KENO HILL PROPERTY

PHYSICAL HAZARD REDUCTION PROGRAM

2007

Prepared for:

Yukon Government

by:

ACCESS CONSULTING GROUP

February 2008

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1.0 INTRODUCTION

Over the course of 75 years of active mining on the Keno Hill Properties, there are a substantial number of older workings on the former United Keno Hill Mine (UKHM) sites. Many of these abandoned sites are accessible to the public and in some instances local literature even encourages tourists to visit these sites. The public is potentially exposed to human health and safety hazards such as open shafts and stopes, instable pit walls, open or partially accessible adits and buildings. These types of hazards can result in persons being injured, even fatally wounded, if the right precautions are not in place to protect the public from these dangers.

The Government of Canada, along with the Yukon Territorial Government and the Yukon First Nations, commissioned a comprehensive Baseline Environmental Study project in the summer/fall of 1999, for the Keno Valley and Dublin Gulch area by Public Works and Government Services Canada (PWGSC)[1]. This project's key objectives were to:

- Compile the available and current information describing the physical setting and resources of Keno Valley and Dublin Gulch;
- Describe traditional and other non-mining land uses in the study area; and
- Identify mine tenure status, historical mine exploration development and operational activities, potential or acid rock drainage conditions, and health/safety risks associated with specific Keno Valley and Dublin Gulch exploration and mining sites.

Alexco Resource Corp. was selected as the preferred purchaser of the UKHM property in June 2005. A condition in the Request for Offers and purchase of the assets of UKHM was for the selected purchaser to undertake a Baseline Environmental Assessment of the property. SRK Consulting was contracted by Alexco Resource Corp. to conduct site inspections as part of this assessment[2].

SRK visited the Keno Hill property and documented a number of sites in September 2005, but ran short of time and could not complete the inspection of all the sites indicated in the PWGSC Environmental Baseline Assessment until the following year. In August and September 2006, SRK Consulting returned to the property to continue the Baseline Environmental Assessment, and was accompanied by Access Consulting Group (ACG) to complete site inspection and

[1] Public Works and Government Services Canada, "Keno Valley/Dublin Gulch Environmental Baseline Assessment", March 2000
[2] SRK Consulting Engineers and Scientists, "Baseline Environmental Report, United Keno Hill Mines Property", April 2007

documentation. In the summer of 2007 ACG personnel visited and assessed the 14 hazardous sites that were given highest priority following the 2006 investigation. Remedial works on these sites to reduce risks to public health and safety commenced shortly after the site visit.

This document outlines the methodology to identify, mitigate and rank the risks associated with each site observed in 2005 - 2007. This document summarizes the remedial work completed in the summer of 2007 on the higher priority hazards to ensure that public health and safety risks, as well as Alexco Resource Corp. interests, are protected and ensure continued site safety. The objective is to reduce exposure to hazards at the site.

2.0 METHODOLOGY

The following methodology was used:

1. Review of previously documented physical hazard information on the Keno Hill Property, including the PWGSC Environmental Baseline Assessment, the SRK Preliminary Baseline Assessment Report, the 2006 ERDC Physical Hazards Report and discussions with site caretakers and historic operators possessing historical knowledge of site operations;
2. Comprehensive physical hazard site investigation and documentation of hazards not currently identified on the Keno Hill Property (2005-2006);
3. Updating the physical hazard risk register including all risks at all locations showing location, description of hazard, accessibility, and priority for risk reduction;
4. Consultation with local Yukon Government offices to review the risk registry and hazard ratings;
5. Consultation in 2007 with Yukon Government Heritage to review heritage potential of site;
6. Review 2006: recommendations to either eliminate or limit access to the hazards, including but not limited to signage, fences, locked gates, and public education;
7. Additional field investigation as necessary to develop design;
8. Develop construction designs and cost estimates for elimination of the hazards;
9. Implement the recommended actions; and
10. Prepare a final project report.

2.1 BACKGROUND REVIEW

In March 2000, as part of a joint initiative by the Government of Canada, Yukon Government and Yukon First Nations**,** the Environmental Services Department of Public Works and Government Services Canada conducted baseline environmental assessments of areas in the Yukon generally associated with exploration, mining or industrial activities and operations. One such assessment included in its study area the Keno Hill Mining Properties, and the findings of this study are presented in *Keno Valley/Dublin Gulch Environmental Baseline Assessment*, (Environmental Services – Public Works and Government Services Canada, March 2000.)

This assessment included inventories of mine openings and excavations, and of infrastructure at each of the identified sites based on physical site inspections conducted in 1999 and 2000. This provided the foundation for further site investigations and follow-up. The pertinent information (workings descriptions, maps, site locations) from the PWGSC document was extracted and compiled in a brief field reference manual for site investigators. This information was qualified with many years of site experience on the part of ACG principals and sub-contractors. Known data gaps and erroneous information from the PWGSC report were reviewed and corrected, augmenting the background data and presented a more complete picture of the existing nature and locations of physical hazards on the Keno Hill Properties. It is with this background information and preliminary work that physical hazards will be continuously examined and mitigated.

2.2 SITE INVESTIGATION

An initial site investigation was conducted in September 2005 as part of the Baseline Environmental Assessment study, which included verifying and documenting existing physical hazards. Darryl Hockley, Bruce Murphy, and Dylan McGregor of SRK Consulting, were accompanied by Ken Nordin of Laberge Environmental Services and Peter Johnson of Alexco Resources Corp. in conducting this initial investigation, which covered a number of accessible sites. The sites were examined in a manner directed initially at verifying prior documentation, and then more exhaustively to produce a definitive inventory of the particular hazards at that location.

As the initial investigation took place late in the year, not all of the concerned sites were examined at that time. Dylan MacGregor of SRK Consulting, accompanied by the author, was on site from August 16 to August 25, 2006, and documented 32 of the remaining sites, as

