

KENO 700, PORCUPINE, AND COMSTOCK

SITE #32

105M 001an, at & 105M 008

This report describes the field investigation of parts of the Keno No. 9 System, including the Keno 200 and 700 levels, the Porcupine Open Pit, and the Comstock 150 and 200 levels. Investigations of the Shamrock J18 Vein Raise, No. 3 Vein Open Pit and Adit, No. 9 Vein Open Pit, Faro Gulch Portal, the Keno No 4 trenches and Upper Adit and the No. 5 Vein trenches are reported in a separate report (site #36). The sites of the Keno No. 1 Vein Adits, Keno No. 4 and 5 Shafts, Keno No. 6 Vein and No. 2 Vein Shafts, Keno No. 5 Vein Adit, and Keno No. 12 Vein Adit were not investigated.

1. LOCATION AND ACCESS

The sites described in this report are spread southeast of Keno Summit on Keno Hill between 1,440m and 1,650m asl. They occur across a broad, relatively gentle slope above Hope Gulch. Access to Keno No. 9 is east along the Keno 700 Road from Keno City. A map showing the relative locations of the workings is provided in Map 32-1.

	<u>MinFile</u>	<u>UTM North</u>	<u>UTM East</u>	<u>Elevation</u>
Keno 700 Level	105M001at	7,089,350m	490,250m	1,440m
Keno 200 Level	105M001an	7,089,825m	489,550m	1,615m
Porcupine Pit	105M001an	7,089,850m	489,850m	1,605m
Comstock 150 & 200	105M008	7,089,900m	490,100m	1,645m

2. SITE PHYSIOGRAPHY

The Keno No. 9 System (including Keno 200 and 700, Porcupine, and Comstock 150 and 200) of mine sites is situated along a broad and gentle southeast-facing slope which converges and drains down into Hope Gulch approximately 800 m further to the southeast (Map 32-1). From here, Hope Gulch drains into Lightning Creek further to the south. The sites occur well above the treeline, located in sub-alpine to alpine tundra terrain, with characteristic shrub vegetation and soils. Raised frost-heave areas, polygons and the high altitude suggest the presence of continuous permafrost in the area (Photo 32-

1). The mine system was recorded as being in permafrost at the 400 level from the summit.

3. GEOLOGY AND MINERALIZATION (from original minfile)

The host rock geology consists of Keno Hill Quartzite, graphitic schist, quartz sericite schist and greenstone. Veins in the host rock consist of breccia and sheeted types, hosted by the quartzite and greenstone. These are highly oxidized near the surface to galena, limonite, beudantite, jarosites, cerussite, anglesite, manganese oxides and oxidized siderite, freibergite and sphalerite nodules, with some native silver. Siderite, galena, sphalerite and freibergite are found lower in the mine system. Total production from the mine system to date is 257,241 tonnes consisting of 1517 g/t silver, 10.6% lead and 3.7% zinc.

4. SITE HISTORY (from original minfile)

Current claims in the area include Keno, Roulette, Rico, Minto, Pinochle, Porcupine, Wolverine etc. and are owned by United Keno Hill Mines Ltd. (UKHM). The land tenure is leased quartz claims, in addition to surface leases at the Wolverine claim (at Keno 700), F.B. 16735, UKHM 010; and the old Keno Summit townsite, 000007. Operations began with UKHM starting in 1919, during which the No. 9 mine was developed and worked to the 300 level using shafts and adits, followed by an incline shaft below 300. By 1924, two more shafts were added including the No. 3 vein, which was developed with a 50 m shaft at levels 30 (adit), 75, and 150; and No. 12 vein with a 107 m adit. Three additional adits, totaling 158 m, were also developed at No. 1 vein in the 1920's. Prior to 1930, a 15 m shaft, 61 m adit and 49 m drift were developed at the Porcupine claim. Bulldozing along the vein at No. 6 was conducted between 1948 to 1949 and a 13 m shaft was sunk and 5 m drift in 1952 during which some ore was mined. In 1954, two adits at the 150 and 275 levels were conducted at Comstock Porcupine. The Keno 200 level adit was developed in 1956 with a 416 m crosscut and 100 m drift. Between 1958 and 1982, activities included the development of the 700 level adit, connection and further development of the levels, an internal shaft from the 700 to 1075 level and a vent raised from the 400 level. Porcupine Pit was excavated in 1977 leaving a 3000 tonne dump; the earlier shaft and adit from the late 1920's were destroyed. Reported adit waste dumps include Keno 700 - 25,000 tonnes, Comstock 275 - 2,800 tonnes, and Keno 200 - 13,250 tonnes. More recently the Keno 700 adit has been subject to ice plug damming

resulting in erosion of the waste dump from periodic release of the plug. The adit is also draining through a culvert under the waste dump. Future mining is planned by UKHM for the No. 18 vein.

5. MINE DEVELOPMENT

5.1. Mine Openings and Excavations

Adits/Shafts/Portals

Keno 700 Adit (Photo 32-2)

Description: Portal is enclosed in plywood housing with reinforced metal aluminum roofing; deep melt water occurs on the eroding portal floor. There is a rail car on the track inside the shack.

Location: Located in the centre of Keno 700 building site (Building 7, Map Figures 32-1 and 32-2) on the Wolverine claim

Dimensions (L x W x H): portal opening - ? m x 2 m x 2.5 m

Supports: railway tie wood supports along inner portal walls in relatively good condition, but beginning to rot.

Condition: structure appears to be stable

Accessibility: Inaccessible. A locked fence blocks the main adit entrance, but entry can be gained from a open side door. A large ice plug blocks a majority of the portal opening.

Keno 200 Adit (Photo 32-3)

Description: Portal is enclosed in plywood housing with tar paper siding and roofing, a portion of which has blown off the top. A rail car was found on the track within the shack in front of the portal opening (Photo 32-4). Some equipment, mostly ties and metal parts, was also stored along the inside of the shack.

Location: Located at Keno 200 (Map Figures 32-1 and 32-3) north of Keno 700, west of the road of the same name.

Dimensions (L x W x H): portal - 1.5 m W x 2 m H

Supports: log reinforced walls at portal entrance (see Photo 32-4)

Condition: stable near portal entrance; however, some wall collapse observed 3 m into adit (see Photo 32-4)

Accessibility: Entry can be gained from an open two-sided door at the front

Comstock 150 Adit (Photos 32-5, 32-6)

Description: Portal is enclosed in on the north-west side of two-roomed wood plank housing with reinforced aluminum metal roof; a portion of the reinforcing has been blown off. Access door to other room has been removed. This second room consists of a small office with a wood floor, electrical supply, switch box and an old desk. A small vent shaft enclosed in a stable wood housing, with an aluminum metal reinforced roof and hand ladder occurs at the 100 level just above this adit (Photo 32-6).

Location: Located at Comstock 150 (Map Figures 32-1 and 32-4) northeast of Keno 700, near the east end of the road of the same name.

Dimensions (L x W x H): portal - ? m x 1.5 m x 2 m

Supports: log reinforced walls at portal entrance

Condition: appears to be stable near portal entrance, shack is shifting but solid

Accessibility: Access door to the adit has been sealed but partially damaged (see Photo 32-5).

Comstock 200 Adit – (Photo 32-7)

Description: Portal is enclosed in plywood housing with aluminum-reinforced siding and roof; a portion of the roof has been blown off. The floor of the adit shack consists of soft mud.

Location: Located at Comstock 200 (Map Figures 32-1 and 32-5) northeast of Keno 700, near the east end of the road of the same name, and directly below Comstock 150.

Dimensions (L x W x H): portal - 1.5 m W x 2 m H

Supports: plywood and log reinforced walls at portal entrance, still in good condition

Condition: appears to be stable near portal entrance, shack is shifting but solid

Accessibility: The main access door to the adit has been locked; however, access can be gained through a second smaller door on the west side of the adit shack.

Porcupine Pit Portal (Photo 32-8)

Description: The location has been overgrown by natural vegetation. An old empty drum is situated near its entrance, in addition to a smaller barrel with a spigot at the north end of the adit.

Location: Located along the west side of Porcupine Pit (Map Figures 32-1 and 32-6) north of Keno 700, along the north side of the road of the same name.

Dimensions (L x W x H): portal - 30 m x 2 m x 1.5 m

Supports: although most of the portal has collapsed, the walls were apparently reinforced using logs.

Condition: unstable near portal entrance; majority of remainder of adit has caved in

Accessibility: Portal is blocked by wood planks and has collapsed along a majority of its length. A vertical shaft occurs further along the adit approximately 30 m into the pit; the opening, which is exposed, has been caved in with large boulders.

Open Pits

Porcupine Pit (Photo 32-9)

Description: large circular pit dug into the slope to the north of Keno 700 Road; sides are moderately steep to gently-sloping. Vegetation has begun to establish along the sides of the pit which have eroded over the years

Location: along north side of Keno 700 Road

Dimensions (L x W x H): 50 m x 60 m x 25 m

Condition: sides of pit appear to be eroding, but partially stabilized through natural re-colonization by vegetation

Trenches

No apparent trenches in the Keno No. 9 System; many of the exploration sites were undoubtedly developed in some capacity.

