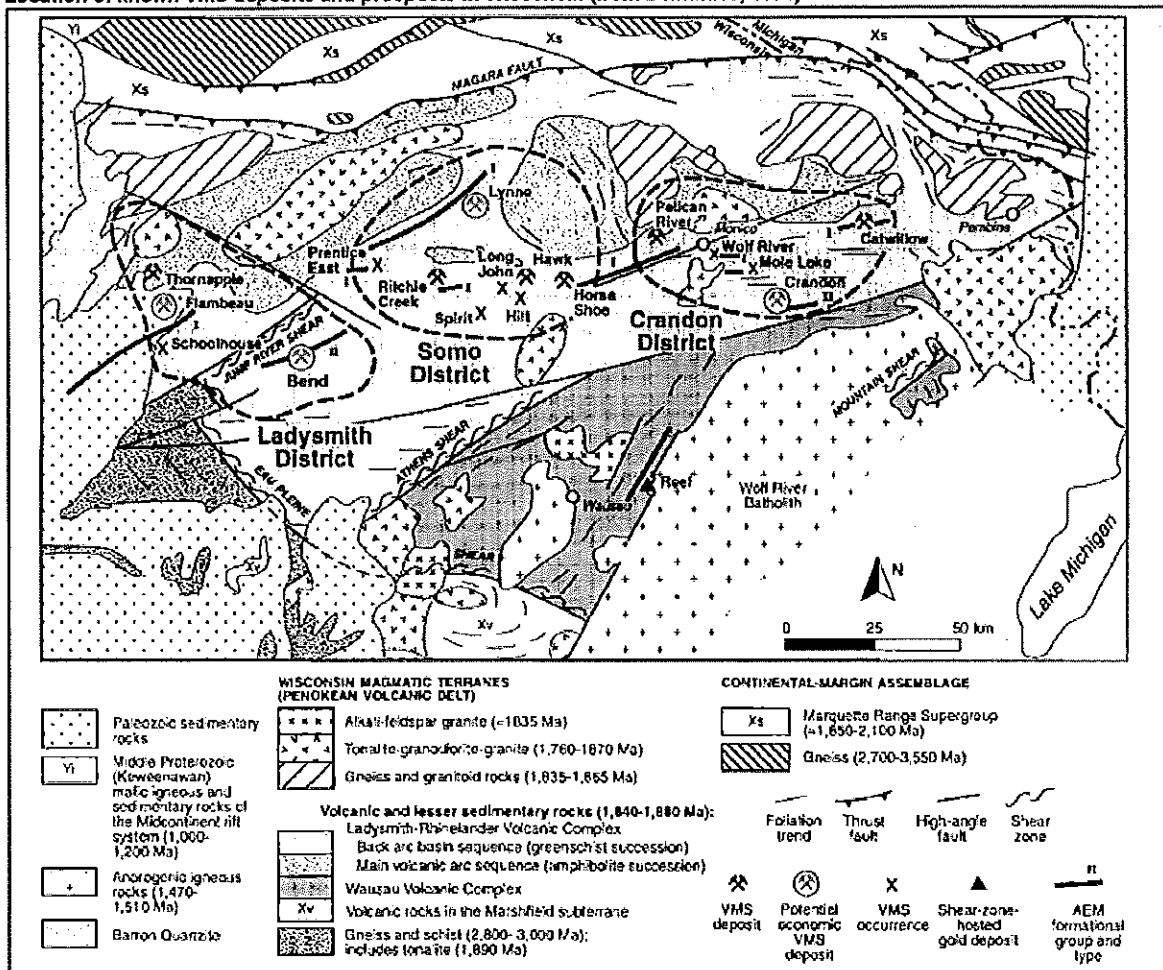
The Lynne deposit is located in the central part of the Rhineland-Ladysmith greenstone belt, a belt of Proterozoic, volcanic and sedimentary rocks within the Southern Province of the Canadian Shield (Figure 4.1.1). The Rhineland-Ladysmith greenstone belt is an informal designation for the northern part 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.

Figure 4.1.1  
 Rhinelander-Ladysmith greenstone Belt (from Adams, 1996)



Mineral exploration over the past 30+ years, dominated by airborne geophysical surveys, has identified over two dozen significant base-metal massive sulfide occurrences scattered throughout the Rhinelander-Ladysmith greenstone belt (Figure 4.1.2). The Flambeau mine, currently mined out, and three other potentially economic occurrences, the Crandon, Bend and Lynne deposits, all occur within the Rhinelander-Ladysmith greenstone belt.

Figure 4.1.2  
 Location of known VMS deposits and prospects in Wisconsin (from DeMatties, 1994)