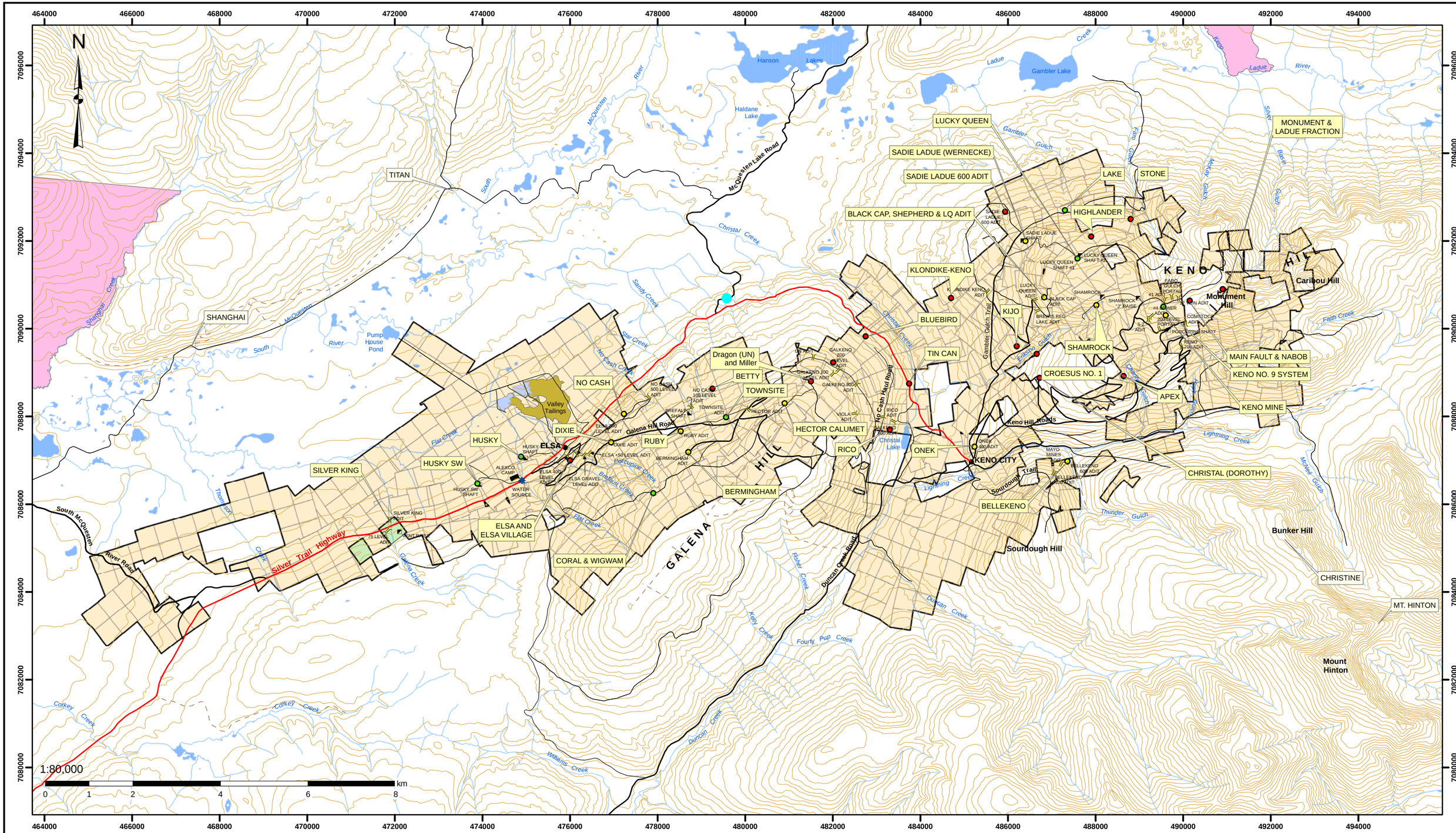
indicated on the Project Area Overview map, as well as reviewing two high priority sites including Bellekeno 600 (Eureka shafts), and the Lucky Queen adit. Inspections were carried out on foot, by pickup truck, and by All-Terrain Vehicle. Sites included in these inspections were those known to be on UKHM claim blocks and those that were within one claim block of a known UKHM claim. The workings associated with these sites were located with a GPS unit in order to verify that the workings were either on or off UKHM claim blocks. One site, Gold Queen, could not be located based on the coordinates and description given in the PWGSC document, and therefore could not be documented.

Dylan MacGregor completed the inspection and documentation of the four remaining sites on September 18, 2006, including the Keno No. 9, Cream & Jean, Dragon & Miller, and Coral & Wigwam sites, which concluded our documentation of all relevant sites.

On June, 15, 2007 Jim Muntzert, Mike McDougall, and Sam Wallingham visited and assessed the 14 physical hazard sites on the Access Consulting Group priority list identified in the 2006 Physical Hazards report. Work on these sites commenced shortly after the site visit. In addition to the suggested sites, remediation occurred at two new sites; the Wernecke Shaft and a sink hole above the Hector Calumet pit.

On July 13th, 2007 a preliminary meeting was held with Barb Hogan Yukon Government Historic Sites Register and Hugh Copland Yukon Government Project Manager Assessment and Abandoned Mines Branch to discuss 2007 season's Physical Hazards Reduction work. A follow up meeting at site with Barb Hogan on August 9th, 2007 which included, a tour of the sites which her department had not previously documented. Barb again visited the site on October 2nd, 2007 with Brent Riley her department's conservation planner.

The sites that were visited during the 2007 season were Dixie, Coral and Wigwam, Bermingham and Ruby, No Cash, Hector Calumet, Onek Adit, Blackcap Shepard and Lucky Queen Adit's, Lucky Queen Shaft House, Lake Shaft House, Highlander Adit, Keno 200 Adit, Keno #9 system, and Sadie Ladue 600 Adit. The results of site assessments and remedial work completed are outlined in Section 4.0. A diagram showing all the sites inspected and their remedial status from 2005 - 2007 is shown in Figure 1.



Legend

- Sites Mitigated
- Sites Partially Mitigated
- Sites To Be Mitigated

Topography

- Town
- Silver Trail
- Secondary Road
- Limited-use road
- Trail
- Watercourse
- Waterbody

Mine Workings

- Valley Tailings
- Adit
- Shaft (to surface - connection to underground not determined)

Quartz Claims

- UKHM Claim Package

Note:
Map does not depict all mining claims in the district.

- First Nation Settlement Land
- Crown Grant

Notes:
This map is for illustrative purposes only.
This is not a legal document.
National Topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:50,000. Cadastral data compiled by Natural Resources Canada. Reproduced under license from © Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved.
Quartz Claim boundaries are current as of October 14, 2005. Data source: http://geomaticsyukon.ca.
Crown Grants confirmed by Land Titles November 2005.
Projection: UTM Zone 8 NAD83
NTS Sheet 105M/13 and 105M/14

ALEXCO
ACCESS CONSULTING GROUP

KENO HILL SILVER DISTRICT

PHYSICAL HAZARD REDUCTION PROGRAM 2007

Project Overview & Site Status

Drawn By: HD	Date: February 2008	**FIGURE 1**
Checked by: RM	File: D:\Project\AllProjects\ALEX-05-01\gis\mxd\UKHM\PhysicalHazRedProgram\2007\Fig1_OV_SiteStatus.mxd	

2.3 PHYSICAL HAZARD RISK REGISTRY AND RATINGS

All of the physical hazards identified during the site visits were compiled in a comprehensive list, organized in numerical order, using the site identifications numbers used in the Keno Valley/Dublin Gulch Environmental Baseline Assessment. The columns in the risk registry (Appendix A) included the PWGCS site numbers and site names, a description of the location as well as the UTM coordinates a description of the hazard and who last identified the hazard (ie. PWGCS, SRK Consulting, ACG), and mitigation measures taken to date. Three columns used to determine the hazard rating are listed below:

1. **Severity of the Consequence:** If the hazard could result in serious injury or death (i.e. Falling down a vent raise), it received a "Critical" rating, whereas accessible abandoned buildings with no underground workings received a "Low" rating as this hazard would not likely result in serious harm to a person.
2. **Likelihood of Exposure:** A site located on a main thoroughfare that is easily accessible would receive "Frequent" or "Continuous" exposure as opposed to a site located in the dense bush far up on a hillside, in which the prospect of human encounter would likely be remote.
3. **Likelihood of Probability:** A hidden hazard, where a person may not perceive the hazard until it is too late to avoid, would receive an "Almost Certain" or "Likely" rating, whereas a hazard indicated with warning signs or gates brining it's attention to a person would receive a "Rare" or "Unlikely" rating.

Each of the three columns was then used in a risk rating matrix, which would assign a numerical rating and a descriptive rating in the appropriate columns, signifying it to be either a low hazard, a moderate hazard, or an extreme hazard.

It is important to note that this information was used by Alexco Resources Corp. to determine which hazards would take a priority in the Physical Hazard Reduction Program by referring to the descriptive risk rating. The numerical rating is there only as a reference, and was not used to quantify the risk or exposure.

3.0 UPDATING THE RISK REGISTRY

A meeting was held at the offices of ACG on December 13, 2006, and was attended by Bill Leary, the Mayo district Natural Resources Officer, and Hugh Copland, Project Manager for the Assessment and Abandoned Mines Branch of the Yukon Government, Rob McIntyre and Dan Cornett of ACG. During this meeting, the attendees reviewed individual site inspections and discussed at length the appropriate rating that each individual hazard should receive. At the conclusion of the meeting, a definitive rating was given to each hazard identified in the comprehensive risk registry that satisfied all attendees. The following week, the risk registry was updated to reflect the conclusions reached during the meeting.