5.2. Waste Rock Disposal Areas

Keno 700 Waste Rock (Photo 32-10)

General Description: Large mound upon which the current campsite is located. Area has been eroded downslope as the result of erosion and catastrophic release of seep water from the Keno 700 Adit ice plug. Most of the regular adit seepage flows through a culvert in the waste pile which daylight near the upper edge flowing down towards Ray Gulch. This drainage and the steep incline make the slopes of the pile highly unstable and has resulted in erosion downslope forming a large outwash area towards Ray Gulch. Waste rock pile is direct result of mining activities from the portal, some of which is overburden. Landfilling activities have also occurred in the waste rock at the northeast end of the pile, where exposed debris resulting from erosion was observed. An inspection of the waste rock piles suggests that very little ore grade material is contained in the pile,

minor quantities of galena and sphalerite was documented throughout the pile. However, the majority of the waste rock pile appears to be associated with host rock material with very little evidence to suggest sulphide rich rock content. No evidence of staining or physical evidence of Acid Rock Drainage was documented at the site. The waste rock pile is located on a steep, well drained slope and is comprised of coarse rock material. Although water drainage from the adit flows through the waste rock pile, the pile does not appear to retain large volumes of water.

Location: Located underneath and southeast of the Keno 700 camp site (Map Figure 32-2).

Dimensions (L x W x H): 200 m x 60 m x 50 m at top; however portions of pile have eroded downslope into an outwash area for a few hundred metres; total mass is estimated at ~ 25,000 t

Sampling: Two samples were previously taken by United Keno Mines Ltd. at the top of the waste pile along the southeast edge in 1995 (95-UKHKD01 and 95-UKHKD02, Map Figure 32-2). These results are reproduced below.

Sample	Paste pH	S (tot.) %	S (SO ₄) %	AP kg CaCO ₃ /tonne	NP kg CaCO ₃ /tonne	Net NP kg CaCO ₃ /t	NP/AP
95UKHKD01	8.03	1.03	0.16	27.19	47.00	19.8	1.7
95UKHKD01	8.22	0.45	0.16	9.06	10.94	1.9	1.2

One sample of waste rock (99-32-WR-01 – Map Figure 32-2) was taken during the current investigation at the top of the waste pile to the south west of the adit entrance. Results of the 1999 sampling indicated similar results to the 1995 sampling event with a paste pH of 7.9 and an NP/AP ratio of 1.9. The acid-base accounting tests and other chemical results are provided in attachment 2.

Keno 200 Waste Rock (Photo 32-11)

General Description: Large mound, mixed with overburden upon which the Keno 200 adit and loading infrastructure is located. The area is relatively high and dry; no evidence of surface adit seepage drainage was observed. Some evidence of erosion has occurred along the south edge of the pile by the loading trestle, where an erosion scree was observed. An inspection of the waste rock pile indicated no staining or indications of acid rock drainage. The waste rock appeared to be well drained with no evidence of seepage that would suggest saturated conditions within the pile. No evidence of sulphide rich

rock was documented in the waste pile. However, the upper 0.15 metres of the pile had a distinctive green colour to it when compared to the waste rock comprising the lower portions of the pile. The rock type appeared to consist primarily of host rock, not ore containing material.

Location: Located underneath and south of the Keno 200 adit (Map Figure 32-2).

Dimensions (L x W x H): 150 m x 25 m x 15 m; total mass is estimated at ~ 13,250 t

Sampling: Two waste rock samples were collected during the current investigation including one (99-32-WR-02, Map Figure 32-3) at a 15 cm depth in the green horizon of the pile (upper 0.15 metres) and the second from the weather horizon (99-32-WR-05, Map Figure 32-3) (lower portions of the pile). The acid-base accounting tests and other chemical results are provided in attachment 2.

Comstock 150 Waste Rock (Photo 32-12)

General Description: Small mound, mixed with overburden upon which the Comstock 150 adit and loading infrastructure is located. The area is relatively high and dry; no evidence of surface adit seepage drainage was observed. The sides of the waste rock pile have been stabilized and reinforced by wood planks and logs (see Photo 32-23). A second, smaller pile (~ 15 m L x 4 m wide x 1.5 m high) was situated to the south of the site and the truck-loading trestle waste rock was composed of brown loose shale and overburden material. The waste pile appeared to contain a high percentage of sandy overburden. An inspection of the waste pile did not indicate any seepage faces or saturated conditions that would indicate saturated conditions at the site. The waste pile is located on a steep slope and is comprised of well-drained coarse granular material. No physical indications of acid rock drainage were documented at the subject site.

Location: Located underneath and south of the Comstock 150 adit site (Map Figure 32-4).

Dimensions (L x W x H): 50 m x 30 m x 7 m.

Sampling: One waste rock sample was collected during the current investigation (99-32-WR-01, Map Figure 32-4). The acid-base accounting test and other chemical results are provided in attachment 2.

Comstock 200 Waste Rock (Photo 32-12)

General Description: Small mound, mixed with overburden upon which the Comstock 200 adit and loading infrastructure is located. The area is relatively high and dry; no

evidence of surface adit seepage drainage was observed. The waste rock associated with the Comstock 200 adit contains a high percentage of sandy overburden. In addition, the waste rock contains a brown-black shale loosely consolidated with no apparent sulphide content. No visible evidence of Acid Rock Drainage was documented during the site visit.

Location: Located underneath and south of the Comstock 200 adit site (Map Figure 32-5).

Dimensions (L x W x H): 30 m x 25 m x 15 m; mass estimated at 2,800 tonnes.

Sampling: One waste rock sample (99-32-WR-04, Map Figure 32-5) was collected during the current investigation. The acid-base accounting tests and other chemical results are provided in attachment 2.

5.3. Tailings Impoundments

Tailings Dams

No apparent dams; all mined material was shipped to Elsa for processing.

Tailing Ponds

No apparent tailings ponds; all mined material was shipped to Elsa for processing.

5.4. Minesite Water Treatment

No apparent treatment facilities; all mined material was shipped to Elsa for processing.

6. MINE SITE INFRASTRUCTURE

6.1. Buildings

Keno 700 Site

Buildings at this site included accommodations, mess hall, offices and associated physical plant facilities in support of the operations. A layout of the site buildings and their relative locations is provided in Map Figure 32-2. These are described in more detail below. A description of the Keno 700 adit shack is provided above in Section 5.1.

Building 32-A (Photo 32-13)

The mess hall and kitchen operations buildings (1&2) consisted of wood construction (15 m W x 30 m L) with a reinforced aluminum metal roof and exterior asbestos-board insulation siding. . A sample from the northwest exterior wall of the building (sample 99-

32-AS-01) confirmed the presence of asbestos; these results are presented in Attachment 2. The back end of an old metal freezer truck was attached to an extension at the back (north-west) side of the building and used for cold food storage. The mess hall building itself was stable; however, the exterior wooden access stairs and deck were rotting and extremely unsafe. Non-hazardous contents consisted of a full complement of kitchen equipment including stoves, sinks and domestic debris. A paint sample (99-32-PS-01) was taken from the interior wall at the south end of the building; this was archived, but not analyzed. The second building (2) to the northeast was likely used by the cooking staff and consisted of a shower stall, old mattress and other associated domestic debris. No hazardous materials were apparent within either of the two buildings.

Building 32-B (Photo 32-14)

An old bunkhouse building (3) located to the southwest of building 32-A was originally of wood construction, but the walls were dismantled leaving only portions of the flooring and plumbing in place. It is likely that portions of the removed material were used to construct the current bunkhouse (32-C, building 4). The wood materials at the site were in a state of decay. Non-hazardous materials below the floor boards consisted of old bedsprings, an old empty drum and pieces of domestic debris. No hazardous materials were apparent around or below the remaining building structure.

Building 32-C

The current bunkhouse building (4) was located northwest of the mess hall and was of similar wood and metal construction (30 m L x 6 m wide) to the mess hall (32-A), including interior paint and exterior asbestos-board insulation siding. A sample from the southwest exterior wall of the building (sample 99-32-AS-02) confirmed the presence of asbestos; these results are presented in Attachment 2. The building itself was stable; however the wooden stairs leading up to the building from the mess hall were collapsed. Evidence of an old trailer site was observed beyond the southwest end of the building, including some remaining pieces of floor piping. The interior of the bunkhouse consisted of a series of rooms with a common social area including pool table and TV room. Non-hazardous debris was scattered throughout and included mattresses, bedsprings, wood furniture and personal artifacts. No hazardous materials were apparent within the building.

Building 32-D (Photo 32-15)

The manager's accommodation building (5) and storage sheds (5A) located northwest of the current bunkhouse (32-C) consisted of wood construction (8 m L x 5 m W) with fibre-glass insulation and a reinforced aluminum metal roof. The building was self-contained, in good condition and stable. The interior was painted and consisted of a kitchen (with stove), full bathroom, living/dining room and two bedrooms. Non-hazardous debris consisted of small amounts of domestic debris, but the interior was otherwise clean for the most part. No hazardous materials were apparent within the building.

Building 32-E (Photo 32-16)

The garage building (6) and fallen rail car building (6A) were located near the top edge of the waste rock pile. The garage was of solid wood construction (8 m L x 3 m W x 6 m H) with aluminum metal reinforced roofing and siding, and a wood floor covered in a thin layer of dirt. Although quite stable, the garage was beginning to erode down the side of the waste rock pile. The rail car building (6A) consisting of wood construction with shingle material roof, had already succumbed to erosion and fallen over the side of the pile. The garage was empty but contained an oil stain within the surface dirt of the floor (soil sample 99-32-SS-09). The results of the chemical analysis are provided in Attachment 2. No hazardous materials were apparent within either building.

Building 32-F (Photo 32-17)

Post office, mud room/shower and ambulance garage building (8) was located just northeast of the Keno 700 adit and consisted of wood construction (20m L x 12 m W) with an aluminum metal reinforced roof and insulation board siding. The building was in sturdy condition. Non-hazardous materials within the building included pipes, wood debris, furniture and personal artifacts. No hazardous materials were apparent within either of the sections of the building.

