



Elsa Reclamation and Development Company

Keno Hill Mine

Site Investigation and Improvements, Special Projects

Demolition Plan

MAY 2010

Prepared by:



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1.0 PROJECT DESCRIPTION

Approximately 211 buildings ranging in various sizes and building construction type reside throughout the Keno Hill Silver District and require demolition as part of the Existing State of Mine Closure Plan. It is estimated that 43,985 m³ of building waste is required to be buried throughout the district, including within the Elsa town site. The report completed by Access Consulting Group titled: "*Elsa Reclamation and Development Company, Keno Hill Mine, Site Investigation and Improvements, Special Projects, Hazardous Waste Assessment*", March 31, 2009 outlines the various hazardous waste identified in the buildings during the field assessment. As part of the physical hazard assessment plan, heritage consultation will be conducted with Indian and Northern Affairs Canada (INAC), Yukon Government Heritage, Keno City residents and First Nation of Nā Cho N'yak Dun (NNDFN) to determine if the buildings can be demolished or if they will be designated as a historical heritage site.

The hazardous waste assessment was completed in August 2008 and January/February 2009. Hazardous waste including batteries, partially full drums with unknown material, asbestos, PCB lamp ballasts, lead paint and containers with unknown chemicals were identified in the buildings throughout the district. Previous hazardous waste removal programs were completed throughout the district and included the collection, storage and removal of PCB, laboratory and mill chemicals. Hazardous waste will be removed as per the special waste permit with the exception of lead paint and asbestos prior to demolition. Attachment 1 is the current special waste permit.

The demolition plan will be completed over the next two to five years. The buildings are one to four stories high and were built anywhere from 1920 to 1990. The buildings mostly consisted of bunk houses, mess halls, grocery stores, mechanic and maintenance shops, storage sheds, utility/boiler rooms and geology/engineering buildings. A sawmill and a large floatation mill/crusher house is located in the Elsa town site. Most of the buildings are wood framed and sheeted construction, but there are a few steel framed structures located throughout the district. The majority of the buildings are wrapped in an asbestos tar paper or have asbestos tiles as siding.

An excavator will be used to demolish the buildings and a dump truck will be used, if required, to move the rubble to an approved disposal location. Elsa Reclamation and Development Company (ERDC), a wholly owned subsidiary of Alexco Resource Corp., has a commercial dump permit in place (see Attachment 2). A demolition plan outlining worker health and safety is required due to the asbestos building materials.

The Yukon Occupational Health Regulations were reference to develop this document and will be followed by ERDC employee's onsite. The Regulations are attached in attachment 3.

1.1 Objective

The objective of this demolition plan is to outline safe work procedures for the protection and safety of the workers, the public and the environment.

1.2 Tasks

The following tasks are involved within the demolition plan:

- 1) The buildings will be inspected as part of the heritage consultation and will be conducted with INAC, Yukon Government Heritage, Mayo, Keno City residents and First Nation of Nä Cho N'yak Dun (NNDFN) to determine if the buildings can be demolished or if they will be designated as a historical heritage site. Items of interest will be salvaged and saved;
- 2) One supervisor will be available and onsite at all times and will be trained in asbestos awareness and removal. Attachment 4 is the course outline which has now been completed for site staff and workers;
- 3) All workers will be required to read, understand and follow the onsite 2008 Alexco Resource Corp. safety manual. The Safety Manual is attached in Attachment 5;
- 4) A pre job meeting for everyone involved will be conducted with WCB present onsite;
- 5) Daily tailgate safety meetings will be conducted by the onsite supervisor and a Safety Checklist (Attachment 6) will be completed;
- 6) Designated work areas will be clearly marked using warning signs, barricades and caution tape. Only authorized workers may enter the work area;
- 7) Smoking is not permitted in the work area, only after proper decontamination procedures for breaks have been followed;
- 8) The entrance and exit of the designated work area will be controlled;
- 9) Workers will wear proper personal protective equipment (PPE). Proper PPE includes:
 - a) Impervious disposable coveralls with hoods that resist asbestos fibre penetration. Gaps will be taped shut;
 - b) CSA steel toed rubber boots;
 - c) Rubber gloves;
 - d) Safety eye wear;
 - e) Hardhat;
 - f) Visible safety vests; and
 - g) Fitted respirators with a "100" HEPA filter.
- 10) Workers will be clean shaven and required to perform a fit test with the respirator. Three powered air purifying units will be made available to the workers if needed;
- 11) Compressed air will not be used to clean up or to remove dust from work areas or clothing;
- 12) Dry sweeping will not be permitted;
- 13) Prior to demolition, the building will be inspected again to ensure the utilities are disconnected. This will be a component of the safety checklist. Any hazardous waste such as batteries, partially full drums with unknown material, PCB lamp ballasts and containers with unknown chemicals; unknown containers will be removed, stored and handled as per the special waste permit. The buildings will be then given approval for demolition;