Having completed the field work and assessments for the 2007 season, the risk registry was updated accordingly. This requires the columns 'Mitigation Measures' and 'Actions Complete' to be updated to accurately represent the sites' remedial status.

Updates to the risk registry are based on each specific location and the work that is completed. It is updated by the proponents directly involved in the planning and implementation of this project. This risk registry in an integral aspect to this project's success, as each year it represents the historical and impending work. Its clearly defined goals ensure efficient and effective response. The risk registry can be found in Appendix A.

4.0 HAZARD REDUCTION TO DATE

During the summer of 2007, action was taken to eliminate certain high priority hazards as the public exposure to these hazards was significant and the need to address these sites in a timely manner was of the utmost importance. Hazard reduction is obviously done in order of highest priority. The actions taken last summer were followed up on and additional hazards were remediated and/or minimized. See Appendix C for select photo documentation of 2007's remedial works. SRK Consulting was tasked with developing an effective and long term deconstruction design for these high priority sites. SRK's remedial design criterion is included in Appendix B.

4.1 CORAL AND WIGWAM

It was identified in 2006 as part of the PWGSC baseline assessment that 2 shafts were open and accessible. One was four metres deep and the other was approximately two metres deep. Within the risk registry the severity of consequence was marked as critical, therefore requiring attention in the summer of 2007. In order to alleviate this hazard, a Hitachi 270 excavator was used to remove all timber and debris from the shafts. Both shafts were then backfilled as per SRK specifications (Appendix B) to seal off access indefinitely.

4.2 DIXIE

The Dixie 200 level adit entrance was open and accessible. Personnel effectively sealed off the entrance with 25 cm wire mesh.

4.3 BERMINGHAM ADIT AND RUBY SHAFT HOUSE

Bermingham Adit level 200 at had partially collapsed, although was still accessible. Its risk rating was at 100 and was given an "extreme" level in its description. As part of the summer 2007 physical hazard reduction project, a Hitachi 270 excavator was used to remove duff, topsoil, debris and timber. As per SRK specifications, the exposed area was backfilled first with large rock. Subsequently, topsoil and duff was applied to cover the disturbed area.

At the Ruby location, it was identified that the "Ruby shaft area has collapsed on skip; area in front of house has failed also; shaft house accessible" (field notes from personnel on site). As well, a smaller shaft approximately 5 meters deep was exposed. A Hitachi 270 excavator was used to remove debris and timber. Material from the adjoining waste dump at the Bermingham pit was used to backfill and seal the shafts. The remediation for this shaft followed the SRK general backfilling guidelines (see Appendix B), which consisted of filling the shaft with

adequately sized material that would compact enough to lessen the likelihood a future subsidence over the shaft. The building material was burned and the remaining metal debris was loaded and transported to the approved commercial dump site at Elsa. A burn permit was secured prior to burning the remnant building. In the summer of 2008 the larger shaft will be visited for additional work as sinking is likely to occur. Refer to Appendix C, Plate 1 and 2, for photo documentation of remedial works on Ruby Shafthouse.

4.4 NO CASH 100 ADIT AND BREFALT SHAFT HOUSE

Adit level 100 at No Cash had partially collapsed causing an "extreme" physical hazard description on the risk registry. Excess wire was resting on the ground causing a hazard to humans and wildlife alike. The adit was cleaned of old timber and debris and backfilled with rock as per SRK specifications (Appendix B). The large rock was covered with topsoil and duff to cover the disturbed area. Wire was collected, cut and removed from the site. Windows and doors were secured with 10 cm wire mesh to prevent access into the Brefalt Shafthouse. Refer to Appendix C, Plate 3 and 4, for photo documentation of remedial works on Brefalt Shafthouse and Plate 5 and 6, for photo documentation of remedial works on No Cash 100.

4.5 HECTOR CALUMET PIT

The open pit at Hector was accessible to the public and had an open hole in the pit floor, consequently a significant physical hazard. Personnel used an excavator to establish a 1 metre berm across the pit entrance. No action was taken to minimize the open hole in the pit floor because on-site evaluations deemed it a nominal risk once the berm went up across the pit entrance.

Within the risk registry, it was identified in the 2005 site inspection that an underground opening was present at the west wall. It was determined during the summer of 2007 that it was inaccessible to the public and therefore requiring no mitigation.

The Hector 200 Adit was exposed and accessible and sealed off in the last couple years. On inspection during the summer of 2007, the entrance was still solidly sealed and closed to public admission.

It was discovered by a geologist during the 2007 investigation that a sink hole was present to the west of the Hector pit. It was approximately 1 metre in diameter and 3 – 4 metres deep. All

debris was removed from the sink hole using an excavator and backfilled to seal the opening following SRK's guidelines (Appendix B).

4.6 ONEK ADIT, LONESTAR, AND FISHER SHAFT

The work required at the Onek Adit is extensive. In the south end there are open pits without berms. However, this location is inaccessible by vehicle and will require additional planning and personnel to take mitigative action. At the 400 Level Adit personnel observed that collapsed rock was present and the timbers were in poor shape. As was the case with the south end, this physical hazard will require further work and preparation for the summer 2008 program.

The Lonestar shaft was deemed inaccessible to humans and wildlife and therefore, remained as is.

The physical hazard at Fisher Shaft was a sink hole at the far end of the pit. This hole was exhumed of all timber and debris and backfilled using adequately sized material to securely seal the opening and reduce the risk of adverse effect.

4.7 BLACKCAP, SHEPARD, AND LUCKY QUEEN ADITS

These 3 sites are located on the western slope of Keno Hill, all within 450 m of each other. The Blackcap and Shepard Adit had caved in and were accessible. Hazard reduction action involved a Hitachi 270 excavator to remove timber and debris was removed. The adit was backfilled and resloped to cover the disturbed area.

The Lucky Queen Adit and snow shed had caved in and was littered with old mining equipment. The adit and snow shed was cleared of all timber, pipe and debris and then backfilled using adequately sized material as SRK's guidelines suggest (Appendix B). The disturbed area was resloped and contoured. All old mining equipment and metal was collected and removed from the site. All burnable material was burned at the site. The building material was burned and the remaining metal debris was loaded and transported to the approved commercial dump site at Elsa. A burn permit was secured prior to burning the remnant building.

4.8 LUCKY QUEEN SHAFTHOUSE

Located approximately 1.25 km east and uphill of the Wernecke Camp is the accessible Lucky Queen Shafthouse. It received an "extreme" descriptive rating on the risk registry. To reduce its hazard to humans and wildlife, personnel secured the opening with timber, barricaded the double door and secured all openings and windows with 25 cm wire mesh.

4.9 LAKEVIEW HEADFRAME

Due to this site's location and inaccessibility it required extensive searching for personnel to find the Lakeview Headframe. In order to execute sufficient physical hazard reduction it would result in significant damage to the surrounding vegetation and area. In this case, on-site inspection concluded the necessary extensive harm to surrounding environment would do more harm than value; therefore it was left as is. This site will be visited periodically to ensure its status remains the same.

4.10 HIGHLANDER ADIT

This site was not visited due to inaccessibility.

4.11 KENO MINE AREA ON KENO HILL

Above Hope Gulch and across a broad gentle slope of the Keno summit on Keno Hill is the Keno Mine Area. Adit 200 had collapsed and was accessible from the entrance door. Personnel discovered a sinkhole beginning above the adit. In order to reduce the physical hazard, 25 cm wire mesh was used to secure off all openings. The sinkhole above the adit was excavated using a Hitachi 270 excavator to remove duff, vegetation and old timber. The opening was backfilled with local material of adequate size as SRK's guidelines suggest, and resloped and contoured. Duff and vegetation was then replaced to cover the disturbed area.

Both the Comstock 150 and Comstock 200 level adits were open and accessible. To secure these adits 25 cm wire mesh was used to blockade all entrances.