Building 32-G (Photo 32-18)

The generator shack and oil storage building (9) for the site were located just northwest of the ambulance garage (32-F) and consisted of wood construction (28 m L x 7 m W) with aluminum metal reinforced roofing, and concrete flooring. The building was relatively stable; however, faults and cracks were noted in the concrete flooring. Two

diesel generators were found inside in addition to a workshop with equipment pieces, a fuel tank in the southwest corner, drums of hydraulic oil and kerosene (2 x 45 gal.), and hydrocarbon staining on the floor leading outside to the southeast. Soil samples were collected in the large hydrocarbon stain outside the shack at surface (99-32-SS-01), 0.7 m depth (SS-01D) and in drainage from the area (SS-02). The results of the hydrocarbon analysis for these samples are provided in Attachment 2. Three samples were collected from the drums of hydrocarbon products, including 99-32-DS-1 (205 L Chevron barrel containing a green fluid), DS-2 (barrel containing a 4:1 gasoline water mixture) and DS-3 (20 L pail containing hydraulic oil). There were archived, but not analyzed. Aside from hydrocarbon, no hazardous materials were apparent within the building.

Building 32-H (Photo 32-19)

The drill equipment shop building (10), just southeast of the generator shack, was of wood construction (4 m W x 5 m L) with an aluminum metal reinforced roof and wood flooring. The building structure was unstable and was beginning to slip into the erosion channel immediately to the southeast; wood struts had been placed under the shack to support it. Drill casings were stored in a rack next to the structure, which was otherwise empty with the exception of some wooden table stands. Some casings were also scattered on the ground to the northwest of the building. No hazardous materials were apparent in or around the building.

Building 32-I (Photo 32-19)

The mining/geologists office building (11) was situated just next (northwest) to 32-H. This building was of wood construction with insulation board siding, an aluminum metal reinforced roof which had been blown off, and wood flooring. The structure was on the verge of collapse and sliding down into the erosion channel to the southeast. Aside from some wooden support tables, the interior was empty; however, two 45-gallon drums of hydraulic oil and kerosene were noted by the casing storage rack next to the structure. Some heavy oil staining was also noted on the wood flooring of the shack. Aside from hydrocarbon containers, no hazardous materials were apparent in or around the building.

Building 32-J (Photo 32-20)

Boiler room and water supply building (12), located just east of 32-I, was of wood construction (12 m L x 12 m W) with a combination of aluminum metal reinforced, and

shingle roofing; and concrete flooring. The building was relatively stable; however, the blocks of concrete flooring were beginning to shift against one another. The main boiler within the southwest end of the building was in eroded condition and contained exposed insulation material. Samples collected from the floor (99-32-AS-04) and boiler (AS-03) tested negative for asbestos; the results are presented in Attachment 2. The boiler was connected to a network of heat pipes in utility conduits leading to the other serviced buildings on site. Two large water/filtration tanks, a smaller boiler and pressure tanks were located in the northeast end of the building which were also heavily corroded. Non-hazardous debris within the building included old chlorine buckets, 45 gallon fuel drum (one quarter full), insulation material and (2) bags of sand. No hazardous materials were apparent in or around the building.

Keno 200 Buildings

No buildings, aside from adit shack described above in Section 5.1

Comstock 150 Buildings

No buildings, aside from adit shack and vent shaft described above in Section 5.1 and a small outhouse along a utility conduit at the east side of the site. The outhouse was beginning to shift and slide down the slope to the south.

Comstock 200 Buildings (Photo 32-21)

Building 32-K

In addition to the adit shack, described above in Section 5.1, a maintenance building of wood (4 m W x 7 m L) construction with aluminum metal reinforced roofing and siding, and concrete flooring was located to the southeast of the adit. The building was stable with the exception of some minor damage to the interior wall. No materials were noted inside the structure; however, some wood and metal siding debris was observed next to the building. No hazardous materials were apparent in or around the building.

Porcupine Site Buildings

No buildings present.

6.2. Fuel Storage

Keno 700

No apparent fuel storage facilities; aside from a fuel tank situated between the ambulance shed (32-F) and the generator shack (32-G), and barrels of hydrocarbon product noted above in some of the buildings.

No fuel storage facilities were apparent at any of the other sites investigated in the Keno No. 9 System (i.e., Keno 200, Comstock 150 or 200, or Porcupine).

6.3. Rail and Trestle

Keno 700 Rail (Photo 32-22)

This rail, composed of steel rails on wooden ties, extended south from the Keno 700 adit and continued southeast along the top edge of the waste rock pile terminating at a wood-constructed trestle used to load ore into trucks at the southeast end of the site. The total length of the track was approximately 100m and was relatively intact with the exception of a small portion which collapsed with erosion along the top edge of the waste rock pile by the garage building. The wall of the waste rock pile underneath the trestle were reinforced with wood planks, but were beginning to show signs of buckling.

Keno 200 Rail (see Photo 32-11)

The steel rail on wooden ties extended south from the adit and continued west, terminating along a wood constructed truck-loading trestle for ore along the top edge of the waste rock pile. The total length of the track was approximately 84 m and was relatively intact posing no particular safety hazard. The wall of the waste rock pile below the trestle, however, was not secured and was eroding forming a scree slope. An older abandoned trestle composed of wood was located further along to the east side of the site. The rails were no longer associated with this structure which had become exposed by waste rock erosion and was beginning to collapse.

Comstock 150 Rail (Photo 32-23)

This rail extended south from the adit and continued east terminating along a wood-constructed loading vessel at the south end of the site, along the edge of the main waste rock pile. The rail was comprised of steel on wooden ties and extended for approximately

25 m. This rail was in good condition and the trestle, below which the waste rock pile wall was reinforced by wooden planks and logs, was relatively stable.

Comstock 200 Rail (Photo 32-12)

The rail, composed of steel on wooden ties, extended south from the adit shack and continued southwest terminating along a wood-constructed loading trestle at the south end of the site. Two other portions of the rail included a track extending southeast from the adit to the rail car maintenance shed, and a section extending northeast directly from the trestle and used as a loading queue for rail cars. The total length is approximately 65 m and the rail is in good condition throughout its length. Although the trestle structure itself is in relatively stable condition, a portion of the waste rock pile wall below is not reinforced and is beginning to erode, forming a small scree slope.

Porcupine Site Rail

No rails or trestle were found at this site.

6.4. Milling and Processing Infrastructure

No processing facilities present as mined materials were taken to Elsa for processing.

6.5. Electrical Equipment

No in-service electrical equipment apparent at any of the sites; see Section 8.1 below.

7. SOLID WASTE DUMPS

Keno 700 (Photo 32-24)

A large volume of landfill material has been incorporated into the waste rock pile at the northeast end of the site. The slope of the pile has become eroded at this point exposing a large amount of debris up to 3 m in thickness including drums, wood, plastics, cables, rail ties, rubber hose, culverts, old boiler, drill rods and other materials. Although none of the observed material appeared to be hazardous, the exposed surface was extremely unstable and in an eminent state of collapse. One soil sample (99-32-SS-08) was collected in the drainage just below this area and analyzed for contaminants; the results of the analyses are provided in Attachment 2. In addition to this and materials noted around the

buildings, wood and metal debris was also observed along the slope and outwash area below the waste rock pile to the southeast of the site.

Keno 200

No apparent waste dumps; however, limited amounts of debris scattered over site including a pile of old rusted rail cars near the Keno 200 adit, wood debris and an old transformer (see Section 8.1 below).

Comstock 150

No apparent waste dumps; however, wood debris (rail ties, core tables) scattered along damaged wooden utility conduit at north edge of site and a pile of metal debris (casings) near the Comstock 150 adit.

Comstock 200

No apparent waste dumps; however, wood and metal debris (logs, casings, rail ties, wood core tables, aluminum siding) scattered along damaged wooden utility conduit at northeast edge of site.

Porcupine Site

No apparent waste dumps; however, a couple of empty drums and a pail were noted along the portal.

8. POTENTIAL CONTAMINANTS OF CONCERN

8.1. Out of Service Transformers

Keno 700 (Photo 32-25)

Twin single-phase transformers just to the northwest of the site manufactured by Supreme Power Supplies Ltd., serial numbers 72181 and 72180, weight core & coils 2250 lbs. (4560 lbs. total), volume 125 imp. gallons. The transformers were in relatively good condition and mounted on heavy wooden planks; however, some leakage was observed from the spigot valves. Two samples of fluid (99-32-TR-01 and TR-02) were taken from the spigot valve of each of the transformers. Soil samples (99-32-SS-12 and SS-13) were also taken from the soil surface below the wooden boards of the transformers, in addition to two other locations below raised transformer tower platforms,

including one just to the south of the transformers (99-32-SS-11) north of the site, and the other just southeast of the mining manager's house (99-32-SS-10). The results of the analysis for PCBs in both the transformer oil and the soil samples are presented in Attachment 2.

Keno 200 (Photo 32-26)

A single Permalex transformer, west of the Keno 200 adit, manufactured by General Electric, serial number 606238, volume 11 gallons. The transformer had fallen from a raised wooden transformer tower platform and the top of the housing had been removed. No fluid was present inside the unit. A field duplicate soil sample (99-32-SS-14 and 15) was taken below the raised transformer platform. The result of the analysis for PCBs in this soil sample is presented in Attachment 2.

Aside from electrical lines, lights and switch-boxes, no transformers (out-of-service, or otherwise) were apparent at any of the other sites investigated (i.e., Comstock 150 or 200, or Porcupine).

