



Fort Knox Mine

Solid Waste Management Plan

January 2006

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Fairbanks, Alaska
Solid Waste Management Plan**

TABLE OF CONTENTS

1.0 Introduction	2
2.0 Applicable Jurisdictions	2
3.0 Types of Waste	2
3.1 Recyclable Materials	2
3.2 Non-Putrescible Waste	3
3.3 Putrescible Waste	3
3.4 Oily Solid Waste	3
3.5 Hazardous Waste and Liquid Waste	4
4.0 Location, Design, and Construction	4
5.0 Operation	5
6.0 Closure	6
7.0 Monitoring and Record Keeping	6
8.0 Financial Assurance	7

FIGURES

- Figure 1: Active/Proposed Landfill Trench Location Map
- Figure 2: Typical Landfill Trench Cross-Section
- Figure 3: Active/Proposed Landfill Trench Site Layout: Barnes Creek Landfill Area
- Figure 4: Burn Pit Trench Site Layout: S/O/W Landfill Area
- Figure 5: Closed Landfill Trench Site Layout: Melba-Monte Landfill Area
- Figure 6: Buried Landfill Trench Layout: Tailing Dam Landfill Area

APPENDICES

- Appendix A: Monthly Landfill Inspection Form
- Appendix B: Landfill Trench/Tire Dump Coordinates
- Appendix C: Smart Ash Model 100 Operating Instructions

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1.0 Introduction

This solid waste management plan is part of the overall environmental management system developed by Fairbanks Gold Mining Inc. (FGMI) for the Fort Knox Mine. The *Fort Knox Mine Waste Disposal Procedures* booklet (attached) is the other component to this specific management plan. The booklet is issued to all employees and contractors. This plan and booklet address construction and operation phases of the mine, and both will be updated when necessary as the project continues to develop.

2.0 Applicable Jurisdictions

The Fort Knox Mine is located within the Fairbanks North Star Borough in the State of Alaska. Solid waste disposal is regulated by federal and state requirements. The Fairbanks North Star Borough adopted all state requirements by reference in the Conditional Use Permit issued to FGMI on March 1, 1994.

Permits required for operation of the on-site landfill are as follows:

Alaska Dept. of Environmental Conservation – Solid Waste Permit
Alaska Dept. of Natural Resources, Division of Forestry – Burn Permit
Fairbanks North Star Borough – Conditional Use Permit
Fairbanks North Star Borough – Zoning Permit

All waste put into the Fort Knox landfill will be generated by construction, operation, and closure of the Fort Knox Mine.

3.0 Types of Waste

Waste materials from the Fort Knox Mine will be handled as described in the following sections.

3.1 Recyclable Materials

FGMI's waste reduction strategy includes reuse and recycling of as many materials as possible. Air filters are examples of materials that can sometimes be cleaned and reused. Tailings water can be reused. Vehicle and heavy equipment batteries, rechargeable radio batteries, used oil and coolant are examples of materials that can be recycled. Assay sample reject rock will be collected in a steel bin along with other assay and refining

residuals from the laboratory. Periodically these materials will be mixed with mill feed and recycled through the milling process.

3.2 Non-Putrescible Waste

Inert office refuse and non-recyclable, non-putrescible items such as cardboard boxes, packaging materials, wooden shipping materials, plastic sample bottles and containers, non-recyclable metal materials, tires, and steel drums will be handled in one of three ways, depending on the nature of the material.

Direct Burial: Items such as clean, non-recyclable metals, synthetic liners, and other inert materials that would not benefit from burning will be placed directly into the landfill trenches. Non-recyclable empty drums will be drained, flushed if necessary, crushed, and disposed in a trench specifically designated for drums only. All non-recyclable scrap vehicle parts and machinery will be drained of all petroleum products prior to direct burial. Tires will be placed along the base of the Barnes Creek or Yellow Pup rock dumps where they will be covered by the next lift of material.