4.12 KENO NO. 9 SYSTEM

This location has an "extreme" description rating in the risk registry and part of that is that this location receives heavy traffic from locals and tourists. The probability and exposure risks are much higher at this location. There were two open pits at the top of the Keno Hill summit (the 'signpost pit'). One of the pits had a caved in drift at the bottom of it. Using a Hitachi 270, the caved drift was excavated and filled with local materials. The second open pit was filled with local materials as well. This site will require an inspection in the summer of 2008 as sinking

may occur. Refer to Appendix C, Plate 7 and 8, for photo documentation of remedial works on the signpost pit.

Site evaluation at Faro Gulch and the open pits located east of the Signpost were not visited this season.

4.13 TOWNSITE ADIT

A rock overhang over the Townsite Adit had caved in and the entrance was accessible. Using a Hitachi 270 excavator field personnel excavated the old timber and debris and backfilled the opening, following the general backfilling guidelines suggested by SRK (Appendix B). It was then resloped and recontoured to obscure the disturbed area.

4.14 SADIE LADUE

In the summer 2007 season Sadie Ladue was investigated and deemed stable, however, a revisit in prospective plans is suggested.

4.15 WERNECKE SHAFT

This location was not listed as a potential site for the 2007 season however, field personnel were able to excavate and backfill it while the excavator was in close proximity.

4.16 WIRE HAZARD CLEAN-UP

Old telegraph and phone wire is scattered across the Keno Hill and Galena Hill properties. This wire presents a safety concern for wildlife, as incidents of wildlife becoming fatally entangled in this remnant wire have been reported. A project was undertaken in 2005 to remove approximately 48 km of wire during the field season. This project was continued in 2006 and 2007, as promised in the Care and Maintenance Project Proposal (Licence QZ06-074 effective November 2007). For a complete description of 2007's wire hazard clean-up program refer to Appendix D.

5.0 TERMS OF LIMITATIONS AND CERTIFICATION

Although a thorough field survey was carried out to locate, identify and assess the physical hazards on the Keno Hill Property, the potential remains for additional hazards to exist on-site. Note, however, that the investigation was focused on known historical sites where previous workings or mining had occurred. With any area which has seen decades of historic underground and surface mining, there are bound to be new physical hazards that arise from time to time. Our program of regular inspections and monitoring should be successful in discovering any new physical hazards and this document will be revised accordingly. Additional workings may be hidden in the dense bush areas or in locations that are not clearly visible either from the roadways or aerial views, and were never staked as claims or reported by locals in the vicinity. However, the field investigation, UKHM Site Characterization Report, and PWGSC documentation is thought to capture the majority of the sites known to be located on or near the Keno Hill Property.

This report was prepared for the exclusive use of the Yukon Government, and is based on data and information collected from the Keno Valley/Dublin Gulch Environmental Baseline Assessment, (Environmental Services – Public Works and Government Services Canada, March 2000.), SRK's 2007 Baseline Report, the United Keno Hill Mines Site Characterization (Access Consulting Group), and during the on location site assessments performed in August and September of 2006. The Project Team has followed standard professional procedures have been followed in conducting the inventory and consolidation and in preparing the contents of this report. The material in this report reflects the Project Team's best judgment in light of the information available at the time of the preparation of this report.

Any use that a third party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of the third parties. The Project Team accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. The Project Team believes that the contents of this report are substantively correct.

The information and data contained in this report are based solely on the conditions observed at the time of the field assessment and have been developed or obtained through the exercise of the Project Team's professional judgment and are set to the best of the Project Team's knowledge, information, and belief. Although every effort has been made to confirm that all such information and data is factual, complete and accurate, the Project Team offers no guarantees or warranties, either expressed or implied, with respect to such information or data.

The Project Team shall not, by the act of issuing this report, be deemed to have represented that any investigations conducted by it have been exhaustive or will identify all the physical hazards on the Keno Hill Property, and persons relying on the results thereof do so at their own risk.

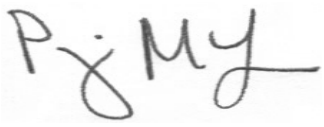
6.0 CERTIFICATION

Should you have any questions regarding this report, or if you require further information, please contact the undersigned at Access Consulting Group in Whitehorse, Yukon, at (867) 668-6463.

Respectfully submitted,

ACCESS CONSULTING GROUP
A registered trade name for Access Mining Consultants Ltd.

Prepared by:



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KENO HILL PROPERTY
PHYSICAL HAZARD REDUCTION PROGRAM
2007

Appendix A

PHYSICAL HAZARD RISK REGISTRY

Keno Hill Physical Hazard Risk Registery

Assigned Site No.	Site Name	Location Description	UTM Coordinates	Description of Existing Physical Hazards	Hazard Identified By	Consequence	Likelihood	Likelihood	Risk Rating		Mitigation Measures	Actions Complete
						Severity	Exposure	Probability	Numerical	Descriptive		
1	Silver King	Straddles the Silver Trail Highway at Galena Creek, approximately 4km southwest of Elsa town site	473050E, 7085275N	Open Pit has no barriers to prevent access; temporary barriers have fallen down.	SRK 2005 Site Inspection	Moderate	Remote	Unlikely	0.3	Moderate	The site is gated and locked, and is actively treated by Alexco employees.	✓
				Compressor building accessible to the public.	SRK 2005 Site Inspection	Low	Remote	Unlikely	0.03	Low		✓
2	Husky & Husky SW	12km west of Keno City on Silver Trail Highway, past the first turnoff for the Elsa townsite, downhill via an access road for 0.5km.	474740E, 708677N	Power pole and power line west of headframe.	SRK 2005 Site Inspection	Low	Remote	Unlikely	0.03	Low	Site is actively treated and thereby, continually monitored be Alexco employees.	✓
				Boiler House accessible.	PWGSC Baseline Assessment	Low	Remote	Unlikely	0.03	Low		✓
				Storage Shed accessible.	PWGSC Baseline Assessment	Low	Remote	Unlikely	0.03	Low		✓
				Workshop accessible.	PWGSC Baseline Assessment	Low	Remote	Unlikely	0.03	Low		✓
				Shaft House and Headframe were accessible at Husky SW.	PWGSC Baseline Assessment	Low	Remote	Unlikely	0.03	Low		✓
				Hoist House accessible.	PWGSC Baseline Assessment	Low	Remote	Unlikely	0.03	Low		✓
				ATCO Trailer accessible.	PWGSC Baseline Assessment	Low	Remote	Unlikely	0.03	Low		✓
3	Elsa	Located within the Elsa townsite on the north-facing slope of Galena Hill.	476000E, 7087000N	Powderhouse corner vent raise appears to be subsiding with a linear depression crossing Calumet Drive.	PWGSC Baseline Assessment	Moderate	Occasional	Possible	10	Moderate	The site is gated, and is continually monitored and used by Alexco employees.	✓
				Adit has an ice plug	ACG Site Characterization	Low	Remote	Unlikely	0.03	Low		✓
				Several buildings in various stages of repair may need to be either dismantled or entry adequately blocked to prevent entry.	PWGSC Baseline Assessment	Low	Remote	Unlikely	0.03	Low		✓
4	Dixie	3.6km along Calumet Drive from the junction with Wernecke Road.	477000E, 7087200N	Ditch running along side of Garage/Office building could be subject to erosion during peak flows, which could result in the structure collapsing; accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		
				Shaft is partially collapsed and filled with water to a depth of approximately 3m below ground level.	PWGSC Baseline Assessment	Critical	Occasional	Possible	100	Extreme	Upon investigation, the remedial work necessary was too extensive for the 2007 season. Site will be planned in propective action.	✓
				Two collapsed raises show evidence of subsidence.	PWGSC Baseline Assessment	Critical	Occasional	Possible	100	Extreme	Investigated and deemed stable. However, a revisit in the summer of 2008 is suggested.	✓
				200 Level Adit is blocked with timber cribbing.	PWGSC Baseline Assessment	Low	Remote	Rare	0.01	Low	The entrance to this adit was sealed off with 25 cm wire mesh.	✓
5	Coral & Wigwam	Follow the Bermingham Road for 2.8km from the Hector Portal to a cat trail that leads northwest for 100m to site.	477900E, 7086250N	Two shafts present that are open and accessible.	PWGSC Baseline Assessment	Critical	Unusual	Possible	30	Extreme	Excavated all timber and debris from shafts and backfilled both sites.	✓

note:

cell pattern indicates site has been mitigated or partially mitigated.