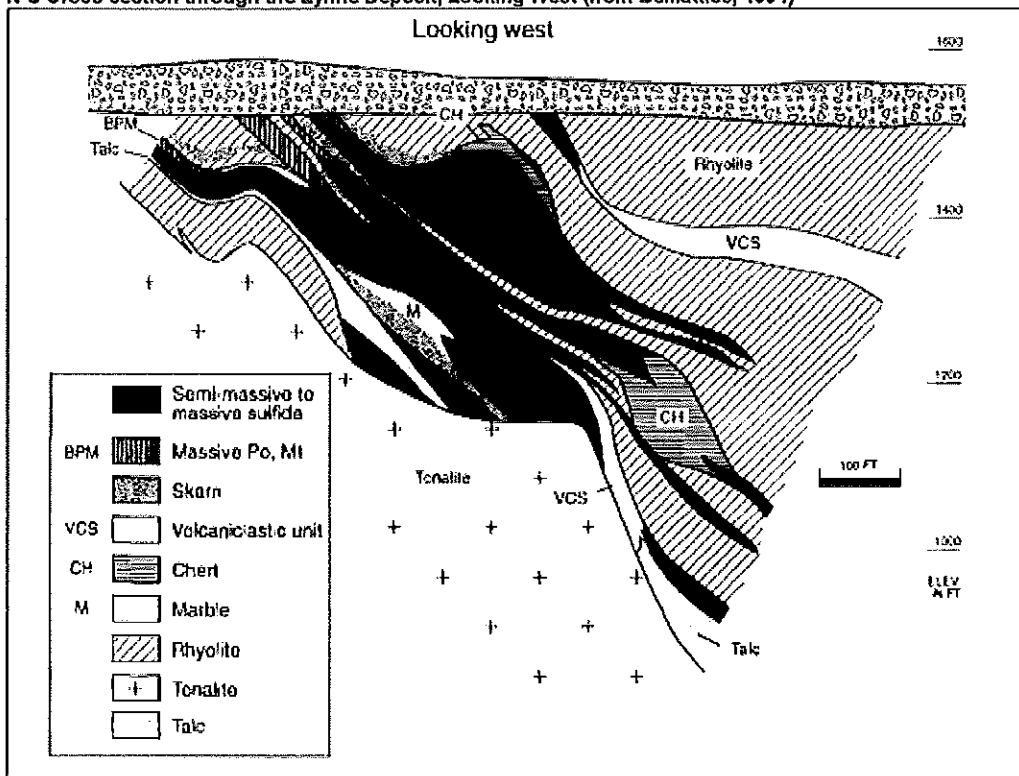


Geologic knowledge of the Lynne deposit area is very limited due to poor outcrop exposure. Regional airborne E.M. and magnetic data and scattered drill hole information suggest that the general geology of the Lynne area consists predominantly of mafic to intermediate volcanic rocks with at least one felsic eruptive and intrusive event, represented by the lithologies in the immediate Lynne deposit area. The felsic volcanic-related rocks associated with the Lynne deposit predominate over mafic to intermediate rocks by a significant amount. The increase of felsic volcanic rocks in the Lynne deposit area is common to other significant base-metal occurrences in northern Wisconsin.

#### 4.2 Deposit Geology

The Lynne deposit is covered by 40 to 75 feet of unconsolidated glacial till. The ore body itself consists of four stratiform, massive to semi-massive, stacked bodies with an aggregate thickness of approximately 325 feet in the central part of the ore zone (Figure 4.2.1) (Adams, 1996). The sulfide bodies exhibit abrupt thickening and coalescing in the core of the ore zone that quickly become disseminated along the flanks. Sphalerite is the predominant sulfide followed by pyrrhotite, pyrite, galena and chalcopyrite. Gold occurs in the lower sulfide body and also with skarn mineralization along the flanks of the deposit. Silver mineralization occurs in the central to upper part of the ore body. The ore zone has a strike length of approximately 1300 feet and strikes in a general east-southeast direction. It dips to the northeast at about 40°. Graded bedding of the host rocks suggests that the stratigraphy is upright with tops to the northeast. The ore body itself is hosted within a subaqueous, volcanoclastic, sedimentary and carbonate-rich sequence of rocks. Drill hole data from host rocks indicate a general coarsening of pyroclastic material to the north, or down dip, suggesting a more proximal location to a possible volcanic eruptive source (Adams, 1996). The bottom of the deposit is underlain and cut off by a tonalite intrusive body.

Figure 4.2.1  
 N-S Cross-section through the Lynne Deposit, Looking West (from DeMatties, 1994)



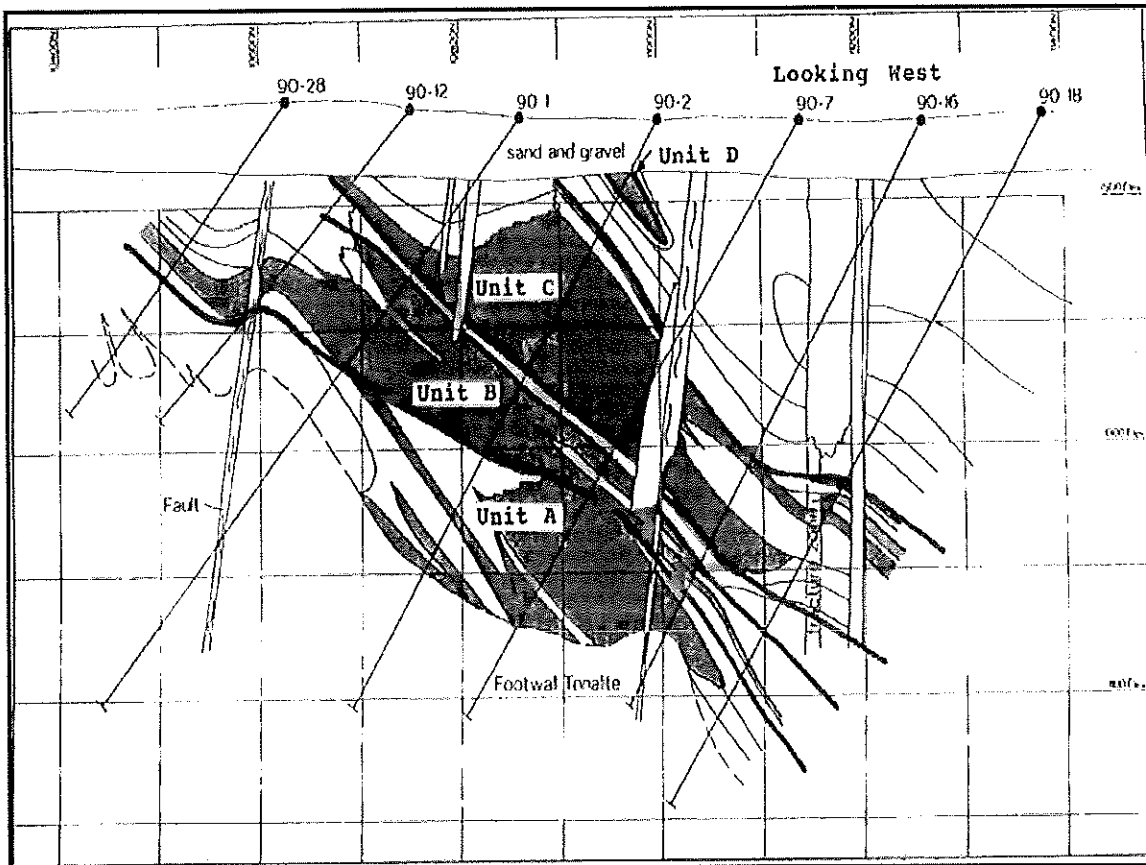
The deposit is structurally simple. East to southeast striking, vertical to sub-vertical, fracture zones exhibit minor movement in stratigraphy within and down-dip from the ore zones. These fractures postdate the tonalite intrusive (Kennedy, 1992 *in Adams, 1996*). The fracture zones are commonly intruded with rhyodacite dikes and lesser basaltic dikes. A shallow depression or trough is present in the tonalite beneath the thickest part of the deposit. Adams (1991) suggests that the fracture zones may be, in part, responsible for the trough like feature, and together, the two may be genetically related to the deposition of sulfide mineralization.

Alteration within the Lynne deposit and of the surrounding host rocks is variable and locally affected by contact metamorphism and skarnification, although the overall metamorphic grade lies within the greenschist facies. Evidence of retrograde alteration is prevalent. No evidence of a stringer zone or alteration pipe has been recorded, although the stratigraphy below the ore deposit has been altered to chlorite and talc-bearing assemblages. Because of the unusual combination of base-metal and alteration assemblages, and host rock lithologies, the Lynne deposit exhibits characteristics common to both volcanogenic massive sulfide and carbonate-related skarn deposits (Adams 1996).