Open Burning: The designated open burning area, as required in the burn authorization, will be located away from the construction and demolition debris disposal operations. The burn pit will be constructed to allow the periodic dozing of ashes and non-combustible material (staples, nails, and banding) to the west-end of the pit. Pallets, cyanide bag boxes, and cardboard from the shipping of blasting supplies are the only materials to be disposed of in the burn pit. All employees and the contractors are instructed in waste disposal practices and issued the Fort Knox Mine Waste Disposal Procedures booklet to minimize disposal of non-combustible material and other wastes in the burn pit.

Burn piles will be placed and burned in such a way as to minimize large amounts of black smoke.

Three-Smart Ash Model 100 burners will be used to incinerate oily rags, absorbent pads and materials contaminated with petroleum hydrocarbons. Operating instructions will be located at Mobile Maintenance, Mill Maintenance, and Appendix C of this plan. Ash from the incinerators will be placed in the landfill as needed and be covered. The incinerators will comply with the visible emissions standard of 18 AAC 50.040(a) and all other applicable standards.

3.3 Putrescible Waste

Putrescible waste will be placed in covered dumpsters located behind Administration building and Mill building and hauled to the Fairbanks North Star Borough Landfill/Solid Waste Disposal Site.

3.4 Oily Solid Waste

Used oil filters will be crushed or hot drained for 12 hours, then landfilled. Oily rags and used absorbent materials will be incinerated in Smart Ash Burners.

3.5 Hazardous Waste and Liquid Waste

Neither hazardous nor liquid wastes will be disposed of within the on-site landfill. Septage or other semi-solid wastes from a wastewater treatment process or porta-potty will be periodically removed by a commercial pumping service and disposed of in accordance with the commercial pumping services ADEC approved procedures.

All hazardous wastes will be handled in accordance with the Resource Conservation and Recovery Act (RCRA) requirements. Materials not designated for disposal onsite will be sorted and shipped to Fairbanks for recycling or disposal. All materials will be handled in accordance with applicable regulations.

4.0 Location, Design, and Construction

The main active landfill trenches will be located on the northwest side of the overland conveyor accessed by the Barnes Creek Road. Other areas below the mill, shop/office/warehouse and within the Yellow Pup rock dump are permitted for disposal trenches. Landfill trenches will also be located in areas from which borrow material has been removed on the north side of the tailing storage facility dam. These areas are shown on Figure 1. The trenches located below the tailings dam are intended for use only during the phased construction of the dam.

All trenches will be located at least 100 feet from any surface water body and more than 200 feet from any drinking water source. Trench bottoms will be more than 10 feet above any existing or expected future groundwater table. The main landfill trench location on Barnes Creek is located at the 1740-foot elevation (as of 9/1/05) and the nearest surface groundwater elevation in the area of the trenches range from the 1400-foot elevation to the 1450-foot elevation. The average elevation differential between the bottom of the trenches and groundwater will be at least 200 feet.

Except for the landfills in the vicinity of the tailing dam, which are intended for use only during the construction and closure phases of the dam, the landfill areas will be located below planned diversion ditches. This means that all surface water from the landfill areas will flow into the zero discharge tailings impoundment.

Bulldozers excavate the trenches. Landfill trenches are 20 feet wide, 10 feet deep, and 150 feet long (see Figure 2). Each of the trenches will have protective berms around them to allow vehicles to safely back up to the trench for unloading. The berms also serve to divert surface runoff away from the trench.

Signs are in place indicating conditions of use and what types of waste are acceptable for the placement in the landfill. Scavenging or salvage of waste materials from landfill trenches is prohibited to protect the health and safety of employees. Human access to the

landfill is limited to project vehicles and personnel by the mine security system, which includes fencing, a security gate, and limited access to the mine. Animal access to the landfill is controlled by not landfilling anything that will attract animals.

5.0 Operation

The main mine landfill disposal area has two trenches, one for crushed drums and one for inert solid waste, and an open burn pit/trench area that are active simultaneously. When one trench becomes full a new one will be put into service. This is expected to occur approximately every six months to one year, depending on project activity (see Figure 3). Six to ten trenches are anticipated over the next five-year permit period. More solid waste will be generated during periods of construction and closure.

Open burning of non-reusable pallets, cyanide bag boxes, and packing material from blasting supplies is conducted in a designated burn pit (see figure 4). Burning is conducted to minimize black smoke. Open burning is conducted in accordance with authorization from the State of Alaska Department of Natural Resources, Division of Forestry, Burning Permit No.56009 (as of 11/30/05) or additional burning permits or authorizations as issued by the State of Alaska.