Keno Hill Physical Hazard Risk Registery

Assigned Site No.	Site Name	Location Description	UTM Coordinates	Description of Existing Physical Hazards	Hazard Identified By	Consequence	Likelihood	Likelihood	Risk Rating		Mitigation Measures	Actions Complete
						Severity	Exposure	Probability	Numerical	Descriptive		
6	Bermingham & Ruby (Arctic & Mastiff)	Near the summit of Galena Hill, approximately 1.5km southwest of Calumet town site via the gravel road from Calumet.	474740E, 708677N	Ruby shaft area has collapsed on skip; area in front of shaft has failed also; shaft house accessible.	PWGSC Baseline Assessment	Critical	Occasional	Possible	100	Extreme	Excavated both shafts clean of timber, debris and backfilled with material from adjoining waste dump. Part of the shaft house was torn down and burned to access larger shaft. Note: larger shaft may need additional work as sinking may occur	✓
				One of the dumps is open without any berming.	SRK 2005 Site Inspection	Moderate	Occasional	Possible	10	Moderate		
				Ruby 400 Level adit accessible	ACG Site Characterization	Moderate	Occasional	Possible	10	Moderate		
				Bermingham 200 level Adit has collapsed somewhat but is still accessible.	PWGSC Baseline Assessment	Critical	Occasional	Possible	100	Extreme	Excavated duff, topsoil, timbers, and debris. Backfilled with large rock and topsoil and duff laid atop as cover.	✓
				Explosives magazine and Detonator House accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		
				Water Shack accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		
				Two residential buildings were considered unsafe, yet accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		
7	No Cash	Located on the mid-northwest slope of Galena Hill via a road leading from the Elsa-Calumet road.	477230E, 7088058N	No Cash 100 Level Adit partially collapsed.	PWGSC Baseline Assessment	Critical	Occasional	Possible	100	Extreme	Excavated duff and topsoil and adit cleaned of timer and debris. It was backfilled with large rock then topsoil and duff was put on the disturbed area. Wire was cut and removed	✓
				No Cash 500 adit inaccessible	ACG Site Characterization	Low	Occasional	Possible	1	Low	Doors are locked.	✓
				Brefalt shafthouse is accessible	PWGSC Baseline Assessment	Critical	Occasional	Possible	100	Extreme	Secured doors and windows with 10 cm wire mesh.	✓
				Garage accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		
				Lunch Room accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		
8	Betty	Old trailheads extend northeast from the No Cash mine towards the Betty mine site.	479251E, 7088632N	One shaft collapsed due to permafrost; retaining approximately 1ft of water.	ACG 2006 Site Inspection	Low	Remote	Rare	0.01	Low		
9	Hector Calumet	Located on the northwest slope of Galena Hill, on the Calumet Road.	480900E, 7088300N	Underground opening present in west corner.	SRK 2005 Site Inspection	Critical	Occasional	Possible	100	Extreme	excavated and backfilled	✓
				Other concern would be berming the open pits and wall failure in some areas.	SRK 2005 Site Inspection	Critical	Occasional	Possible	100	Extreme	Investigated and deemed stable. However, a revisit in the summer of 2008 is suggested.	✓
				Sinkholes present in pit floor.	SRK 2005 Site Inspection	Critical	Occasional	Possible	100	Extreme	a 1m berm was put at the pit entrance to prevent access.	✓
				Shacks, bunk house, and water storage building all accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		
10	Dragon & Miller (UN Adit; Miller separate workings)	Located on the north slope of Galena Hill along the Calumet Back Road.	481500E, 7088800E	UN Adit open but blocked by ice year round.	PWGSC Baseline Assessment	Moderate	Occasional	Possible	10	Moderate		

note:

cell pattern indicates site has been mitigated or partially mitigated.

Keno Hill Physical Hazard Risk Registery

Assigned Site No.	Site Name	Location Description	UTM Coordinates	Description of Existing Physical Hazards	Hazard Identified By	Consequence	Likelihood	Likelihood	Risk Rating		Mitigation Measures	Actions Complete
						Severity	Exposure	Probability	Numerical	Descriptive		
11	Galkeno 200	Located on the northeast slope of Galena Hill via the Calumet Back road, approximately 3.9km from the Duncan Creek road.	482600E, 7088600N	100 Level Adit timbers have collapsed making access difficult, but still possible.	SRK 2005 Site Inspection	Moderate	Occasional	Possible	10	Moderate		
				200 Level Adit is open and unsafe.	PWGSC Baseline Assessment	Critical	Occasional	Possible	100	Extreme	Upon investigation, site was isolated enough for remdial work to be continued into the 2008 season.	✓
				Unnamed Adit has collapsed.	ACG Site Characterization	Moderate	Occasional	Possible	10	Moderate		
				Unnamed shaft is in accessible.	PWGSC Baseline Assessment	Moderate	Occasional	Possible	10	Moderate		
				Macleod shaft is partially collapsed and inaccessible.	PWGSC Baseline Assessment	Moderate	Occasional	Possible	10	Moderate		
				Subsidence/sinkhole uphill of the 300 adit.	SRK 2005 Site Inspection	Moderate	Remote	Rare	0.1	Low		
14	Bluebird	Northeast slope of Galena Hill, approximately 4km northwest from Keno City; 70m upslope from Silver Trail	482750E, 7089825N	Three shafts were located east of cabin, two with ladders. Shafts filled in but still relatively deep (approx. 1-2m) One small shaft located north of other shafts only 0.5m deep.	ACG 2006 Site Inspection	Moderate	Remote	Unlikely	0.3	Moderate		
				Log cabin accessible; in poor condition.	ACG 2006 Site Inspection	Low	Remote	Unlikely	0.03	Low		
15	Tin Can	250m uphill of Silver Trail Highway.	483743E, 7088748N	One partially caved shaft found further down slope; still somewhat accessible however, not too deep (approx 2.5m)	ACG 2006 Site Inspection	Moderate	Remote	Unlikely	0.3	Moderate		
16	Rico	Northwest slope of Galena Hill, 450m upslope of Galkeno 900 site via old dirt road that branches off Calumet Back road roughly 2.2km north of junction with Duncan Creek Road.	483300E, 7087700N	One open shaft above adit, collapsed inward approximately 4m in depth; water retained in bottom.	ACG 2006 Site Inspection	Moderate	Remote	Unlikely	0.3	Moderate		
19	Onek	Located on the south slope of Keno Hill immediately northeast of Keno City.	487406E, 7087196N	Open pits in the south end have no berms on them (location is vehicle accessible).	SRK 2005 Site Inspection	Moderate	Continuous	Likely	300	Moderate		
				Collapsed rock above 400 Level Adit; timbers of 400 Level in poor shape.	SRK 2005 Site Inspection	Major	Continuous	Likely	900	Extreme	Investigated and deemed stable. However, a revisit in the summer of 2008 is suggested.	✓
				Lone Star shaft inaccessible except for 5m deep hole within open pit.	PWGSC Baseline Assessment	Major	Continuous	Likely	900	Extreme	Excavated of timbers and backfilled	✓
20	Klondike-Keno	Northwest slope of Keno Hill, approximately 1.5km southwest of Wernecke town site.	484700E, 7090700N	Subsidence has occurred behind collapsed adit.	ACG 2006 Site Inspection	Low	Occasional	Unlikely	0.3	Low		
				Drillers shack located north of adit roof structure on it's way to collapsing	ACG 2006 Site Inspection	Low	Occasional	Unlikely	0.3	Low		
21	Sadie Ladue	Located on the northwest slope of Keno Hill at the Wernecke Camp.	486400E, 7092000N	Collapsed stope located between Shaft #2 and Pit #1; loose slabs in roof a hazard.	PWGSC Baseline Assessment	Major	Frequent	Likely	270	Extreme	Stope was mound filled with material; now inaccessible.	✓
				A number of buildings in various states of repair are present on the site.	PWGSC Baseline Assessment	Low	Frequent	Possible	3	Low		
22	Bellekeno	South side of Sourdough Hill Road at the 100 level adit site	487126E, 7086385N	Open shaft along right side of road partially covered by collapsing frame	SRK 2005 Site Inspection	Major	Continuous	Almost certain	3000	Extreme	Shaft was filled and recontoured with backhoe.	✓
				Further up road along right side, another open log-lined vent about 3m deep	SRK 2005 Site Inspection	Major	Continuous	Almost certain	3000	Extreme	Shaft was filled and recontoured with backhoe.	✓
				Minor tension cracks along edge of pond and along crest of waste rock slope.	SRK 2005 Site Inspection	Low	Frequent	Unlikely	0.9	Low		
		80m along a trail leading off of Sourdough Hill Road.		Eureka: 2 open shafts located west of cabin; one overgrown and one is fairly deep 1 large stope failure in the middle of road 1 large open vent raise	SRK 2005 Site Inspection	Critical	Occasional	Possible	100	Extreme	Workings were filled and recontoured with backhoe.	✓
				Powder mag is in poor condition and accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		
				Wash house is in poor condition and accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		