#### 4.2.1 Mineralization

The massive and semi-massive stratiform lenses of the Lynne ore deposit are divided into four separate zones or units based on physical, or discrete compositional, differences (Adams, 1990; Adams, 1991). The sulfide lenses are designated as units A through D with A being the lowermost, and progressing stratigraphically upward to units B, C, and D (Figure 4.2.1.1).

Figure 4.2.1.1  
 Lynne mineralized stratiform lenses (from Adams, 1996)



### Unit A

Sulfide Unit A exhibits the greatest lateral extent of all the zones and reaches up to 60 feet in thickness, although it is locally disrupted and intruded by the foot-wall tonalite. The zone is a pyritic, massive sphalerite body enriched in chalcopyrite and pyrrhotite relative to the other zones. Over 50 percent of the copper and over 30 percent of the gold content of the ore deposit occurs in cherty, chloritic, pyrrhotitic massive to semi-massive sulfide portions of this unit (Kennedy, 1992 in Adams, 1996). Partially enveloping the unit is a talc-rich assemblage containing disseminated to massive sulfides with Mg-chlorite, phlogopite and lesser tourmaline, serpentine, cummingtonite, and galena (Kennedy *et al.*, 1991). Also present locally within the alteration envelope is stringer-like and disseminated sphalerite and pyrrhotite. An extensive barren zone of this alteration assemblage, with laminated cherts containing disseminated pyrrhotite, pyrite and minor magnetite laminae, continues up to 300 feet along strike and down-dip from Unit A.

### Unit B

Narrow intervals of carbonate rock, with local skarn-type mineralization, separate units B and A. Sulfide mineralization in Unit B differs strongly from Unit A in that it occurs in association with lenticular masses of chemical sedimentary rocks including calcareous and siliceous facies. Disseminated sphalerite and pyrite is ubiquitous to the carbonate host rocks, and massive to semi-massive sphalerite, with lesser galena and subordinate chalcopyrite, forms lenses up to 50 feet thick. The composite thickness of Unit B reaches approximately 150 feet in the central part of the ore body. Unit B contains over 50 percent of the total deposit tonnage and almost 60 percent of the total zinc content of the deposit (Kennedy, 1992 *in Adams, 1996*). Thin beds of carbonate-rich volcanoclastic and sedimentary rocks within the unit are pervasively replaced by calc-silicate minerals. Sphalerite, and to a lesser extent pyrrhotite and pyrite, are disseminated throughout the carbonate host rocks. The carbonate rocks are relatively planar bedded near the base of the unit becoming increasingly disrupted toward the top. Carbonate beds tend to be finer grained and well bedded off the flanks of Unit B.

### Unit C

Narrow beds of barren volcanoclastic wackes or tuffs and a rhyolitic sill separate units B and C. Unit C is approximately 160 feet thick and consists predominantly of contorted, folded, or disrupted calcareous chemical sediments that can be divided into two zones. The lower calcareous zone is about 50 feet thick and consists of marble with massive to semi-massive sphalerite and galena. The upper 110 feet of the unit is calcareous, but within the upper 50 feet it becomes extremely siliceous containing cherty layers and diopside-rich cherts. Sulfide mineralization in the upper part of Unit C consists of disseminated to semi-massive sphalerite, pyrite and galena. A large proportion of the deposit's silver content occurs in the upper siliceous part of Unit C in the form of native silver, tetrahedrite, and argentiferous galena. Here, silver content averages over 100 ounces per ton for several tens of feet. As with Unit B, this unit shows a relative abundance of chalcopyrite toward the base of the sulfide assemblages. An envelope of diopside-garnet-pyrrhotite-magnetite skarn mineralization occurs on the south side of the lower part of Unit C and on the upper part of Unit C in association with rhyolite sills (Kennedy, 1992 *in Adams, 1996*).

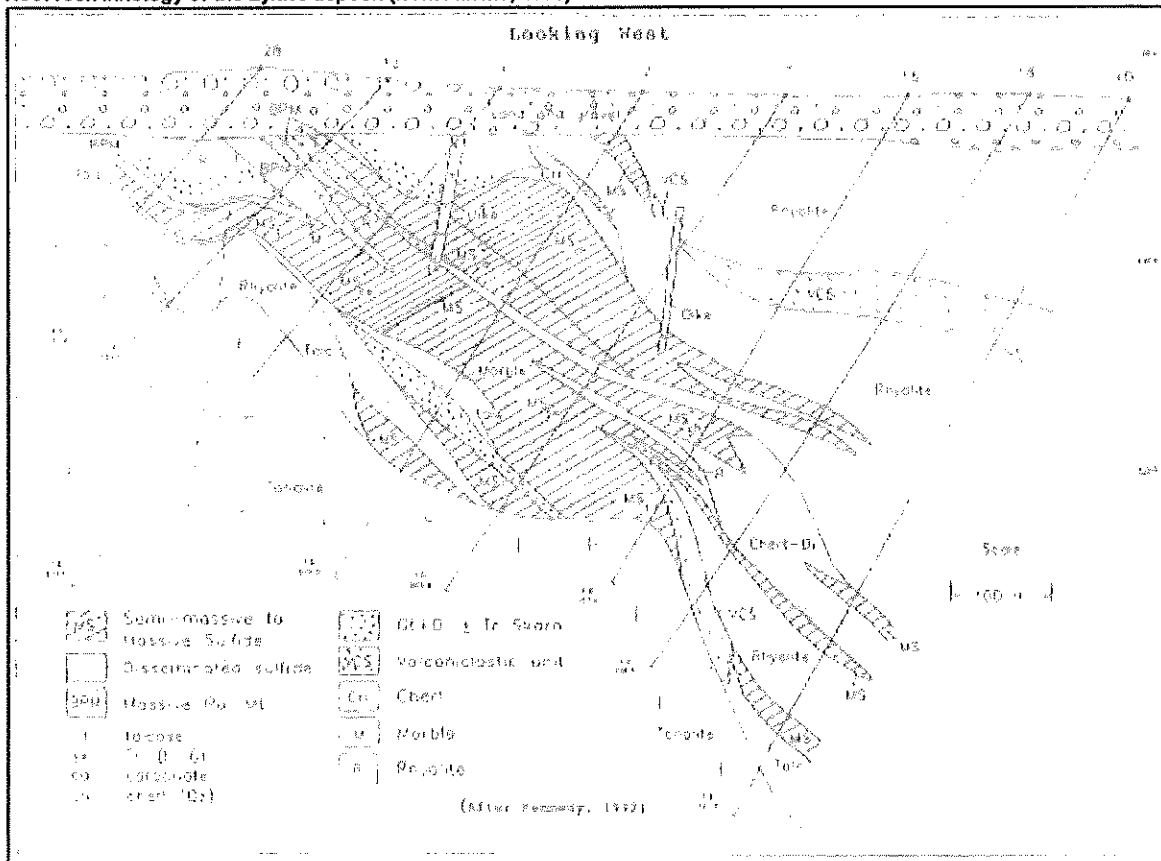
### Unit D

Unit D, the uppermost sulfide unit, is a massive to semi-massive zone of sphalerite with accessory galena and appreciable chalcopyrite in siliceous, cherty, chemical sediments. This unit is truncated by the bedrock surface and grades rapidly down-dip into barren volcanoclastic sediments. The unit is separated from the underlying unit C by a 50-foot thick, rhyolitic sill.