8.2. Metals and Hydrocarbons in Soil

Keno 700

Samples taken from the hydrocarbon spill by the generator shack (99-32-SS-01, SS-01D, and SS-02), below the landfill (SS-08) and the transformer sites (SS-10, SS-11, and SS-12/13), and the garage floor (SS-09) have been noted in earlier sections. A surface and depth sample (SS-06 and SS-07, respectively) were also obtained in another large hydrocarbon stain noted on the slope between the geologist office (32-I) and the boiler building (32-J) (see Photo 32-18). Three samples were also obtained for hydrocarbon analysis in the erosion channel including SS-03, a soil profile obtained below an engine drop/oil change platform (Photo 32-27) and a pair of field duplicates (SS-06/07) collected further to the northeast in the drainage channel. The analytical results for these samples are provided in Attachment 2.

Aside from the field duplicate sample (99-32-SS-14/15) collected below the fallen transformer at Keno 200; no evidence of any significant staining, spills, or odours was observed at the other sites (i.e., Comstock 150 or 200, or Porcupine).

8.3. Liquid Hazardous Materials

Aside from transformer fluid samples and hydrocarbon products at Keno 700 and/or Keno 200 discussed in earlier sections, no liquid hazardous materials were apparent at any of the Keno No. 9 System sites investigated.

8.4. Solid Hazardous Materials

None apparent at any of the Keno No. 9 System sites investigated.

9. WATER QUALITY

Keno 700 Adit Seepage and Drainage

The Keno 700 adit drains an extremely large expanse of underground workings of which many are up to 70 years old (UKHM, 1996). Water samples were taken in seepage at the entrance to the Keno 700 adit (99-32-WQ-01, see Photo 32-2), below the end of the drainage culvert through the waste rock pile exposed and damaged by erosion (WQ-02, Photo 32-28) and in the receiving stream at the bottom of the outwash area a few hundred metres below the site (WQ-03, Photo 32-29). The results of the geochemical analyses for these samples are presented in Attachment 2.

Keno 200 Adit Seepage

One water sample was taken in seepage at the entrance to the Keno 200 adit (99-32-WQ-04, see Photo 32-4); no additional samples were obtained due to the high and dry topography and lack of any apparent surface drainage. The results of the geochemical analyses for these samples are presented in Attachment 2.

No water samples were taken at any of the other sites investigated (i.e., Comstock 150 or 200, or Porcupine due to the high and dry topography of the areas and distances from any observable water courses.

10. RECLAMATION

No revegetation has occurred at the any of the sites at this point due to the sub-alpine wind-swept conditions of this area, recent disturbance, and surface drainage and resulting erosion in the case of the Keno 700 adit site (see Photos 32-1 to 32-29). No evidence of any reclamation measures at any of the Keno No. 9 System sites investigated.

11. OTHER INFORMATION AND DATA

United Keno Hill Mines Ltd. (UKHM, 1996) conducted a study of the Keno 700 adit site including discharges and water chemistry. The report noted that the drainage water chemistry of this site shows more variability over the year than do most other stations in the area. Since the adit is frozen for half the year, the variability has been attributed to freeze/thaw cycles, producing pure water and concentrating contaminants into the surrounding drainage water during freezing. Values for pH were found to be alkaline reaching up to 8 over the summer period. Sulphate concentrations and conductivity were determined to be considerably lower (about half) than those observed at Galena Hill. Zinc was determined to be the metal of note, with lesser contributions from cadmium and arsenic. The metal levels were reported to be consistent with measurements in Hope Gulch and metal leaching, rather than acid mine drainage, was the main geochemical issue at Keno 700. The report concluded that although the data collected was limited to periodic sampling over two years, the load balance results suggested that there was very little, if any, additional contaminant loading to Hope Gulch from the Keno No. 9 System waste dumps. A water chemistry table from the UKHM report (1996) is provided below.

Station	Flow (m ³ /s)	SO ₄	Zn (total)	Zn (diss.)	As(total)	Ca (total)
Keno 700	0.0022	150	0.89	0.83	0.05	110
Hope Gulch	0.0062	87	0.23	0.23	<0.02	44.5

All units in mg/L unless specified otherwise

12. REFERENCES AND PERSONAL COMMUNICATIONS

Dunn, William (1999) pers. comm.

United Keno Hill Mines Ltd. (1996) Report No. UKH/96/01 Site Characterization. Produced by Access Mining Consultants Ltd.

**ATTACHMENT 2: 1999 KENO VALEY MINE SITE WATER SAMPLES
LABORATORY RESULTS**

Sample Number	Detection Limit	Units	99-32-WQ-01 Sept. 15/99	99-32-WQ-02 Sept. 15/99	99-32-WQ-03 Sept. 15/99	99-32-WQ-04 Sept. 15/99	99-32-WQ-05 Sept. 15/99
Site Description			Keno 700 seep/melt water from adit	Keno 700 adit drainage below culvert	Keno 700 drainage in stream below site	Keno 200 seep/melt water from adit	Field duplicate of WQ 04
Temperature (field)	N/A	°C			2.3		
pH (field)	N/A	pH	7.3		6.9	4.75	
Conductivity (field)	N/A	µS/cm	6.05		190	1601	
pH (Lab)	0.01	pH	7.88	8.08	7.19	5.06	5.02
Conductivity (Lab)	0.01	µS/cm	580	570	185	1550	1550
Total Alkalinity	5	mg CaCO3/L	140	140	41	<5	<5
Chloride	0.25	mg/L	<0.25	<0.25	<0.25	na	na
Chloride	0.5	mg/L	na	na	na	<0.5	<0.5
Hardness (CaCO3 equiv)	5	mg/L	329	333	94.5	1100	1070
Nitrate-N	0.05	mg/L	0.48	0.47	0.25	na	na
Nitrate-N	0.1	mg/L	na	na	na	<0.1	<0.1
Nitrite-N	0.003	mg/L	0.003	0.003	0.003	<0.003	<0.003
Sulphate	1	mg/L	158	168	51.3	950	990
Total Dissolved Solids	5	mg/L	378	398	128	1380	1340
Analysis by ICP-USN							
Aluminum	0.0008	mg/L	0.0032	0.0012	0.0191	4.52	1.5
Antimony	0.005	mg/L	<0.005	0.007	<0.005	<0.005	<0.005
Arsenic	0.01	mg/L	0.03	0.03	0.02	0.05	<0.01
Barium	0.00004	mg/L	0.0126	0.0125	0.0607	0.0811	0.0221
Beryllium	0.00001	mg/L	<0.00001	<0.00001	<0.00001	0.00016	<0.00001
Bismuth	0.0004	mg/L	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
Boron	0.002	mg/L	<0.002	<0.002	<0.002	0.007	<0.002
Cadmium	0.00006	mg/L	0.0253	0.0183	0.00261	0.00329	0.00313
Calcium	0.002	mg/L	96.3	98.6	25.5	340	344
Chromium	0.00006	mg/L	0.00013	0.00014	0.0002	0.00539	0.00063
Cobalt	0.00003	mg/L	<0.00003	<0.00003	<0.00003	0.00298	0.00162
Copper	0.00003	mg/L	0.00286	0.00129	0.00137	0.0242	0.00673
Iron	0.00001	mg/L	0.011	0.025	0.065	13.6	5.76
Lead	0.0003	mg/L	0.0018	0.005	0.0115	0.0394	0.0079
Lithium	0.001	mg/L	0.004	0.003	<0.001	0.024	0.02
Magnesium	0.0005	mg/L	11.9	12.6	3.97	23.2	23.1
Manganese	0.00002	mg/L	0.0688	0.00084	0.00951	0.281	0.237
Mercury	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Molybdenum	0.00007	mg/L	0.00071	0.00088	0.00019	0.00169	0.00013
Nickel	0.00001	mg/L	0.0074	0.006	0.0022	0.0442	0.0381
Phosphorus	0.03	mg/L	<0.03	<0.03	<0.03	0.59	0.07
Potassium	0.4	mg/L	<0.4	<0.4	<0.4	0.8	<0.4
Selenium	0.004	mg/L	0.005	<0.004	<0.004	<0.004	<0.004
Silicon	0.004	mg/L	2.88	2.73	2.05	8.18	5.13
Silver	0.00005	mg/L	<0.00005	<0.00005	0.00017	0.00054	<0.00005
Sodium	0.004	mg/L	1.7	1.7	0.7	1.1	1
Strontium	0.00002	mg/L	0.215	0.218	0.0795	0.388	0.384
Sulphur	0.008	mg/L	49.1	53.8	16.2	319	310
Thallium	0.001	mg/L	<0.001	<0.001	<0.001	<0.001	<0.001
Titanium	0.00002	mg/L	<0.00002	<0.00002	0.00074	0.0558	0.00453
Vanadium	0.00003	mg/L	<0.00003	<0.00003	<0.00003	0.00648	0.00037
Zinc	0.0002	mg/L	1.75	1.27	0.222	0.078	0.0592
Analysis by Hydride AA							
Arsenic	0.0002	mg/L	0.0266	0.0201	0.0112	0.05	0.0114
Selenium	0.0001	mg/L	0.0002	<0.0001	0.0002	0.0057	0.0004