note:

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Keno Hill Physical Hazard Risk Registery

Assigned Site No.	Site Name	Location Description	UTM Coordinates	Description of Existing Physical Hazards	Hazard Identified By	Consequence	Likelihood	Likelihood	Risk Rating		Mitigation Measures	Actions Complete
						Severity	Exposure	Probability	Numerical	Descriptive		
23	Kijo	Located on the mid-southwest slope of Keno Hill, roughly 500m north of Erickson Gulch via Blackcap Road which branches off Wernecke Road, 80m down the slope.	486200E, 7089600N	One collapsed portal south of the collapsed adit; entrance to small for accessibility.	ACG 2006 Site Inspection	Low	Remote	Unlikely	0.03	Low		
24	Croesus No. 1	Midway up the western slope of Keno Hill, extending roughly 350m along an azimuth of 5 degrees up the north side of Erickson Gulch from the creek via the Blackcap Road which branches off of Wernecke Road, 1.3km to the northwest.	486655E, 7089425N	One shallow caved in shaft found up the hill from the adits.	ACG 2006 Site Inspection	Low	Occasional	Unlikely	0.3	Low		
25	Black Cap, Shepherd & LQ Adit	Three sites located on the western slope of Keno Hill, roughly a kilometre north of Erickson Gulch, all within 450m of each other.	486950E, 7091675N	Black Cap Adit accessible.	SRK 2005 Site Inspection	Major	Occasional	Likely	90	Extreme	Excavated of timber and debris and backfilled and sloped.	✓
				Lucky Queen Adit accessible through broken timbers.	ACG 2006 Site Inspection	Major	Frequent	Likely	270	Extreme	Excavated snow shed and adit of timber, pipe, debris and backfilled, resloped and recontoured. All old mining equipment and metal was removed. Burnable material was burned on-site.	✓
				Sheperd (Brewis Red Lake) Adit bulldozed, inaccessible	PWGSC Baseline Assessment	Low	Occasional	Rare	0.1	Low	Excavated timber and debris and backfilled and sloped.	✓
				Two shafts present that are open and accessible.	ACG Site Characterization	Major	Occasional	Likely	90	Extreme	Upon investigation, site was isolated enough for remdial work to be continued into the 2008 season.	✓
				Open pits with no berming present.	SRK 2005 Site Inspection	Moderate	Occasional	Possible	10	Moderate		
				Workshop accessible.	PWGSC Baseline Assessment	Low	Occasional	Possible	1	Low		
26	Lucky Queen	Located on the northwest slope of Keno Hill, roughly 1.25km east and uphill of the Wernecke Camp.	487700E, 7092700N	Doors unlocked on Shaft #1 headframe.	ACG 2006 Site Inspection	Major	Occasional	Almost certain	300	Extreme	Secured open shaft with timber, barricaded the double door and secured all windows and openings with 24 cm wire mesh.	✓
27	Lake	250m west of Gambler Gulch, midway down the north-western slope of Keno Hill, via the Lower Faro Gulch Trail.	490150E, 7090640N	Large headframe present above shaft, access to descent ladder nailed shut, however, access can be gained from side of shaft as ground has collapsed . Shaft may be approximately 5m deep.	ACG 2006 Site Inspection	Critical	Remote	Possible	10	Extreme	Searched extensively for this site. To perform sufficient physical hazard reduction at this site too much damage would nee d to be done to surrounding vegetation and area.	✓
28	Shamrock	Near the summit on the southwest side of Keno Hill; can be seen from Keno City	488018E, 7090536N	Shamrock J headframe is collapsing into the shaft and ground subsidence is occurring on the east side of the shaft.	ACG 2006 Site Inspection	Critical	Continuous	Almost certain	10000	Extreme	Material was removed and burned, and shaft was filled and recontoured with backhoe.	✓
				Main Site Building accessible.	PWGSC Baseline Assessment	Low	Frequent	Possible	3	Low		
				Generator Shed accessible.	PWGSC Baseline Assessment	Low	Frequent	Possible	3	Low		
29	Highlander	2km northwest of Keno Hill Summit on the south side of Gambler Gulch.	487900E, 7092100N	One caved in adit with a small opening that still allows accessibility.	ACG 2006 Site Inspection	Critical	Occasional	Possible	100	Extreme	Site was actively explored and confirmed inaccessible.	✓
				Ore processing building accessible.	ACG 2006 Site Inspection	Low	Occasional	Possible	1	Low		
				Bunkhouse accessible.	ACG 2006 Site Inspection	Low	Occasional	Possible	1	Low		
				Cabin accessible.	ACG 2006 Site Inspection	Low	Occasional	Possible	1	Low		
31	Stone	2.3km north of Keno Summit in Faro Gulch; south of Faro Gulch Trail.	488800E, 7092500N	One adit partially caved and difficult to access.	ACG 2006 Site Inspection	Low	Unusual	Unlikely	0.09	Low		
				Dry Building accessible.	ACG 2006 Site Inspection	Low	Remote	Unlikely	0.03	Low		

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Keno Hill Physical Hazard Risk Registery

