

# **ABANDONMENT AND RESTORATION**

Meliadine West Gold Project Camp and Underground Exploration Area

**Comaplex Minerals Corp.** 

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## 1.0 Introduction and Background

Comaplex Minerals (CMF) and its joint venture partners have been conducting mineral exploration in the Meliadine West area since June, 1995. The lands in the exploration area are Inuit Owned Lands (IOL) pursuant to the Nunavut Land Claims Agreement (NLCA). Land use for the exploration activities has been authorized by the Kivalliq Inuit Association (KIA), the Designated Inuit Association that holds title to IOL in the Kivalliq Region of Nunavut. Rules and procedures for the management of IOL have been established by Nunavut Tungavik Inc. These require that the intensively used lands in the exploration area, such as the camp, fuel storage areas and underground exploration site be held by a surface lease. The lease requires that a "Reclamation Plan" be developed for the lease area.

A condition of the lease is that on lease termination, CMF will return the land in a condition as near to its original natural state as practical and possible. This preliminary demobilization and reclamation plan will be filed with KIA as required by the lease (Schedule C). A "Final Reclamation Plan" will be developed and filed with KIA prior to lease termination. In the meantime, progressive reclamation practices will be undertaken to keep the environmental effects of local land use in the lease area to a practical minimum.

This Abandonment and Restoration Plan is effective for the term of the various land use and water permits presently in place on the project. It is assumed by CMF that extension of these land use and water permits will continue as the project advances towards feasibility. Cessation of the underground exploration program is likely in the near term; however, this does not in any way signal that the project is over and all, or portions, of the Abandonment and Restoration Plan need to be implemented. Despite the explorative focus of the present underground work, the decline was sized to production standards and reclamation of the underground exploration portal site is not expected until the overall project formally terminated and abandoned. This is normal industry practice.

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# 2.0 Location of Infrastructure

The location of the following infrastructure is provided below in UTM coordinates (NAD83, Zone 15) and latitude and longitude, as requested:

Area	Spill_Kit	UTM_E	UTM_N	Lat_DD	Long_DD	Lat_DMS	Long_DMS
Camp (Centre of Area)	1	541935	6988949	63.0277	-92.1713	63,1,40	-92,10,17
Main Tanks / Bladders (P-50)	1	541214	6988484	63.0236	-92.1857	63,1,25	-92,11,8
Aviation Jet A Storage	1	542031	6988695	63.0254	-92.1695	63,1,32	-92,10,10
Camp P-50 Storage	1	542050	6989129	63.0293	-92.169	63,1,46	-92,10,8
Portal Fuel Tanks (5000 gallons)	1	539845	6988850	63.0271	-92.2126	63,1,37	-92,12,45
Ore Pad Fuel Bladders	1	540054	6989039	63.0287	-92.2084	63,1,43	-92,12,30
Boxcut (Centre)	0	539912	6988732	63.026	-92.2113	63,1,34	-92,12,41

Note: DD – decimal degrees, DMS – degrees, minutes, seconds

#### 3.0 Demobilization

The following scenario assumes that the exploration results from the current underground exploration and bulk sample program will lead directly to CMF abandoning the overall project. All equipment, structures and fuel tanks will be removed from the area of the lease prior to lease termination. Buildings and materials with ongoing value to the company will be removed by CMF. Local persons and businesses will be given the opportunity to salvage any remaining buildings and materials that would otherwise be destroyed prior to CMF undertaking final site reclamation procedures. The only materials and structures remaining will be drill core stored in permanent racks on gravel pads, and the contoured earthworks associated with the underground exploration program.

#### 3.1 Structures

Structures presently on the site (Figure 1) include both soft sided Weatherhaven shelters, rigid "Atco" type trailers, stick built wooden shacks, stick built generator shelters, several fuel pump shelters, and several canvas tent frames. A rigid insulated and heated corridor network connects the main accommodation, kitchen/mess and shower structures. Weatherhaven units consist of four person "sleepers", sixteen person "sleepers", a kitchen / mess, a shower / laundry, an office, a TV/recreation room, a core logging and sample processing lab, and a geology office. At the portal site, 2 large Weatherhaven structures have been established.

It is expected that all Weatherhaven units will be salvaged by CMF. The rigid structures and Weatherhaven tent bases could be salvaged by local interests. All unsalvaged combustible materials will be burned on site, with the non-combustible remainder collected and removed to the municipal land fill at Rankin Inlet.

#### 3.2 Heavy Equipment

The heavy equipment on site for the underground exploration program is valuable and reusable. It will be demobilized to Rankin Inlet for sale to local interests or transport south, after being utilized for site reclamation.

#### 3.3 Underground Services

Should underground exploration not continue after the current program, the contract with the underground contractor provides for the complete removal of the contractor's equipment, with the exception of certain items, installed underground, that are not cost effective to remove.