Cooled ashes and non-combustible material (staples, nails, and banding) in the designated burn pit are periodically dozed to one end of the pit and covered with a minimum of six inches of cover.

As described in the Fort Knox Mine Emergency Manual, in the event of a fire, FGMI's 35 member industrial fire brigade has access to hand held fire extinguishers and a mobile fire wagon with 500-gallon foam/water capacity located in the ambulance bay. In addition four track dozers, two rubber tire dozers, three motor graders, and two 9,000-gallon water trucks are available for use in fire suppression.

Solid waste is compacted in approximately two-foot lifts by bulldozers (minimum five passes) to maximize the life of each landfill trench and minimize possible settlement of the trench after closure. Six to twelve inches of cover will be placed on the active area of the trench in the spring (just after snowmelt) and fall (just before snowfall) to minimize potential leachate or when necessary to control windblown litter. When a trench is filled to within four feet of the surface, a cover layer of soil or rock will be placed on top. For those trenches near the mine pit, an additional layer of development rock (approximately 20 feet) will cover the filled trenches as the next lift of development rock is placed on the dump. Figure 5 and 6 show the locations of closed trenches in the mine area and below the tailing storage facility.

Any litter, windblown or otherwise, in the areas around the landfill and office/mill complex as well as around the rest of the mine will be picked up after spring break up and monthly thereafter during the summer months.

All incidence involving accidental fires at the landfill trench, wildlife problems, litter or other unusual activities at the disposal sites are to be reported to Safety/Security and the

Environmental Department. The appropriate supervisor will respond depending on the incident.

6.0 Closure

At closure of an individual trench (or temporary closure of a trench) a minimum of two feet of cover will be placed over it within 60 days of the last solid waste being placed in the trench. This cover will be sloped to deter infiltration and cause surface water to drain away from the area over the trench.

At closure of the mine (or closure of a waste rock dump containing landfill trenches) surface reclamation will be performed in conformance with the Fort Knox Project Reclamation Plan dated January 2005 (or any revisions thereof). Final closure of landfill trenches require that trenches are covered with two feet of cover material and the area sloped to cause water to runoff away from the trench to minimize infiltration. Growth medium will be applied as necessary to promote natural re-invasion by native vegetation. Application depth for the growth medium will be determined on a site-specific basis. The seedbed will be prepared and fertilized as necessary using rates and mixes determined from information acquired during concurrent reclamation activities at the mine site.

7.0 Monitoring and Record Keeping

The main landfill area to be used over the mine life is located in the Barnes Creek area west of the conveyor causeway. Other landfill trenches are located in the waste rock dump areas adjacent to the mine pit and mill site. All trenches are above groundwater and will be protected from storm water run-off. All surface and subsurface drainage from these landfill areas will flow into the fully contained tailing basin. No special groundwater or surface water monitoring is planned for these landfill areas.

Since the landfill trenches in the vicinity of the tailing dam will be limited to inert waste suitable for direct burial or open burning followed by direct burial, no special groundwater or surface water monitoring is planned for these landfills.

Overall surface water and groundwater monitoring for the project area are described in the Fort Knox Project Monitoring Plan, dated January 2006 (or revisions thereof).

Weekly inspections (see Appendix A) will be made by environmental personnel to ensure that the active landfills are being operated properly and in compliance with the ADEC solid waste disposal permit. Non-permitted waste discovered in the landfill trench(s) during routine inspections will be removed and disposed of properly. The Environmental Department will determine the responsible department and notify the proper superintendent or supervisor to inform employees of proper waste disposal procedures.

Trench location records (survey coordinates-see Appendix B) will be maintained throughout the mine life and will be filed with ADEC and ADNR (the land manager)

upon final closure of the landfills. All inspection and location records are maintained by the Environmental Department.

8.0 Financial Assurance

Financial assurance for landfill operation and closure will be covered under the overall financial assurance and bonding for the Fort Knox Mine Solid Waste Disposal Permit 9331-BA008.