- 14) Large volumes of water will be available at the demolition site and the disposal area. Water will be applied to the work areas (depending on the specific situation and building) using either a 1 ½ inch fire hose with an adjustable nozzle or spray bottles with a surfactant. All work areas with potential Asbestos Containing Material (ACM) will be kept wet;
- 15) The air will be continually misted near workers who are removing asbestos or cleaning up waste materials;
- 16) Wearing PPE, any uncontaminated (free of ACM or paint) metal, wood and building contents that can be easily collected will be segregated and salvaged, the work area will be kept misted;
- 17) If asbestos is being segregated and removed from a building, either a hose or spray bottle (depending on what works better) will be used to apply water to the work area during the manual removal of asbestos tar paper or asbestos cement tiles. The asbestos will be either bagged right away or kept wet until it is disposed of in the landfill. The wood under the asbestos will not be salvaged or reused, only burned;
- 18) Friable piping asbestos will be removed where possible using the glove bag system or covered in poly then cut and “capped”. If the glove bags or poly are not practical, the piping will be soaked using the fire hose or spray bottle with a surfactant during removal. Pipe with ACM will not be salvaged or reused only buried in the approved landfill onsite;
- 19) If there are no uncontaminated materials in a building to be segregated, the inside and outside of the building will be soaked with water using at least a 1 ½ inch fire hose with an adjustable nozzle prior to demolition. As the excavator pushes the building down, a water mist will be applied to knock down any dust particles. Water is critical to prevent workers from being exposed to potentially hazardous dust;
- 20) Workers and equipment will be positioned as best as possible upwind from the buildings and work areas;
- 21) All workers in the designated work area will follow a decontamination protocol if leaving the work site;
- 22) If waste material is required to be moved using a dump truck, loads will be soaked and then covered. Waste material will be assessed daily;
- 23) Water will be used at the disposal location to knock the dust down while the dump truck is unloading and while the material is being moved into the waste cell. The dump trucks will be rinsed out once they are emptied. Residual waste will be collected in a small pond, allowed to evaporate, then covered;
- 24) The waste that can not be burned will be disposed of as per the commercial dump/solid waste permit;
- 25) The disposal sites will be decommissioned as per the appropriate Yukon Government *Environment Act Regulations*. Specifically, Schedule 1 Operating Standards for Dumps #4 (Closure and Abandonment of the dump). Decommissioning will include capping the disposal area with 1 m of compacted soil; if necessary a toe berm will be placed along the base of the disposal area to prevent slumping and the area will be revegetated similar to the surrounding area;
- 26) Burning of uncontaminated wood (free of ACM and paint) will be done in accordance with the air emissions and/or burning permit;
- 27) Uncontaminated metal (free of ACM) will be stockpiled in a designated area. Disposal options will be evaluated;

- 28) The disposal areas will be minimized and will be staked with a steel stake, marked using a GPS and mapped.