These materials would be left in situ in the non-reactive permafrost environment. These items are as follows:

- Electrical cables and switch-gear.
- Metal rock support materials.
- Metal pipe and ventilation ducting.

#### 3.4 Drilling materials and fuel

All fuel and fuel infrastructure will be removed to Rankin Inlet. Similarly, all useful material like salt, drilling compounds, and surplus peat and fertilizer will be relocated to Rankin Inlet for local disposal or sale. All fuel vaults (50,000 L double walled tanks, bladders) and barrels will likewise be relocated to Rankin Inlet. All cache sites away from the main storage areas will be reclaimed.

#### 3.5 Non-combustible Waste

All non-combustible waste will be removed to the Rankin Inlet municipal land fill. Material to be burned will be consolidated on a mineral soil area like a rock pad to reduce the number of sites used and to avoid, as much as possible, any areas of scorched tundra. All burning sites will be raked and remaining metal removed and placed in the municipal land fill.

#### 4.0 Reclamation – Camp Area

The camp area will re-vegetate naturally. Revegetation will be slower in higher, drier areas than in lower-lying and moister environments. The use of fertilizers is generally most effective in moist sites and while it helps on drier sites, the response by the tundra plant community on the higher ground occupied by the camp will be slower.

Five different surface conditions will require reclamation on termination of activities at the present camp site:

- Areas of heavy traffic In these areas, the total amount of vegetation on surface is diminished thereby reducing the insulative layer over the permafrost. The effect is an eroded surface settlement and rocks protruding through to the surface. These areas are stable and reclamation will involve applications of fertilizer to accelerate natural revegetation. These sites will also receive applications of fertilizer in the interim to stimulate healthier plants and seed development on the margins of the disturbed areas.
- Gravel pads and walkways Gravel has been placed on the lease area either to establish a level supporting surface under fuel tanks and buildings, or to replace wooden walkways in high foot traffic areas. The natural surface remains stable and is bordered by natural vegetation. The gravel will be mixed with peat and fertilizer and be dispersed, while the original ground surface will be fertilized and allowed to regenerate naturally.
- <u>Building and core rack bases</u> The prolonged presence of a building has prevented plant growth by blocking light to the plants on the site. Similar conditions existed at the former camp site which was vacated in late winter 1996. The natural revegetation of those building sites is progressing but is slow. The ground surface at building sites remains stable and time

alone will allow plants to become established. This will be enhanced by limited scarification to improve the germination of seeds from adjacent plants. Application of fertilizer throughout the lease area generally assists in the process.

- <u>Burned and contaminated sites</u> Sites that have been used to burn remaining wood and other combustibles on demobilization will be few in number and limited in size. All live plant tissue in the soil will have been destroyed by the heat or contamination but the surface will be stable. Like former building sites discussed above, natural revegetation will be slow. The sites will be raked to remove metal, the ash scattered, and the sites fertilized. All sites with contaminated soils will be identified with GPS locations for monitoring.
- Roads and bridges All bridges and culverts will be removed and roads contoured to reduce their vertical profile and scarified to enhance native plant growth.

#### **5.0 Reclamation – Underground Exploration Area**

A two phase reclamation plan is envisaged for the underground exploration area:

**Phase 1:** restoring the site during the snow free season.

Phase 2: removing remaining equipment and gear overland on a winter road.

#### **5.1 Phase 1 – Site Restoration**

# Ore Stock Piles

• A total of 6400 m3 (loose) of ore with potential for acid generation will be in storage on pads of neutralizing waste rock at the end of the current exploration program. This mineralized material would be loaded onto a mine haul truck and disposed of underground in the permafrost environment of the ramp or drifts. The mineralized material would most likely be moved underground in a frozen state. Even if the work were to be done in the late summer, when thawing would be at a maximum, the percentage of unfrozen material that would be moved underground would be small. This material would be mixed with frozen material and would soon freeze.

INAC has requested that progress of freeze-back of the ore underground be monitored. Comaplex presently has 5 thermistors installed in the area of the boxcut (Figure 1). Three of the thermistors are about 100 meters from the portal and decline. These sites are monitored on a periodic basis and the temperature profile is well known. Freezing of tailings and other ore bearing materials in permafrost is a well established and accepted mitigation strategy.

• The remote likelihood of returning crushed ore underground requires the ventilation system to be left intact, as well as loading and hauling equipment left on site to relocate this material. This would be one of the first earthworks projects completed, so that the related infrastructure can be disassembled as soon as possible after the ore is returned underground and the portal is closed. The present contract between Comaplex and the underground contractor is written so that the underground infrastructure, including the ventilation system can be left on site at the end of the current underground exploration program.

- A loader and/or a small excavator and at least one haul truck will remain on site to be available to carry out this work at the end of the present exploration program.
- INAC has requested that progress of freeze-back of the ore underground be monitored. CMF is investigating the cost and logistics of this aspect and can address it again when finalizing the Closure and Reclamation Plan with the KIA.