Assigned Site No.	Site Name	Location Description	UTM Coordinates	Description of Existing Physical Hazards	Hazard Identified By	Consequence	Likelihood	Likelihood	Risk Rating		Mitigation Measures	Actions Complete
						Severity	Exposure	Probability	Numerical	Descriptive		
32	Keno Mine	Sites occur across a broad, relatively gentle slope above Hope Gulch southeast of the Keno Summit on Keno Hill via the Keno 700 Road.	490250E, 7089350N	Keno 200 Adit collapsed some approx. 3m deep; accessible from door at front.	PWGSC Baseline Assessment	Major	Continuous	Almost certain	3000	Extreme	secured the adit with 25 cm wire mesh on all openings. The sinkhole above the adit was excavated of duff, vegetation and timber and backfilled with local material and resloped. Duff and vegetation was replaced as cover.	✓
				Comstock 150 Adit door sealed but has some damage.	PWGSC Baseline Assessment	Major	Continuous	Almost certain	3000	Extreme	secured with 25 cm wire mesh	✓
				Comstock 200 Adit door sealed but accessible from smaller door on west side.	PWGSC Baseline Assessment	Major	Continuous	Almost certain	3000	Extreme	secured with 25 cm wire mesh	✓
				Porcupine Pit Portal is blocked by wood planks and has collapsed along a majority of its length.	PWGSC Baseline Assessment	Minor	Continuous	Unlikely	9	Low		
				Garage building subjected to erosion at base from being positioned on waste rock pile.	PWGSC Baseline Assessment	Low	Continuous	Possible	10	Low		
				Drill equipment shop was unstable, slipping into the erosion channel.	PWGSC Baseline Assessment	Low	Continuous	Possible	10	Low		
				The mining/geologist office was unstable and slipping into the erosion channel.	PWGSC Baseline Assessment	Low	Continuous	Possible	10	Low		
				All building on the site were accessible.	PWGSC Baseline Assessment	Low	Continuous	Possible	10	Low		
33	Main Fault & Nabob	North face of Keno Hill, approximately 0.75km northwest of Monument Hill, adjacent to the Keno No.9 System via the Silver Basin Gulch Trail.	490150E, 7090640N	Old house & old outhouse accessible.	ACG 2006 Site Inspection	Low	Continuous	Possible	10	Low		
36	Keno No. 9 System	Located on the Keno Hill summit via the Keno Signpost road.	48?300E, 7090200N	Faro Gulch Portal not inspected. Unsure of condition.		Critical	Frequent	Possible	300	Extreme	This site was located and confirmed to be beyond property borders.	✓
				Open pits on top of Keno Hill summit.	SRK 2006 Site Inspection	Major	Continuous	Likely	900	Extreme	Excavated and backfilled with local material	✓
				Two open holes are present just east of the Signpost.	SRK 2006 Site Inspection	Critical	Continuous	Almost certain	10000	Extreme	Excavated and backfilled with local material	✓
47	Monument & Ladue Fraction	Northwest facing slope of Monument Hill summit, approximately 1.5km past the signpost via the Silver Basin Gulch Trail.	490900E, 7090900N	One collapsed adit located on east facing slope of Silver Basin Gulch just below summit of Monument Hill; not accessible. Trenching present on top of cirque.	ACG 2006 Site Inspection	Low	Occasional	Possible	1	Low		
48	Apex	Located approximately 250m south of 4th switchback past the intersection of Signpost Road and Keno 700 Road.	488640E, 7088920N	One lined shaft located in Trench #3, a couple of meters deep. Possible subsidence immediately west of the hole.	ACG 2006 Site Inspection	Low	Unusual	Possible	0.3	Low		
				Wood cabin accessible.	ACG 2006 Site Inspection	Low	Occasional	Possible	1	Low		
71	Christal (Dorothy)	Located on the western slope of Keno Hill south of Erickson Gulch via a foot trail departing Keno Road about 2.5km out of Keno City.	486780E, 7088540N	One timber lined shaft approximately 2.5m deep with approximately 6" of water.	ACG 2006 Site Inspection	Moderate	Remote	Possible	1	Moderate		
				One shaft located north of first shaft, approx. 1m deep with approx. 0.5ft of water in it.	ACG 2006 Site Inspection	Moderate	Remote	Possible	1	Moderate		
76	Townsite Mine	6.2km along Calumet Drive from the junction of Wernecke Road .	479500E, 7087800N	Rock overhang has caved in at adit entrance and is considered a safety hazard.	PWGSC Baseline Assessment	Critical	Frequent	Possible	300	Extreme	Excavated of timber and debris and backfilled, sloped and contoured.	✓
77	Sadie Ladue 600 Adit	6km north of Keno City via a 1km trail leading north from Wernecke Camp.	485950E, 7092700N	One adit present; still accessible.	PWGSC Baseline Assessment	Critical	Occasional	Possible	100	Extreme	Investigated and deemed stable. However, a revisit in the summer of 2008 is suggested.	✓

note:

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Keno Hill Physical Hazard Risk Registery

Assigned Site No.	Site Name	Location Description	UTM Coordinates	Description of Existing Physical Hazards	Hazard Identified By	Consequence	Likelihood	Likelihood	Risk Rating		Mitigation Measures	Actions Complete
						Severity	Exposure	Probability	Numerical	Descriptive		
78	Elsa Village	Located on the south side of Silver Trail Highway, 11.5km west of Keno City.	476000E, 7087000N	Green shack accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Shack #1 & 2 beside sawmill accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Carpentry shop accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				No. 5 bunkhouse accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Union shop building accessible; in poor condition.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Snack bar accessible through a back door.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Dining hall accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Wooden walkways are in poor condition at Mill site.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Access available to the grizzly bay at Mill site.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Utilildor collapsing at mill site.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Retaining wall failing on south side of Mill site.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Light vehicle shop accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Rescue building accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Swimming pool building accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Medical building accessible; contains medical equipment and personal medical files.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low	Although this is not a physical hazard, contents of the building can subject the company to large privacy exposure.	
				Heavy Equipment Warehouse accessible through unlocked door on the north side.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Mens staffhouse accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Apartment building accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Single car garage building accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Church building in poor condition; accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Elsa School was accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		
				Flat Creek residences #1 & 2 accessible.	PWGSC Baseline Assessment	Low	Unusual	Possible	0.3	Low		

note:

cell pattern indicates site has been mitigated or partially mitigated.

KENO HILL PROPERTY
PHYSICAL HAZARD REDUCTION PROGRAM
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Appendix B

SRK CONSULTING REMEDIAL DESIGN CRITERIA

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Engineers and Scientists

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Memo

To:	Brad Thrall and Peter Johnson, Alexco Resource Corp.	**Date:**	September 6, 2006
cc:	Daryl Hockley, SRK	**From:**	Gordon Doerksen, Dylan MacGregor
Subject:	Physical hazard reduction: Backfilling of open holes and areas of subsidence	**Project #:**	1CA009.001.0200

Several sites have been identified as priorities for mitigation of risks to public safety. The following recommendations outline a general methodology for minimizing public safety risks by backfilling open holes and areas of subsidence. Priority sites are listed in Table 1; open pits were not considered in this assessment of risk mitigation priorities.

While the recommended measures may well result in stable ground conditions that are acceptable for closure, the intent of these recommendations is primarily to minimize the immediate risks to public safety. Monitoring will be required to establish the permanence of remedial work carried out on this basis.

These recommendations are based on surface inspections and on review of available sections of underground workings. Cross-sections showing as-built underground workings, thickness of crown pillars and overburden, and dimensions of stopes were typically not located, and inspections of backfilled areas will be necessary to monitor settlement in future.

General Backfilling Guidelines:

1. Mobile equipment must never operate on ground that shows signs of subsidence without taking adequate precautions.
2. Equipment should work, whenever possible, from the footwall side of the opening.
3. Waste rock backfill must be:
    a. relatively free of fines. The use of waste rock fill from previous mining periods is likely suitable.
    b. non-acid generating.
    c. mounded at least 1m above topography at the void to keep water from flowing underground and potentially washing away fill material.
    d. sized to contain no rocks greater than 1/4 the size of the void.
    e.g. when filling a 2m x 2m raise, the backfill rocks should be less than 0.5m in size.
4. Every effort should be made to keep all debris other than rock fill from going underground.