## 4.2.2 Lithology

The rocks hosting the Lynne deposit (Figure 4.2.2.1) have had little in-depth investigation with the exception of work done by Kennedy (1992 *in Adams, 1996*), who, in conjunction with Noranda's predevelopment staff, studied the immediate host-rocks and their alteration assemblages as part of the deposit delineation drilling program.

**Figure 4.2.2.1**  
 Host rock lithology of the Lynne deposit (from Adams, 1996)



Kennedy (1992 *in Adams, 1996*) has divided the Lynne deposit host rocks into five units consisting of, in ascending order, the Lower Rhyolite, the ore-bearing Lynne Horizon, the Upper Rhyolite, the Upper VCS and the Hanging Wall Unit. Subsequent to the deposition of this felsic volcanic-rich sequence, the rocks were intruded by a probable subvolcanic tonalite body that partially ingested and disrupted the lower surface of sulfide Unit A.



Lower Rhyolite

The Lower Rhyolite consists of massive to poorly sorted, rhyolitic lapilli to ash tuff containing abundant pumice fragments and locally poorly graded beds of fine ash tuff. Dark green to black chloritic material is common as veinlets and irregular masses. Kennedy (1992 *in Adams, 1996*) interprets this lithologic package as a sequence of subaqueous debris flows. Angular and shattered coarser felsic lapilli fragments suggest possible local autobrecciation of rhyolitic flow rocks.

The Lower Rhyolite interfingers with the stratigraphically higher Lynne Horizon north of the orebody but is absent from the immediate vicinity of the orebody either due to non-deposition or incorporation into the intruding tonalite. Rhyolitic tuffs with distinctive angular lapilli clasts occur north of the orebody and approximately one mile south of the orebody, suggesting that this unit may be relatively widespread.

Lynne Horizon

The Lynne Horizon hosts the Lynne ore deposit and consists of a sequence of predominantly volcanoclastic, detrital, and chemical sedimentary rocks with lesser interlayered intermediate to felsic volcanic flow rocks and minor rhyolitic crystal tuffs. The horizon is up to 320 feet thick and extends over one-half mile east of the ore deposit. The volcanoclastic rocks consist of greywackes and laminated siltstones of volcanoclastic or reworked volcanic material interbedded with and grading into crystal to crystal-lithic tuffs.

Carbonate-rich sediments, characteristic to this horizon, and lesser laminated cherts occur over 1300 feet away from the orebody and increase in abundance and thickness toward the orebody where they exceed 200 feet thick in the center of the ore deposit (Kennedy, 1992 *in Adams, 1996*). The bulk of the carbonate rocks are directly associated with the massive to disseminated parts of the sulfide ore zones where they are partially or mostly replaced by sulfide minerals. Some partial replacement continues for a considerable distance away from the main orebody to the north and east where it is often associated with an envelope of potassic and magnesium alteration. On the flanks of the Lynne Horizon the carbonates are often well bedded, while less sulfide-rich carbonate zones within and between the main ore zones are commonly laminated though often disrupted and contorted. The carbonate rocks form sharp contacts with overlying volcanoclastic horizons.

Descriptions by Kennedy *et al.* (1991), Kennedy (1992 *in Adams, 1996*), and Kennedy and Donnelly (1992 *in Adams, 1996*), suggest that the carbonate assemblages at Lynne show considerable compositional variations. Dolomitic rocks are the most abundant, and directly associated with base-metal mineralization, while limestones are associated with barren or poorly developed sulfide mineralization on the eastern and western flanks of the deposit. The tendency of more Mg-carbonate toward the central part of the orebody, combined with Mg-silicate alteration assemblages in the immediate host rocks, could denote Mg-metasomatism related to

carbonate build-up and ore formation. Since the initial drill holes into the ore body, it has been speculated that the buildup of carbonate material is directly associated with ore deposition (Adams, 1990). The carbonate rocks are relatively restricted to a north-northeast-trending basinal feature (Kennedy, 1992 *in Adams, 1996*), which coincides with the thickest part of the sulfide ore body, suggesting a direct relationship between the ore body and a carbonate build-up.

### Upper Rhyolite

The Upper Rhyolite unit consists of rhyolite crystal and crystal lithic, lapilli tuffs and massive rhyolite with minor interlayers of dacite and andesite, and thin basal horizons of greywacke and chert. The unit is over 300 feet thick north of the orebody and thins southward where it becomes interlayered with the ore stratigraphy. Rhyolitic sills that intrude the ore body are similar to massive rhyolites in the Upper Rhyolite. Epidote-rich skarn is associated with some of the rhyolitic sills on the west edge of the ore body, suggesting a possible correlation between the intrusion of narrow rhyolite sills of the Upper Rhyolite and the formation of skarn mineralization.

### The Upper VCS Unit

The Upper VCS Unit consists of volcanic-derived greywacke and laminated siltstone with increasing amounts of andesite as the horizon is traced northward. The updip southerly projection of the horizon is represented by the narrow, upper-most, siliceous sulfide Unit D. In the immediate vicinity of the orebody, the Upper VCS Unit is less than 100 feet thick but thickens to over 200 feet to the north and west. Iron sulfides commonly occur in this unit as fracture fillings within 100 feet of the orebody, and form sulfide-rich laminae associated with magnetite in siltstones. Chlorite, epidote and minor actinolite alteration minerals are common.

### Hanging Wall Unit

The Hanging Wall Unit is a mixture of felsic to mafic tuffs, heterolithic wackes and agglomerates, or conglomerates. Characteristic to this unit are clast-supported agglomerates containing beige to pink lapilli-sized rhyolitic clasts. The wackes contain lapilli-sized rhyolitic to andesitic clasts and plagioclase and quartz crystals in a mafic groundmass. Interpretations by the Noranda pre-development team suggest that the unit may be a series of debris flows that appear to dissipate to the north and are therefore derived from a southerly source area.