#### Phase 1 - Site Access Roads and Pads

- Road bed material near streams/creek crossings would be pulled back from the watercourse
  and contoured to prevent migration of sediments into the stream/creek. Areas that have the
  potential to block or dam the natural flow/runoff of surface water will be breached and
  contoured.
- All other roads and pad areas will be graded down and scarified to facilitate growth of natural vegetation. All natural drainage will be restored.

#### <u>Phase 1 - Hydrocarbons/Waste Oils/Hazardous Materials</u>

- In the event that there may be evidence of spills (diesel fuel, oils, etc.) that are too large to recover naturally, soil in the affected area would be excavated and moved to a land farm site on the project. Such a land farm could be established on a rock pad for soil remediation which on completion would enhance colonization of the pad. Guidelines for acceptable limits for the remediation of hydrocarbon impacted soils are given in the CCME Canada Wide Standards for Petroleum Hydrocarbons (PHC) in Soil (January 2008) and the Environmental Guideline for Site Remediation (Government of Nunavut, January 2002). Comaplex will work with the KIA in developing an acceptable strategy for the remediation of any such soils taking into consideration the appropriate guidelines.
- Waste oils will be stored in 45 gallon drums and shipped to Rankin Inlet for recycling and/or disposal, in accordance with Comaplex's existing waste treatment program.
- Hazardous materials, such as hydrocarbon impacted rags, oil filters and old batteries will be appropriately crated for transportation during the winter demobilization all items will be either recycled or properly disposed of in an approved facility down south, as per our present policy in place.

#### Phase 1 - Portal Box Cut

- A metal grate sufficient to hold back the neutralizing waste rock would be placed in the portal mouth. Neutralizing waste rock would then be piled in the portal and packed with the Cat D8 Dozer.
- The till pile surrounding the portal boxcut will be pushed into the cut. The topsoil pile would then be spread onto the till material and fertilizer spread onto the area of the old portal site.

## **5.2 Phase 2 - Winter Demobilization Program**

Phase 2 comprises primarily of demobilizing materials and equipment that has previously been prepared and assembled for removal to Rankin Inlet during Phase 1 of the program.

# Phase 2 - Execution Plan

- An advance crew will be sent to site from Rankin Inlet to get the camp operational and establish communications (tents could be left in place for this purpose).
- Equipment will have to be heated up and started so that snow can be removed from around the outbound freight and equipment.
- Caterpillar Challengers c/w sleighs will be used to demobilize the gear to Rankin Inlet. All loads will be hauled to a designated muster area in Rankin and either sold, salvaged, recycled, land-filled, and if necessary, prepared for shipment from Rankin via barge. Due to local demand, it is not currently foreseeable that anything will be shipped out of Rankin Inlet.

#### 6.0 Drill Core

There are over 160,000 metres of drill core in storage at the site. More will likely be added prior to termination of the lease. If there is no further activity in the Meliadine West area by CMF at lease termination, the core will be evaluated for long term storage stability. Core deemed stored in unstable conditions will be restacked on more durable and stable gravel pads for long term storage and access.

#### 7.0 Cost of Implementation

Costs of executing this Abandonment and Restoration Plan, and of other Plans covering a worst case scenario with the ongoing exploration program are covered in the **Site Liability Security Deposit Review** document provided to the NWB in **September 2007**. This report provides details on Comaplex's \$950,000 security deposit (Letter of Credit) with the KIA that covers both the camp and the underground exploration site (the entire project).

To ensure the \$950,000 Letter of Credit was sufficient for the ongoing and proposed programs, the KIA contracted an unrelated third party to determine what it deemed the complete reclamation cost of the entire Meliadine West project to be (camp and all underground and related infrastructure). The consultant came up with a figure of \$615,419, to which they added a 20% contingency fee for a total of \$738,503.

As part of this process, Comaplex requested recent estimates for the same work from two independent northern contractors with extensive experience in this type of work. One of the quotes was for \$413,839 (includes a 10% contingency) and the second was for \$652,140 with no contingency. In all cases, the present security deposit with the KIA is more than sufficient to cover the complete decommissioning and restoration of the entire camp and underground exploration site.

# **8.0 Post Closure Monitoring**

The longer term environmental monitoring of the site (after the major restoration work has been completed) is covered in the **Site Water Management Plan**, the **Waste Rock and Ore Storage Management Plan**, and/or the **Mitigation and Monitoring Plan** and is not repeated here. Clearly, water and soil sampling after the site has been re-habilitated is the primary method of ensuring that the area has been brought back into environmental equilibrium.

Environmental monitoring will continue during and after the post-closure phase of the reclamation until it can be established that licensed criteria have been met. The amount and frequency of post closure monitoring that is required will diminish with time as natural reclamation takes hold and all parties are satisfied that the reclamation has met its objectives satisfactorily.