ATTACHMENT 2: 1999 KENO VALLEY MINE SITE SOIL SAMPLES

LABORATORY RESULTS

Sample Number	Detection Limit	Units	99-32-SS-01 - 99/09/15	99-32-SS-02 - 99/09/15	99-32-SS-03 - 99/09/15	99-32-SS-04 - 99/09/15
Site Description			Keno 700 - Surface hydrocarbon stain by generator building	Keno 700 - Depth sample (0.7 m) of SS-01	Keno 700 - Edge of visible drainage path from hydrocarbon stain	Keno 700 - Profile of hydrocarbon staining by engine drop
pH in Saturated Paste						
pH	0.1	pH	na	na	na	6.5
pH in Soil (1:2 water)						
pH	0.01	pH	na	na	na	6.57
LEPH/NEPH in Soil						
LEPHs10-19	10	mg/kg	8460	na	na	na
HEPHs19-32	10	mg/kg	58100	na	na	na
EPH in Soil						
EPHs10-19	10	mg/kg	na	2530	3600	na
EPHs19-32	10	mg/kg	na	9990	12000	na
Moisture						
% Moisture		%	9.6	7.53	8.95	na
PAH in Soil						
Naphthalene	0.05	mg/kg	<0.5	na	na	na
Acenaphthylene	0.05	mg/kg	<0.5	na	na	na
Acenaphthene	0.05	mg/kg	<0.5	na	na	na
Fluorene	0.05	mg/kg	<0.5	na	na	na
Phenanthrene	0.05	mg/kg	<0.5	na	na	na
Anthracene	0.05	mg/kg	<0.5	na	na	na
Fluoranthene	0.05	mg/kg	<0.5	na	na	na
Pyrene	0.05	mg/kg	<0.5	na	na	na
Benzo(a)anthracene	0.05	mg/kg	<0.5	na	na	na
Chrysene	0.05	mg/kg	<0.5	na	na	na
Benzo(f)fluoranthene	0.05	mg/kg	<0.5	na	na	na
Benzo(a)pyrene	0.05	mg/kg	<0.5	na	na	na
Indeno(1,2,3-c,d)pyrene	0.05	mg/kg	<0.5	na	na	na
Dibenzo(a,h)anthracene	0.05	mg/kg	<0.5	na	na	na
Benzo(g,h,i)perylene	0.05	mg/kg	<0.5	na	na	na
ICP Semi-Trace Scan - Metals						
Aluminum	5	µg/g wet	na	na	na	20100
Antimony	2	µg/g wet	na	na	na	800
Arsenic	2	µg/g wet	na	na	na	730
Barium	0.05	µg/g wet	na	na	na	403
Beryllium	0.1	µg/g wet	na	na	na	0.3
Bismuth	5	µg/g wet	na	na	na	<5
Cadmium	0.1	µg/g wet	na	na	na	223
Calcium	5	µg/g wet	na	na	na	12100
Chromium	0.5	µg/g wet	na	na	na	25.7
Cobalt	0.1	µg/g wet	na	na	na	16.5
Copper	0.5	µg/g wet	na	na	na	550
Iron	1	µg/g wet	na	na	na	52000
Lead	1	µg/g wet	na	na	na	19500
Lithium	0.5	µg/g wet	na	na	na	15.9
Magnesium	1	µg/g wet	na	na	na	4580
Manganese	0.5	µg/g wet	na	na	na	7740
Mercury	0.01	µg/g wet	na	na	na	0.9
Molybdenum	1	µg/g wet	na	na	na	4
Nickel	0.2	µg/g wet	na	na	na	26.7
Phosphorus	5	µg/g wet	na	na	na	561
Potassium	20	µg/g wet	na	na	na	7000
Selenium	2	µg/g wet	na	na	na	<2
Silicon	5	µg/g wet	na	na	na	7270
Silver	0.5	µg/g wet	na	na	na	925
Sodium	5	µg/g wet	na	na	na	1250
Strontium	1	µg/g wet	na	na	na	38
Sulphur	10	µg/g wet	na	na	na	24200
Thorium	1	µg/g wet	na	na	na	<1
Tin	1	µg/g wet	na	na	na	9
Titanium	0.2	µg/g wet	na	na	na	365
Uranium	5	µg/g wet	na	na	na	<5
Vanadium	1	µg/g wet	na	na	na	37
Zinc	0.5	µg/g wet	na	na	na	15200
Zirconium	0.1	µg/g wet	na	na	na	15.9

ATTACHMENT 2: 1999 KENO VALLEY MINE SITE SOIL SAMPLES

LABORATORY RESULTS

Sample Number	Detection Limit	Units	99-32-SS-05 - 99/09/15	99-32-SS-06 - 99/09/15	99-32-SS-07 - 99/09/15	99-32-SS-08 - 99/09/15
Site Description			Keno 700 - Field duplicate of SS-04	Keno 700 - Large stain on slope between buildings	Keno 700 - Depth (0.7 m) sample of SS-06	Keno 700 - Toe of exposed landfill debris in waste rock
pH in Saturated Paste						
pH	0.1	pH	6.8	na	na	6.9
pH in Soil (1:2 water)						
pH	0.01	pH	6.74	na	na	6.98
LEPH/HEPH in Soil						
LEPHs10-19	10	mg/kg	na	2630C	na	na
HEPHs19-32	10	mg/kg	na	4410C	na	na
EPH in Soil						
EPHs10-19	10	mg/kg	na	na	6300	na
EPHs19-32	10	mg/kg	na	na	3000	na
Moisture						
% Moisture		%	na	26	9.97	na
PAH in Soil						
Naphthalene	0.05	mg/kg	na	<0.5	na	na
Acenaphthylene	0.05	mg/kg	na	<0.5	na	na
Acenaphthene	0.05	mg/kg	na	<0.5	na	na
Fluorene	0.05	mg/kg	na	<0.5	na	na
Phenanthrene	0.05	mg/kg	na	<0.5	na	na
Anthracene	0.05	mg/kg	na	<0.5	na	na
Fluoranthene	0.05	mg/kg	na	<0.5	na	na
Pyrene	0.05	mg/kg	na	<0.5	na	na
Benzo(a)anthracene	0.05	mg/kg	na	<0.5	na	na
Chrysene	0.05	mg/kg	na	<0.5	na	na
Benzo(f)fluoranthene	0.05	mg/kg	na	<0.5	na	na
Benzo(a)pyrene	0.05	mg/kg	na	<0.5	na	na
Indeno(1,2,3-c,d)pyrene	0.05	mg/kg	na	<0.5	na	na
Dibenzo(a,h)anthracene	0.05	mg/kg	na	<0.5	na	na
Benzo(g,h,i)perylene	0.05	mg/kg	na	<0.5	na	na
PCBs in Soil						
Total PCBs	0.1	mg/kg	na	na	na	<0.1
ICP Semi-Trace Scan - Metals						
Aluminum	5	µg/g wet	2210C	na	na	2090C
Antimony	2	µg/g wet	120	na	na	77
Arsenic	2	µg/g wet	600	na	na	1840
Barium	0.05	µg/g wet	406	na	na	356
Beryllium	0.1	µg/g wet	0.4	na	na	0.3
Bismuth	5	µg/g wet	<5	na	na	<5
Cadmium	0.1	µg/g wet	214	na	na	91.8
Calcium	5	µg/g wet	1700C	na	na	7250
Chromium	0.5	µg/g wet	34.4	na	na	23.8
Cobalt	0.1	µg/g wet	15.6	na	na	14.4
Copper	0.5	µg/g wet	146	na	na	90.5
Iron	1	µg/g wet	4600C	na	na	5800C
Lead	1	µg/g wet	1670C	na	na	1250C
Lithium	0.5	µg/g wet	16.4	na	na	19.9
Magnesium	1	µg/g wet	4790	na	na	4820
Manganese	0.5	µg/g wet	6730	na	na	8900
Mercury	0.01	µg/g wet	0.3	na	na	0.31
Molybdenum	1	µg/g wet	3	na	na	3
Nickel	0.2	µg/g wet	24.7	na	na	26
Phosphorus	5	µg/g wet	520	na	na	699
Potassium	20	µg/g wet	7800	na	na	6300
Selenium	2	µg/g wet	<2	na	na	<2
Silicon	5	µg/g wet	6680	na	na	5270
Silver	0.5	µg/g wet	138	na	na	81.3
Sodium	5	µg/g wet	1450	na	na	1310
Strontium	1	µg/g wet	45	na	na	31
Sulphur	10	µg/g wet	2020C	na	na	1610C
Thorium	1	µg/g wet	<1	na	na	<1
Tin	1	µg/g wet	8	na	na	6
Titanium	0.2	µg/g wet	390	na	na	527
Uranium	5	µg/g wet	<5	na	na	<5
Vanadium	1	µg/g wet	43	na	na	45
Zinc	0.5	µg/g wet	1720C	na	na	9090
Zirconium	0.1	µg/g wet	16.5	na	na	14.3

ATTACHMENT 2: 1999 KENO VALLEY MINE SITE SOIL SAMPLES

LABORATORY RESULTS

Sample Number	Detection Limit	Units	99-32-SS-09 - 99/09/15	99-32-SS-10 - 99/09/15	99-32-SS-11 - 99/09/15	99-32-SS-12 - 99/09/15
Site Description			Keno 700 - hydrocarbon stain on dirt floor of maintenance garage	Keno 700 - below transformer tower by mining manager residence	Keno 700 - below capacitor tower NW of site	Keno 700 - below 2 transformers NW of site
PCBs in Soil						
Total PCBs	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1