### Tonalite

The tonalite underlies the Lynne ore and host-rock stratigraphy. It has an irregular upper contact that dips at a shallow angle to the northeast. The tonalite intrudes and disrupts the lower part of sulfide Unit A, displacing and enclosing parts of the unit. Flexures in the overlying stratigraphy appear to be associated with a northeast-striking trough in the tonalite surface. The intrusive is often porphyritic with quartz ovoids and euhedral, zoned plagioclase crystals in a fine-grained,

commonly graphic, matrix (Kennedy and Donnelly, 1992 *in Adams, 1996*). Within 50 feet of the contact, the tonalite is characterized by a granophyric texture. Low temperature alteration is common in the tonalite, but is strongest in association with local fracturing or faulting. Within 35 feet of the tonalite, local recrystallization of adjacent volcanic and volcanoclastic rocks occurs and a hornfels texture is sometimes present (Kennedy and Donnelly, 1992 *in Adams, 1996*). The magnetic response associated with the known area of tonalite grades into a relatively constant regional magnetic low south of the deposit that is interpreted as a large granitic body.

#### 4.2.3 Alteration

There does not appear to be a distinct alteration pipe, or stringer zone, beneath or adjacent to the Lynne deposit as is common to other volcanogenic massive sulfide deposits (Franklin *et al.*, 1975; Franklin *et al.* 1981). It is possible that the subvolcanic tonalite body has engulfed and destroyed any pre-existing alteration stringer zone. There is, however, an alteration mineral assemblage associated with the lower Lynne ore stratigraphy and the stratigraphically higher encompassing host rocks.

Talc-rich zones up to 25 feet thick occur beneath and grade into the lower massive sulfide Unit A, and talc-rich zones up to 15 feet thick separate zinc-rich ore from skarn and marble units along the northern flank of the orebody (Kennedy, 1992 *in Adams, 1996*). Local stringer-like veins and disseminations of sphalerite and pyrrhotite occur within Mg-chlorite and muscovite-rich talcose rocks associated with the lower parts of sulfide Unit A (Adams, 1990; Kennedy, 1992 *in Adams, 1996*). Observations by the Noranda predevelopment team (Adams, 1996) reveal a Mg- and K-rich secondary mineral assemblage extending laterally up to 1300 feet down-dip, and over 2000 feet east, in the footwall rocks of the orebody. Within several hundred feet of the orebody, feldspar in tuffs of the Upper Rhyolite and the Upper VCS Unit are altered to muscovite and chlorite. These criteria support a broad alteration assemblage similar to semi-conformable alteration zones found in conjunction with several world-wide volcanogenic massive sulfide occurrences described by Franklin *et al.* (1981). Tonalite in contact with the orebody, on the other hand, appears to be little altered, suggesting a post-alteration intrusive event.

#### 4.2.4 Skarn Mineralization

The abundant calc-silicate mineral assemblage associated with the Lynne deposit is uncommon to volcanic-related massive sulfide deposits. It is apparent that the skarn-style of mineralization

is directly related to the anomalous amount of carbonate rock associated with the orebody. The most intensive skarn mineralization is associated with the extensive replacement of carbonate along the up-dip flanks or projected edges of the orebody. Here pyrrhotite and magnetite are also locally abundant, especially along the southern edges of the orebody. Quartz-diopside skarn assemblages are characteristic of the upper parts of the deposit and epidote skarn occurs in conjunction with intrusive rhyolitic sills within the orebody (Adams, 1996). Skarn mineralization is seldom associated with base-metal ore, but the highest ore-grade gold concentrations have a direct skarn relationship (Adams, 1991).

#### 4.2.5 Genetic Model

Although the Lynne deposit has characteristics of both volcanogenic massive sulfide and skarn-related deposits, it is believed that the supporting evidence is sufficient to suggest a volcanogenic origin for deposit (Adams, 1996). A sulfide depositional scenario is proposed whereby a graben-like depression, perhaps developed in conjunction with a caldera collapse feature, forms on the flank of a felsic volcanic complex centered to the northeast of the present-day Lynne deposit. The association of the near-vertical fracture zones in the Lynne stratigraphy, and the trough-like depression in the tonalite surface, with the rapid thickening of the core of the ore deposit, may represent remnant features of the postulated graben. Within the confines of the down-dropped block of felsic volcanic rocks, and using bounding growth faults as conduits, volcanic vents may have begun an effusive build-up of carbonate-rich chemical sediments. Either syn-depositionally, or closely following the carbonate build-up, solutions rich in zinc, with subordinate lead, silver, copper and gold, replaced much of the central portion of the carbonate mound. At least four episodes of metal infusion prevailed over the deposition of volcanoclastic and chemical sedimentary material within the graben complex. As the sulfide deposition evolved, the relatively abundant copper and iron dropped out of solution, both at the onset of each sulfide event, and throughout the entire sulfide depositional period, and was supplanted by zinc with progressively increasing amounts of lead and then silver. Coincident with the evolution of metal-bearing solutions was the progression from carbonate-rich toward silica-rich chemical sedimentary facies. The confines of the proposed graben feature may account for the stacked layering of chemical sedimentation and sulfide deposition.

Associated with a resurgence of volcanic activity, the sulfide-bearing stratigraphy was covered with a sequence of felsic to intermediate, volcanic flow, pyroclastic, and epiclastic rocks, and intruded by rhyolitic sills. At the same relative time, or subsequent to this point in the volcanic history of the area, a subvolcanic, tonalitic mass intruded the base of the graben feature and its metal-rich sequence of volcanics and chemical sediments. During its intrusion, the tonalite could have engulfed an alteration pipe associated with the graben-bounding fracture system leaving only the more widespread wall rock alteration assemblage. Associated either with the intrusion

of the tonalite, the intrusion of higher level rhyolitic sills, or a combination of both, a skarn-style alteration assemblage developed in the flanks of the carbonate mound in which sulfide mineralization was less pronounced. Pyrrhotite, magnetite and gold mineralization was produced or remobilized in association with this event. Later movement reactivated the bounding faults and subsequent bimodal intrusive activity filled some of the fault zones with dikes. It is of course unknown if additional massive sulfide bodies were deposited in this graben feature prior to, or following, the formation of the current Lynne sulfide units, their possible existence being either destroyed by the intruding tonalite or erosion. Since the geological environment favored the deposition of the Lynne deposit, it is likely, as substantiated by base-metal camps throughout the world, that additional massive sulfide deposits formed in conjunction with the Lynne felsic build-up of the prolific Rhineland-Ladysmith greenstone belt.