The Shamrock ‘J’ site represents a uniquely challenging case, in that it has a combination of high accessibility and also the potential for ongoing subsidence. The Shamrock ‘J’ headframe structure is collapsing into the subsiding area; removal of the headframe structure and related debris is necessary to allow inspection of the condition of the raise and to allow backfill with clean material that is free of debris. Recommendations regarding backfilling of raise will be developed once the structure and debris have been removed and the near-surface condition of the raise is known. Anecdotal reports indicate that ground

conditions were poor (as per Bob Wagner, former underground miner who worked in the Shamrock 'J' area, and current employee of Ewing Transport) and that the Shamrock 'J' raise is likely collapsed.

Removal of the headframe structure and related debris should be carried out via methods agreed upon by the contractor and by Alexco, with full consideration given to safe conduct of work. Primary considerations are that heavy equipment be positioned on the footwall side of the area to be filled and be well back from the area of subsidence. This guideline likely precludes the use of all types of equipment except an excavator for the filling of the shaft. The excavator can sit on the edge of the subsidence area and cast material into the void. The excavator operator has an excellent view of the material being handled and can separate any large rocks or debris prior to placement in the void. The area on trend with the NE-SW strike of the collapse should be avoided by heavy equipment, and in particular the linear subsidence feature to the southwest of the headframe structure should be avoided by people and equipment.

Similar considerations should be given to removal of structures at the Ruby site prior to backfilling areas of subsidence.

Table 1 Priorities and recommendations for mitigation of risks to public safety due to open holes and areas of subsidence at the former UKHM site

Location	Hazard	Nature of subsidence	Mitigation Recommendation
Bellekeno			
Eureka Shaft 3	Collapsed building and open shaft	n/a	Removal of old building Backfilling with waste rock
Eureka 1 raise	Open raise	n/a	Backfilling with waste rock
Raise NE of Eureka Shaft 2	Open raise	n/a	Backfilling with waste rock
Open Stope NE of Eureka Shaft 1	Open stope	Possible crown pillar collapse	Backfilling with waste rock
Bermingham			
Ruby shaft	Raise and hoist collapse	Unknown	Removal of old building Backfilling with waste rock
Sinkhole SE of Ruby Shaft	Sinkhole	Unknown	Backfilling with waste rock
Keno 700			
Shamrock 'J' Shaft	Collapsed building and subsidence around shaft	Unknown	Removal of buildings Backfilling with waste rock

KENO HILL PROPERTY
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Appendix C

SELECT PHOTO DOCUMENTATION

Plate 1: Ruby Shafthouse - Before

Plate 2: Ruby Shafthouse - After

Plate 3: Brefalt Shafthouse - Before

Plate 4: Brefalt Shafthouse - After

Plate 5: No Cash 100- Before

Plate 6: No Cash 100- After

Plate 7: Keno Hill Signpost Pit- Before

Plate 8: Keno Hill Signpost Pit- After

KENO HILL PROPERTY
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Appendix D

WIRE HAZARD CLEAN-UP

Introduction

A project was undertaken in 2005 to remove the remnant wire on the UKHM properties. This project has continued every year since 2005 to ensure that the hazard to wildlife and personnel is removed when identified. Approximately 48 km of wire was removed during the 2005 field season, 13 km of wire 2006, and close to 18 km in 2007. This report outlines the process used and outlines the areas remediated.

Process

Areas identified as priority for remediation in 2007 were based on a survey of remnant lines conducted by Peter Johnson and Kieth Hepner in August 2006. The priority for 2007 was lines which for the most part were lying on the ground thereby posing an immediate risk to wildlife.

Project orientation with personnel performing the cleanup consisted of the following before any work was performed:

- General safety protocols
- Chain saw safety
- Falling hazards
- Proper protocol around machinery and machinery safety

All lines to be removed were verified to be de-energized. Personnel walked longer sections of line (over 0.5 km) to determine the amount of line on ground vs. line still elevated. Any remaining poles were cut down where the majority of the line was down, lines with the majority of the line still in the air were left and only the portion of the line on the ground was cut out. All cross-arms, insulators, wire and any other hardware from poles which had fallen or were cut down were removed and stored in the appropriate lay down area. Poles without creosote were made available to local residents who cut the majority and used them for firewood.

Short sections of wire were rolled by hand and stored in the wire lay down area. A wire rolling trailer was rented this year to provide a safe working platform while rolling the longer lengths of cable. The longer lengths of wire were rolled onto spools with this wire rolling trailer. This spool was then stored in the wire lay down area of the framing yard.

Remediated Areas

Hector to Elsa

Work in the Hector adit area commenced on July 19th with the three single strand copper wires running from Hector to Elsa. Most of the poles on this section of line were standing and had live telephone wires still attached. Personnel walked the line and any wire which was within ground reach was removed, coiled by hand and placed in the wire lay down area. Attempts were made to remove the wire off the poles in various places. This proved to be extremely hazardous due to unstable ground conditions and lack of any stable support for ladders. Wire still elevated in this area was left in place due to these safety concerns. Approximately 1 km of wire was recovered from this area. Cleanup in this area took approximately 50 man hrs to complete.

Tailings Dam Area

Work around the tailings area dam began on June 25th. Short lengths of both telephone and power cable were scattered in this area. This wire was hand rolled because of the location, and relatively short length of the various wire strands. All hardware associated with this cleanup was deposited in the wire lay down area. Approximately 2 km of wire was recovered from this area. Cleanup of this area took a total of 87.5 man hrs to complete.

Picture of personnel hand rolling wire in the Tailings Dam Area

Framing Yard to Tailings Area and Tailings Area to McQuesten River Sections

Work in the valley below Elsa leading down to the old pump house on the McQuesten River started on July 9th. Work began on the section from the Tailings area to McQuesten River. Once this line was ready to be rolled, the section from the Framing Yard to the Tailings Area was prepared for rolling.

A crew of 2-3 labours worked on this line. Any remaining standing poles were cut, the wire and all hardware was removed from the poles. All hardware was stored in the wire lay down area. The wire was then freed from any underlying brush and to ready the line for rolling. This portion of the project took approximately 222 man hrs to complete.

Photo of personnel operating wire spooler in the Framing Yard to Tailings Area section

Wire rolling commenced from the Framing Yard to McQuesten River on October 31st. One labourer and one equipment operator rolled the freed wire onto a spool and stored the spool in the wire lay down area. Approximately 15 km of steel core aluminum power cable was rolled during this time. This portion of the project took an estimated 265 man hrs with 3 wks rental of a wire spooler and 7 hrs of other equipment time.

Labourer helping to feed line onto wire spooler in the Tailings to McQuesten River Area.

Recommended Future Remediation Work

Most remnant wire identified in the survey conducted by Kieth Hepner and Peter Johnson in August 2006 has been remediated. There are four areas which will need to be assessed for remediation next year these include the following.

- Sourdough Hill
    - In October of 2007 the entire line from the Bellekeno 625 level portal up Sourdough Hill collapsed. This line consists of approximately 10km of steel core aluminum wire. This line may be a hazard to wildlife on Sourdough Hill next year and should be considered for remediation.
- No Cash 100 to No Cash 500
    - This 1.5km triplex line was left in place as it posed no risk to wildlife due to its size. It may be advantageous to remediate this line while wire rolling equipment is on site next year as this should not require many man hrs to complete.

- Hector to Elsa
    - The portions of wire on this line in close proximity to the ground were cleaned this year. Further monitoring of this line is necessary because of the deteriorated state of most of the existing power poles on this line. It is likely that most of these poles with line still on them will collapse in the next few years and pose wildlife threats.
- UN Adit to Silver Trail Highway
    - This is a single strand telegraph wire which should be cleaned by hand next year as it poses a hazard to wildlife
- Elsa town site
    - There are numerous lines in Elsa which have been cut into short sections. Most of these lines have been replaced with shielded teck cable and the aerial lines serve no purpose. These lines will come down as most are on rotten poles and should be considered for remediation.
- There is an unknown length of single strand telegraph wire going around old Calumet and continuing down to Duncan Creek road and then to Mayo this is not part of the UKHM block but may be targeted as a future YTG project.