ATTACHMENT 2: 1999 KENO VALLEY MINE SITE SOIL SAMPLES

LABORATORY RESULTS

Sample Number	Detection Limit	Units	99-32-SS-13 - 99/09/15	99-32-SS-14 - 99/09/15	99-32-SS-15 - 99/09/15	
Site Description			Keno 700 - Field duplicate of SS-12	Keno 200 - below tower with toppled transformer	Keno 200 - Field duplicate of SS-14	
EPH in Soil						
EPHs10-19	10	mg/kg	na	na	1000	
EPHs19-32	10	mg/kg	na	na	1100	
Moisture						
% Moisture		%	na	na	7.5	
PCBs in Soil						
Total PCBs	0.1	mg/kg	<0.1	0.9	na	

**ATTACHMENT 2: 1999 KENO VALLEY MINE SITE WASTE ROCK SAMPLES LABORATORY RESULTS
MODIFIED SOBEK METHOD ACID-BASE ACCOUNTING TEST**

SAMPLE	SITE DESCRIPTION	PASTE pH	S(T) %	S(SO4) %	AP	NP	NET NP	NP/AP
99-32-WR-01 - Sept 15/99	Comstock 150 - Waste Rock	6.7	0.45	0.16	9.1	17.6	8.6	1.9
	Keno 200 (6' depth) Green							
99-32-WR-02 - Sept 15/99	Horizon	8.3	0.19	0.01	5.6	68.6	63	12.2
99-32-WR-03 - Sept 15/99	Keno 700	7.9	0.29	0.02	8.4	15.8	7.3	1.9
99-32-WR-04 - Sept 15/99	Comstock 275	7.9	0.37	0.18	5.9	13.5	7.6	2.3
	Keno 200 - Weathered							
99-32-WR-05 - Sept 15/99	Horizon	8.1	0.27	0.04	7.2	85.3	78.1	11.9

AP = ACID POTENTIAL IN TONNES CaCO₃ EQUIVALENT PER 1000 TONNES OF MATERIAL.

NP = NEUTRALIZATION POTENTIAL IN TONNES CaCO₃ EQUIVALENT PER 1000 TONNES OF MATERIAL.

NET NP = NET NEUTRALIZATION POTENTIAL = TONNES CaCO₃ EQUIVALENT PER 1000 TONNES OF MATERIAL.

NOTE: WHEN S(T) AND/OR S(SO₄) IS REPORTED AS <0.01, IT IS ASSUMED TO BE ZERO FOR THE AP CALCULATION.

N/D = NO DUPLICATE ASSAY. CALCULATIONS ARE BASED ON ASSAY RESULTS OF THE INITIAL SAMPLE.

RE = REPLICATE.

NOTE - A HIGH LEVEL OF SOLUBLE METALS (ESPECIALLY IRON) WERE OBSERVED IN MANY SAMPLES DURING THE ABA TITRATIONS.

SAMPLES WITH A NEGATIVE NET NP SHOULD BE TESTED FOR MOBILE METALS USING STANDARD SHAKE FLASK EXTRACTION TESTS.

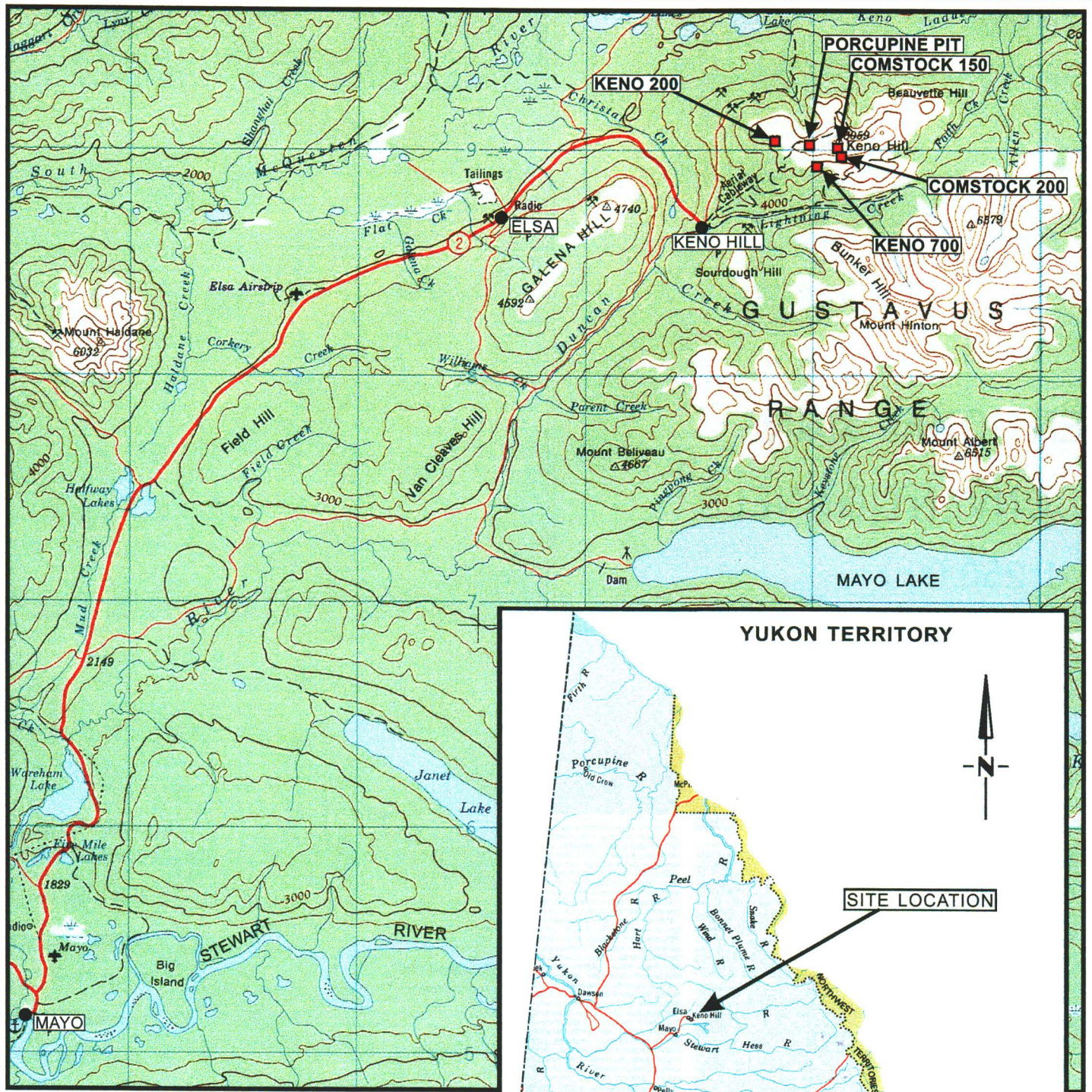
ATTACHMENT 2: 1999 KENO VALEY MINE SITE WATER SAMPLES
LABORATORY RESULTS

Sample Number	Detection Limit	Units	99-32-TR1 - Transformer Fluid	99-32-TR2 - Transformer Fluid		
Site Description			Transformer 1 - Serial 72181	Transformer 2 - Serial 72180		

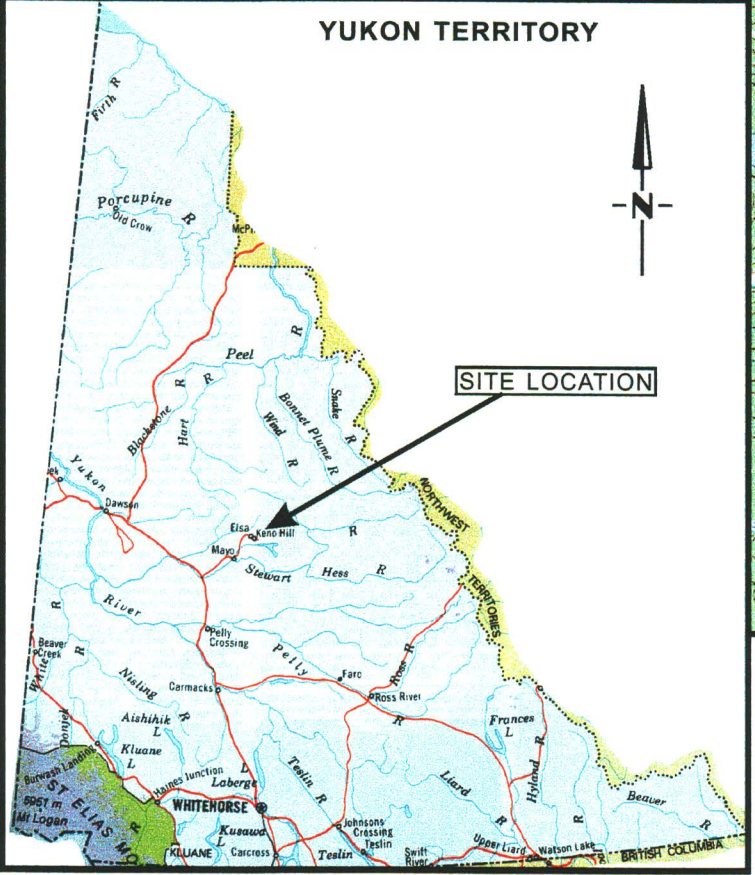
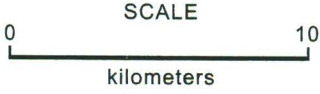
ATTACHMENT 2: 1999 KENO MINE SITE ASBESTOS SAMPLES

LABORATORY RESULTS

Site Number	Detection Limit	Units	99-32-AS-01 - 15/09/99 - Insulation	99-32-AS-02 - 15/09/99 - Insulation	99-32-AS-03 - 15/09/99 - Insulation	99-32-AS-04 - 15/09/99 - Insulation
Sample Description			Building 1 (mess hall) on NE exterior wall	Building 4 (bunkhouse) on S exterior wall	Building 12 (boiler shack) from pile on floor	Building 12 (boiler shack) from side of main boiler
Approximate % fibrous asbestos and most similar type	-	%	60-80% chrysotile	60-80% chrysotile	None observed	None observed