## 5.0 Environmental

Planned work will have negligible impact on the environment. Work will be confined, if possible, to existing roads, trails, cut-lines and structures with minor work to clear overgrowth where needed. All work will be conducted in such a manner as to mitigate any environmental impact on nearby streams and rivers; conducting work under winter conditions further negates any environmental impact. Drill core will be collected and transported on a daily basis. Fuel spill kits will be maintained at the drill sites. Drilling additives will be used as a last resort and will consist of environmentally benign substances. Drill sites will be kept clean and refuse removed when the drilling on any given site is completed. Drill sites, drillholes and access roads will be reclaimed and re-seeding conducted based on County Forest and Parks Service and WIDNR recommendations.

### 5.1 Historical and Social Impacts

Disturbance of archeological resources will be negated by use of pre-existing access and work sites where possible. The Lynne deposit was originally drill tested by Noranda Exploration, and it is assumed that prior to the start of their drilling program, an archeological survey of the area had been conducted with no known areas of archeological resources identified.

Drill contractors, support and supervisory personnel will be housed in local motels minimizing the economic impact on existing community infrastructures.

All local community, government and regulatory representatives will be contacted prior to the start of any drilling program. Tamerlane will maintain a proactive dialogue with all representatives.

## 5.2 MSDS

MSDS sheets for substances to be used in the drilling program will be made available to regulatory representatives prior to the start of any drilling.

## 5.3 Drill Cuttings Management Plan

Proper disposal of drill cuttings will be utilized to mitigate environmental effects during Tamerlane Venture's drilling program. Disposal of *inert* cuttings will be based on recommendations provided by the Oneida County Forestry and Parks Division and the WIDNR, and upon existing ground conditions at the drill site. No cuttings will be disposed in or near any naturally occurring body of water. Methods for cuttings disposal are outlined below.

- 1) Cuttings will be allowed to flow or will be channeled to naturally occurring ground depressions. Water used in the drilling process will naturally filter into the ground leaving the cuttings behind to weather naturally.
- 2) Alternative to point 1 above, if no naturally occurring ground depressions are present, cuttings will be spread, or wiffled around the drill rig into the bush. Utilizing this method, cuttings will not build up in any one area allowing native plant species to reassert themselves the following year.
- 3) If ground conditions or the location of the drill site permits, (i.e. drilling on gravel ridges or off of pre-existing roads), a shallow sump or ditch will be excavated and cuttings directed into the sump. This will allow the cuttings to settle out and clear water to infiltrate the ground or flow out of the sump. Upon completion of the hole, the sump will be reclaimed by filling with naturally occurring ground materials.
- 4) Alternative to point 3 and dependent on existing ground conditions, a small berm will be constructed across the flow of the cuttings. This will act as a catch basin and retard the flow of the cuttings which will allow them to settle out and enable clear water to either infiltrate the ground or overflow the berm. Upon completion of the hole, the berm will be reclaimed by back-blading with a dozer or similar piece of equipment to the natural contours of the ground.
- 5) In areas determined to be potentially sensitive by the Oneida County Forest and Parks managing land use officer or WIDNR personnel, sediment fencing will be utilized alone, or in conjunction with either of the above methods to contain cuttings discharge from the drill hole.

#### 5.4 Safety/Emergency Management Plan

The purpose of this plan is to provide a strategic action for potential emergencies that may occur at Tamerlane Venture's drill sites at Lynne. This plan defines the responsibility of key personnel and outlines procedures to effectively mitigate potential emergencies.

No work shall commence at Lynne until an Exploration – Work and Safety Program Submission form has been completed by Tamerlane Ventures Inc., and accepted by regulatory personnel of Oneida County and/or the WIDNR.

##### 5.4.1 Site Coordinator

- A) At the drill rig, onsite coordination will be assumed by the drill supervisor. If the drill supervisor is not available, onsite coordination will be handled by the lead driller.
- B) The onsite coordinator shall have the following responsibilities:
  - i) Assume complete authority over the work area and coordinate the actions of site personnel.
  - ii) In emergencies, evaluate the situation and incorporate the action plan guidelines of this document.
  - iii) Mobilize personnel, emergency equipment and report the incident.
  - iv) Ensure that all medical and drilling equipment is in proper working condition.
  - v) Ensure that all personnel understand the response procedure in the use of emergency equipment and tools to minimize the impact of fire or serious injury.

##### 5.4.2 Accidents involving a minor injury

- A) Ensure that the injured person receives the proper treatment
- B) Contact and report the injury to medical personnel and a representative of Tamerlane Ventures.
- C) Give required information to the medic/Tamerlane representative and fill out an accident report form.
- D) If the injuries require offsite medical aid, it will be the responsibility of the Onsite Coordinator to arrange the transportation to the nearest medical facility.
- E) It will be the responsibility of the Onsite Coordinator to complete the First Aid Record Report and provide a copy to the authorities and Tamerlane, if necessary.

## 5.4.3 Accidents involving a serious injury or fatality

- A) Ensure that there is no further danger to yourself or the patient before starting treatment.
- B) Stabilize the patient
- C) Call the nearest medical emergency response team giving details on the nature of the injury and patient condition.
- D) The Onsite Coordinator will be responsible for notifying the appropriate medical response personnel and decide whether the patient should be transported to the hospital utilizing available transportation or if medical personnel need to come onsite to render assistance. Medical personnel will make the decision for ground or air transport. The Onsite Coordinator will also be responsible for immediately notifying the Tamerlane representative and relaying the details of the emergency.
- E) It will be the responsibility of the Onsite Coordinator to complete the First Aid Record report and provide a copy to the authorities and to Tamerlane Ventures.

## 5.4.4 Fire

- A) Should a fire break out, and it can be contained, personnel should immediately find the nearest available fire extinguisher and extinguish the fire as quickly as possible. All fire extinguishers are clearly marked and easily accessible.
- B) If the fire appears beyond containment, all personnel shall evacuate the area and assemble at a designated rally point.
- C) The Onsite Coordinator, or driller if the fire is at the drill rig, shall take a head count to ensure that all personnel are accounted for. If personnel are unaccounted for, every effort shall be made to locate them and render assistance if necessary in the safest possible manner.
- D) Once all personnel have been accounted for, no one shall leave the area without approval.
- E) The Onsite Coordinator or driller, or someone designated by them, will immediately call the nearest fire department and a representative of Tamerlane Ventures detailing the nature and extent of the emergency.
- F) Once the fire has been contained no one shall re-enter the affected area until the local authorities have deemed it safe to do so.

## 5.4.5 Emergency Contact Numbers

- A) A list of emergency numbers shall be posted where they are clearly visible at the drill camp and drill shack.