1.3 Decontamination Protocol:

- 1) A three stage decontamination trailer will be used. Partitions between rooms in the decontamination trailer will be self-closing so that each room can function as an air lock. They will be constructed of overlapping sheets of heavyweight poly to form a curtain;

| Entering the contaminated work area:

- 2) Enter the clean room, remove all street clothes and personal belongings, and leave them in the clean room. Store clean, unused disposable coveralls in this room.
- 3) If the worker is not going to wear warm clothing underneath the coveralls, the disposable coveralls can be put on. If designated warm clothing is going to be worn, skip to step 4 and carry disposable coveralls to the transfer room;
- 4) Put on respirator and ensure that it fits and works properly;
- 5) Pass through shower room;
- 6) In the personal transfer room if the worker is already wearing the disposable coveralls, finish putting on any other PPE required, including gloves, steel toes rubber boots and safety head gear. If designated warm clothing is being worn, put on clothing, followed by the disposable coveralls then the remaining PPE; and
- 7) Enter the contaminated work area.

Leaving the Contaminated Work Area:

- 8) Before entering the personnel transfer room, remove all gross asbestos using wet rags or a vacuum cleaner equipped with a HEPA-filtered exhaust.
- 9) In the personnel transfer room, remove all protective clothing and equipment except the respirator. Hang designated warm clothing and place disposable protective clothing and any waste materials in a poly bag for disposal.
- 10) Enter the shower room and shower while wearing the respirator. After having an initial shower and thoroughly rinsing respirator face piece and its harness, remove the respirator and finish showering. (Adequate supply of tempered water and soap must be provided).
- 11) Enter the clean room and dress in street clothes. Thoroughly clean and disinfect the respirator, then store it in the clean room until its next use. Wet filters are not normally reused.

Decontamination continued:

- 12) A vacuum cleaner equipped with a HEPA-filtered exhaust will be used to clean up any dust or waste during work. The vacuums will be used to clean the cab of any equipment used during demolition. Where possible, vehicles will be rinsed out and wiped clean using wet rags at the end of the project;

- 13) Vehicles will be designated for the project and “clean” workers will not use equipment or trucks until the vehicles are cleaned. Workers cleaning vehicles will where applicable PPE and follow decontamination protocol;
- 14) For lunch and for any breaks during the day Workers will be required at minimum to decontaminate using vacuums and water around their faces and hands (hood may be pulled back). Breaks will be taken a safe distance away from the designated work area;
- 15) The WCHSB safety officer will be notified when the work is completed.

1.4 Air sampling and monitoring of workers:

- 1) As per sections 40 and 41 of the Yukon Occupational Health Regulations, air monitoring is required to determine if a worker is considered an “exposed worker” as per the regulation definition. An exposed worker means a worker who, for at least 10 days in a 12-month period, will likely be exposed to airborne asbestos in an amount equal to or greater than 25% of the 8-hour Occupational Exposure Limit in Table 10 of the regulations. If a worker is considered exposed, ERDC shall ensure that the worker undergoes a medical assessment as per the requirements in section 41 of the regulation.
- 2) Pacific Environmental has been contracted to conduct third party air monitoring of the ambient asbestos concentrations, as well as during the demolition. ERDC employees will also be monitored to determine if workers are considered “exposed” and require a medical assessment. The air monitoring plan from Pacific Environmental is attached in attachment 7.

The attached safety manual outlines all environmental, workplace, safety and accident reporting and drug/alcohol substance abuse policies. Emergency contact information as well as emergency procedures are outlined in the manual. All workers onsite will be expected to read, understand, follow and enforce the policies. Following the demolition plan, No 14 Demolition Code of Practice and the safety manual will be critical in the protection of workers, the public and the environment.

Attachment 1
Special Waste Permit

Attachment 2

Commercial Dump Permit

Attachment 3

Yukon Occupational Health Regulations

Attachment 4

Asbestos High Risk Training, Course Outline

Attachment 5

**Alexco Resource Corp.
Project Policies, Procedures, Field Safety
and Environmental Manual**

Attachment 6

Asbestos Pre-job Meeting Safety & Health Checklist

Attachment 7

Pacific Environmental Air Monitoring Plan