LOCATION MAP
(LOCATIONS ARE APPROXIMATE)



BASELINE STUDY

**KENO No. 9 SYSTEM
SITES LOCATION MAP**

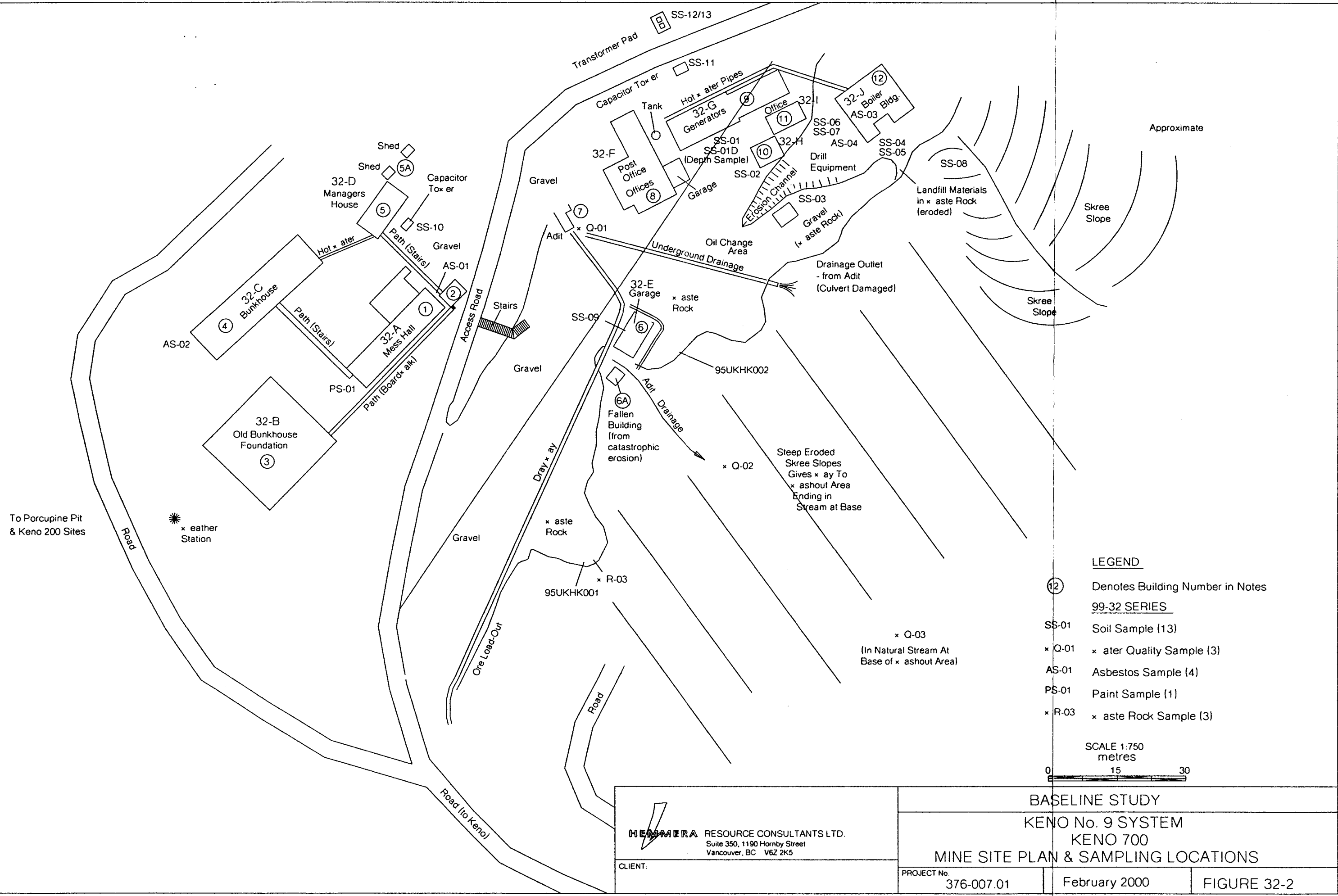
ROYAL ROADS UNIVERSITY &
HEMMERA RESOURCE CONSULTANTS LTD.
Suite 350, 1190 Hornby Street
Vancouver, B.C. V6Z 2K5

CLIENT:
 PUBLIC WORKS and GOVERNMENT SERVICES CANADA

PROJECT No.
376-007.01

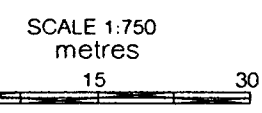
February 2000


Figure 32-1

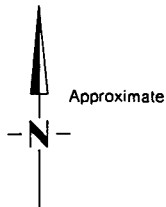


LEGEND

- (12) Denotes Building Number in Notes
- 99-32 SERIES
- SS-01 Soil Sample (13)
- * Q-01 * ater Quality Sample (3)
- AS-01 Asbestos Sample (4)
- PS-01 Paint Sample (1)
- * R-03 * aste Rock Sample (3)



 HEMERA RESOURCE CONSULTANTS LTD. Suite 350, 1190 Hornby Street Vancouver, BC V6Z 2K5	BASELINE STUDY		
	KENO No. 9 SYSTEM		
KENO 700			
MINE SITE PLAN & SAMPLING LOCATIONS			
CLIENT:	PROJECT No. 376-007.01	February 2000	FIGURE 32-2

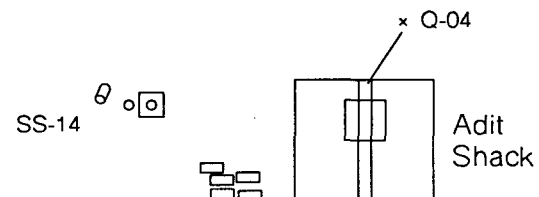


Old Trestle
(Exposed Support Structure)

Transformer Platform/Poles

Transformer
(fallen)

Exposed Area



Rail Cars

ACCESS ROAD

Truck Loading Trestle
(Recent)

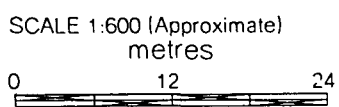
Rail Car Track


Eroded Scree

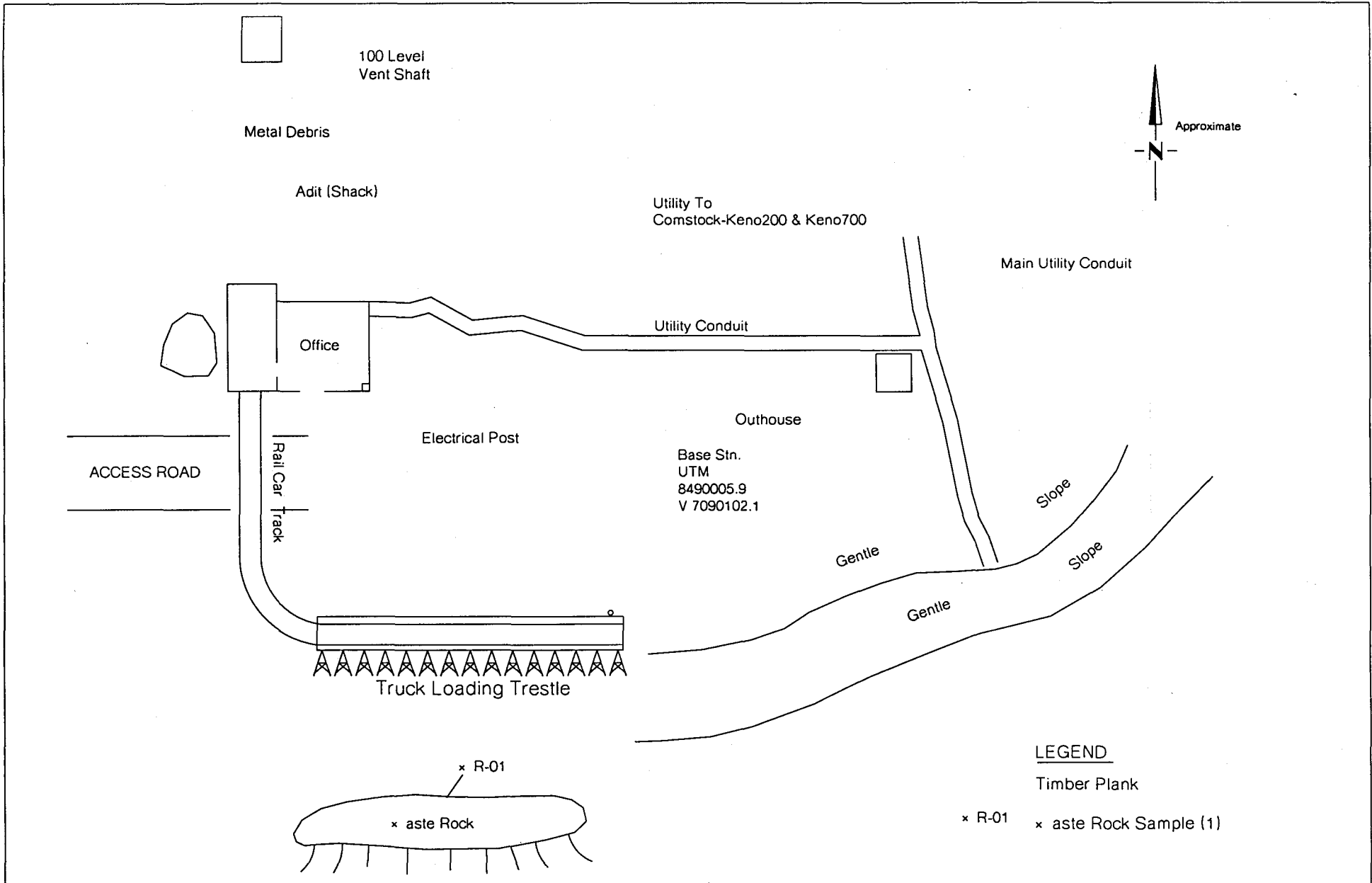
x R-02
x R-05

Base Stn.
UTM
8489519.0
V 709001.6

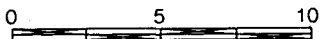
- LEGEND**
- 99-32 SERIES
 - Soil Sample (1)
 - x ater Quality (1)
 - x aste Rock Sample (2)