## 6.0 Summary

- ❖ Tamerlane Ventures Inc. is petitioning the Oneida County Council to consider opening Forest County Lands in all or parts of Sections 15, 16, 21 and 22 T37N R4E for mineral lease.
- ❖ Tamerlane Ventures Inc. is a publicly traded mining company engaged in exploration and development of mineral properties in North America and internationally. Tamerlane proposes to re-evaluate the economic potential of the former Noranda Lynne Zn-Pb-Au deposit located in Lynne Township, Oneida County, Wisconsin.
- ❖ Tamerlane Ventures Inc. is committed to protecting the environment, health and safety of its employees, their families, their communities and the public. Protection will be ensured through compliance with all applicable laws.
- ❖ Tamerlane has a proven track record of conducting exploration and drilling programs in an environmentally sound manner.
- ❖ Should the Oneida County Board agree to open the requested parcels of land for mineral lease, and Tamerlane become the successful bidder, a two phase program is envisioned. The first phase would consist of confirmation/exploration drilling and geophysics. The second phase, dependent on the results of Phase I, would result in the submittal of a Notice of Intent to collect data to support a Mining Permit Application with the WIDNR.
- ❖ With the advent of new mining technologies as described in the body of this Draft Report, Tamerlane envisions mining of the Lynne deposit utilizing underground methods. This would result in the minimization of the mining footprint and mitigate many environmental concerns.

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**APPENDIX A**

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# **Hazardous Materials Spill Contingency Plan**

## **Response Procedures for Site Personnel**

### **1.0 INTRODUCTION**

#### **1.1 Plan Purpose**

The purpose of the Spill Contingency Plan is to provide a strategic action plan for hazardous materials spills that may occur at any of our project sites. The plan clearly defines the responsibility of key personnel and outlines procedures to effectively and efficiently contain and recover hazardous materials spills.

Petroleum products and hazardous materials considered in the Spill Contingency Plan include:

- Diesel Fuel and/or Biodiesel
- Hydraulic Oil
- Motor Oil
- Gasoline
- Antifreeze
- Propane
- Greywater Sewage

#### **1.2 Tamerlane Ventures Inc. Environmental Policy**

Tamerlane Ventures Inc.'s policy is to comply with all existing laws and regulations to help ensure protection of the environment. Tamerlane Ventures Inc. cooperates with other groups committed to protecting the environment and ensures that employees, government and the public are informed of the procedures to follow to help protect the environment.

## **2.0 SPILL RESPONSE ORGANIZATION**

In the event of a hazardous materials spill, all personnel will follow a defined response and notification procedure led by the On-Site Coordinator and supported by the employees. This group will form the Spill Response Team and will be responsible for specific tasks during a hazardous materials spill.

### **2.1 On-Site Coordinator**

The On-Site Coordinator has the following responsibilities:

- Assume complete authority over the spill area and coordinate the actions of site personnel.
- Evaluate the spill and develop an overall response plan.
- Mobilize personnel and equipment to the site of the spill.
- Report the spill immediately to the proper authorities.
- Obtain additional manpower, equipment and materials if they are not available on-site.
- Provide regulatory agencies and Tamerlane Ventures Inc. with information regarding the status of clean-up activities.
- Prepare and submit a report on the spill incident to regulatory agencies within 30 days of the event.

### **2.2 Environmental Advisor**

The Environmental Advisor has the following responsibilities:

- Provide technical advice regarding probable environmental effects from the spill.
- Provide advice to the On-Site Coordinator for spill response procedures.
- Assist in developing any sampling, testing or monitoring of soil or water directly affected by the spill.

## **3.0 INITIAL SPILL RESPONSE**

Specific actions and communications are in place to ensure an expedient response to a hazardous materials spill (Figure 5.0-1). Initial Spill Response measures include the following steps:

**4.1 First Person at the Site**

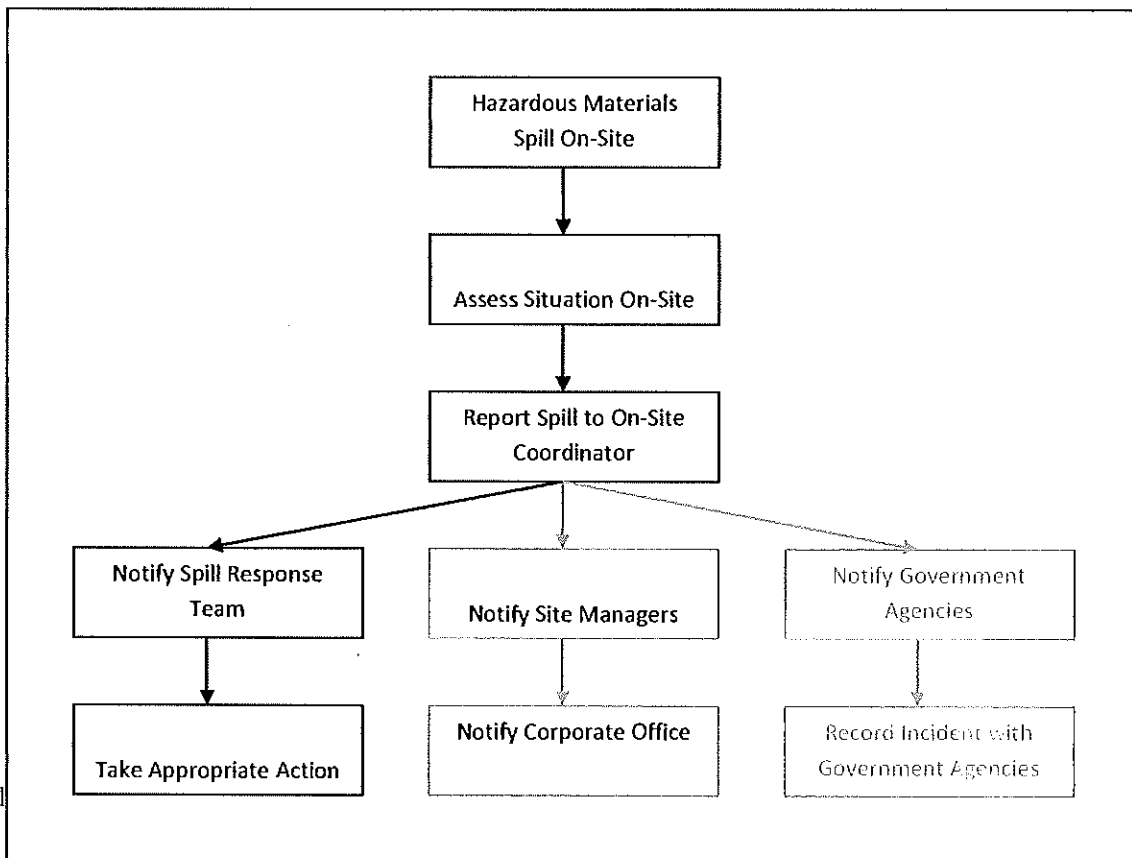
- Identify the material that has been spilled.
- Assess any potential hazard to people in the vicinity of the spill.
- Control the danger to human life if it is possible to do so without additional assistance.
- Assess if the spill can be stopped or brought under control.
- Stop the flow of material if it can be done safely.
- Immediately report the spill to the On-Site Coordinator.
- Call the proper authorities.
- Resume effective action to contain, mitigate, or terminate the flow of spilled material.

**4.2 On-Site Coordinator**

- Call the proper authorities as soon as possible to report the spill and provide initial incident details.
- Gather relevant information and submit a detailed spill report to the applicable regulatory agencies no later than 30 days after the spill event.

Figure 4.0-1

PPPP Response and Notification Process



## 5.0 SPILL RESPONSE CONTACTS

### 5.1 Internal Contacts

On-Site Coordinator	Wolf Schleiss	office: (360) 332-4653 cell: (360) 220-7261
Environmental Advisor	EBA Environmental Engineers	office: (604) 685-0275
Senior Geologist	Wolf Schleiss	office: (360) 332-4653 cell: (360) 220-7261
V.P. / Project Manager	David Swisher	office: (360) 332-4653 cell: (867) 875-7449
President and CEO	Ross Burns	office: (360) 332-4653 cell: (360) 303-3429

### 5.2 External Contacts (Determined on the area work is being done)

Additional assistance may be obtained as necessary from the following organizations:

#### Emergency Services

Ambulance		911
Fire	Willow Region Fire Dept.	(715) 564-2412
Police	Oneida Sheriffs Dept.	(715) 361-5100
Medical Emergency		911
Poison Control	National Call Center	(800) 222-1222

*Emergency Services*  
*Wildlife Fire*  
 715-453-2188 or 2394  
 490-2390  
 911 - Tamarlane Office

Phone: 360.332.4653

441 Peace Portal Drive  
 Blaine, WA 98230

Fax: 360.332.4652

Oil and Chemical Spills		911
Government	DNR Northern Region	(715) 365-8932
	County Parks & Forestry	(715) 369-6140

**6.0 SPILL RESPONSE ACTION PLAN****6.1 Diesel Fuel, Hydraulic Oil and Lubricating Oil**

Stop the spill flow if it is possible and safety permits. No smoking is permitted when responding to a diesel fuel, hydraulic oil or lubricating oil spill.

**On Land**

- Do not flush into ditches or drainage systems.
- Build barrier with soil to block entry into waterways.
- Remove the spill by using sorbent pads or digging out the soil.

**On Water**

- Use a containment boom to concentrate the spill for recovery.
- Use sorbent pads to remove small spills.
- Use a skimmer to remove larger spills.

**On Ice and Snow**

- Block entry into waterways by building a barrier with snow to contain the spill.
- Remove the spill using sorbent pads and shovel contaminated ice and snow into plastic buckets with lids and/or polypropylene bags.

**Storage and Transfer**

- Store all contaminated water, snow/ice, soils, clean-up supplies, and absorbent materials in closed, labeled containers.
- Store containers in ventilated areas away from incompatible materials.

**Disposal**

- Consult with Federal and State Authorities before disposing contaminated material.
- See Section 9.0

*BMP's to Follow -*



**6.2 Gasoline**

Stop the spill flow if it is possible and safety permits. Eliminate ignition sources. Gasoline forms vapors that can ignite and explode. No smoking is permitted when responding to a gasoline spill.

**On Land**

- Build barrier with soil to block entry into waterways.
- Do not attempt to contain the spill if ignition potential exists.
- Use particulate sorbent material to soak up the spill.

**On Water**

- Contain and remove spills only after vapors have dissipated.
- Use containment booms to concentrate spills.
- Use a skimmer on a contained slick.

**On Ice and Snow**

- Block entry into waterways by building a barrier with snow to contain the spill.
- Remove the spill by using particulate sorbent and shovel contaminated ice and snow into plastic buckets with lids and/or polypropylene bags.

**Storage and Transfer**

- Store all contaminated water, snow/ice, soils, clean-up supplies, and absorbent materials in closed, labeled containers.
- Store containers in ventilated areas away from incompatible materials.
- Electrically ground all containers and transporting equipment.

**Disposal**

- Consult with Federal and State Authorities before disposing contaminated material.
- See Section 9.0

*BMP's to follow*

**6.3 Antifreeze**

Stop the spill flow if it is possible and safety permits.

**On Land**

- Do not flush into ditches or drainage systems.
- Build barrier with soil to block entry into waterways.
- Remove spill using sorbent pads or digging out soil.

**On Water**

- Be aware that antifreeze sinks and mixes with water.
- Confine and isolate the spill by damming or diverting the spill.
- Pump contaminated water into containers.

**On Ice and Snow**

- Block entry into waterways by building a barrier with snow to contain the spill.
- Remove the spill by using particulate sorbent and shovel contaminated ice and snow into plastic buckets with lids and/or polypropylene bags.

**Storage and Transfer**

- Store all contaminated water, snow/ice, soils, clean-up supplies, and absorbent materials in closed, labeled containers.
- Store containers in ventilated areas away from incompatible materials.

**Disposal**

- Consult with Federal and State Authorities before disposing contaminated material.
- See Section 9.0
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**6.4 Propane**

Stop the spill flow if it is possible and safety permits. Eliminate ignition sources. No smoking is permitted when responding to a propane spill.

**On Land**

- Do not attempt to contain or remove the spill.

**On Ice and Snow**

- Do not attempt to contain or remove the spill.

**Storage and Transfer**

- It is not possible to collect and/or contain propane once it is released.

**Disposal**

- No disposal is required.

**7.0 SPILL RESPONSE EQUIPMENT**

**7.1 General Equipment**

Hand tools will be kept on site to aid in the mitigation of hazardous materials spills. Motorized equipment will also be available for emergency use and to respond to spill incidents.

**8.0 DISPOSAL METHODS**

In the event of a spill, the On-Site Coordinator will seek local, state or government approval and advice for proper disposal. The selected disposal method will require approval from the Project Manager. The following disposal options are considered appropriate and are expected to meet regulatory approvals.

- Off-Site Disposal (to a landfill that permits disposal of hazardous materials)
- Controlled Burning (contaminants)
- Incineration (liquid product)

*-BMP's to Follow  
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**9.0 SPILL RESPONSE TRAINING**

The On-Site Coordinator will conduct training for all surface personnel working on site. Surface personnel will be trained in the techniques and materials required to manage hazardous spill responses. Training will include the following instruction:

- The initial spill response procedure to use in the event of a spill.
- Location and use of emergency equipment to respond to spills.
- Safe operation of equipment and tools to minimize the potential for spills.
- Operational procedures to limit the potential and impact of spills.
- Monthly safety discussions to address work hazards.

*FIESTA  
Training?*