 HEMMERA RESOURCE CONSULTANTS LTD. Suite 350, 1190 Hornby Street Vancouver, BC V6Z 2K5	BASELINE STUDY		
	KENO No. 9 SYSTEM		
CLIENT:	KENO 200 ADIT SITE & SAMPLING LOCATIONS		
	PROJECT No. 376-007.01/Keno200	February 2000	FIGURE 32-3



SCALE 1:250 (Approximate)
metres



HEMMERA RESOURCE CONSULTANTS LTD.
Suite 350, 1190 Hornby Street
Vancouver, BC V6Z 2K5

CLIENT: .

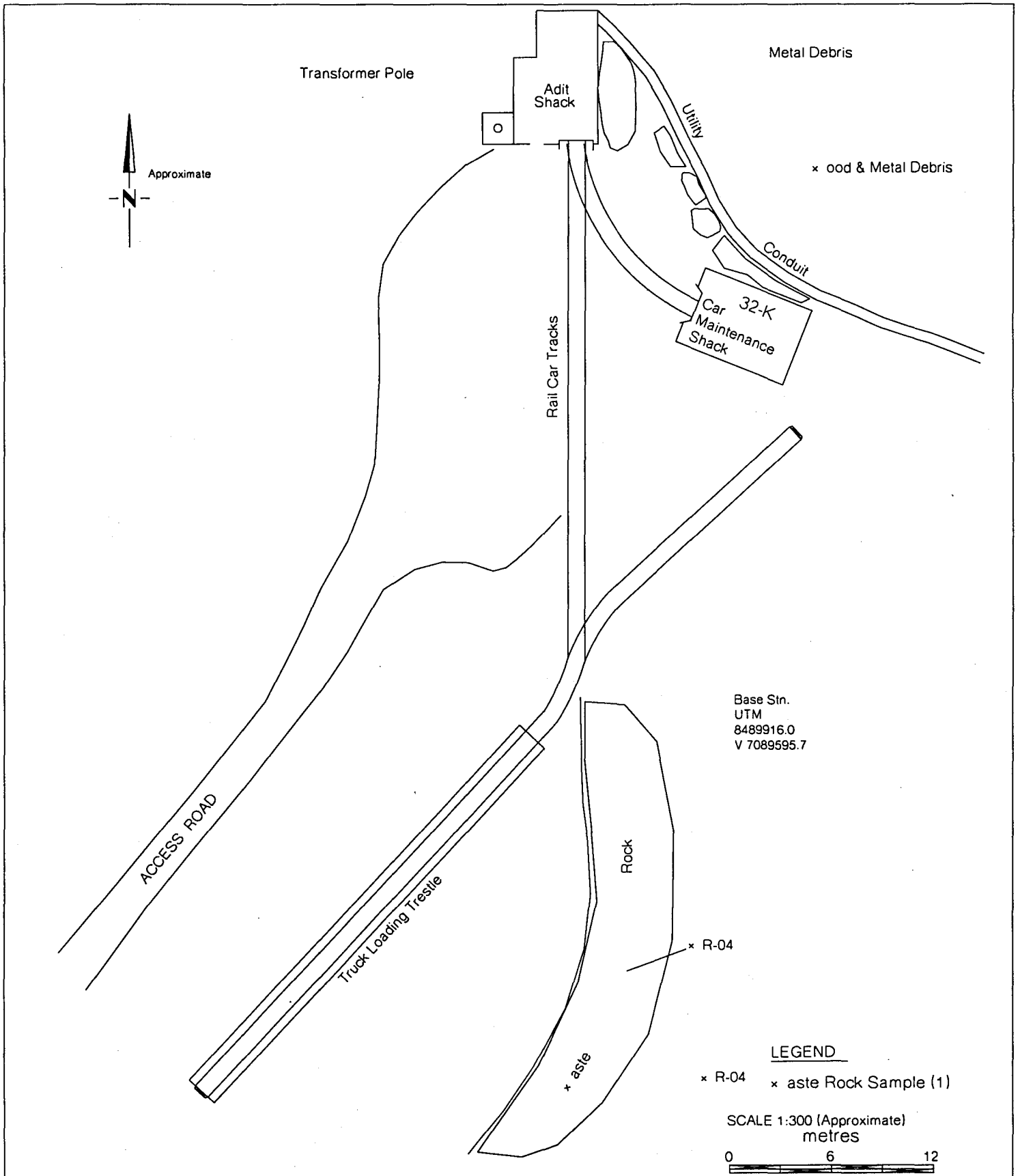
BASELINE STUDY

**KENO No. 9 SYSTEM
COMSTOCK 150 LEVEL SITE**

PROJECT No.
376-007.01/Com150

February 2000

FIGURE 32-4



HEMMERA RESOURCE CONSULTANTS LTD.
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 Vancouver, BC V6Z 2K5

BASELINE STUDY

**KENO No. 9 SYSTEM
 COMSTOCK LEVEL 200 SITE**

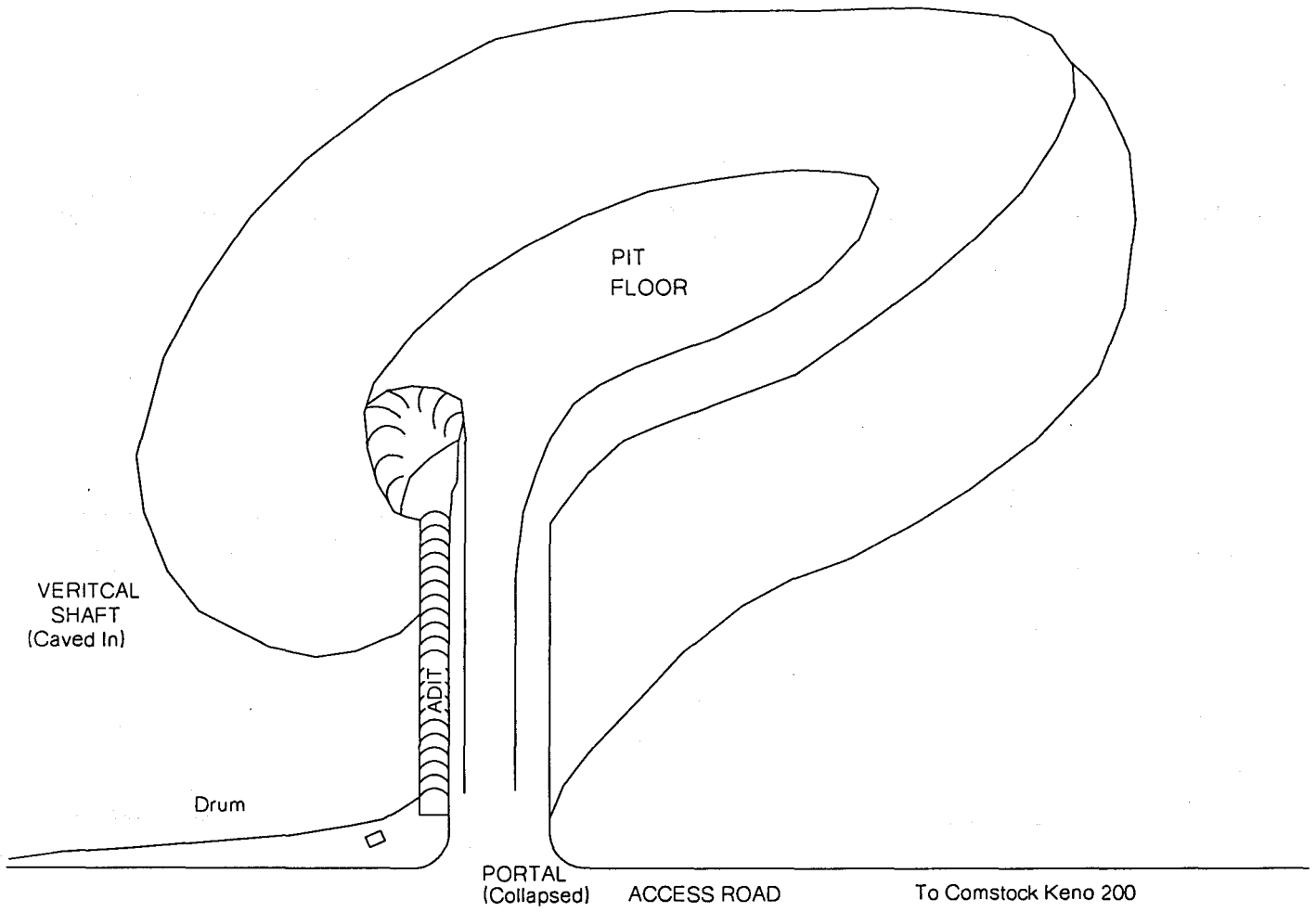
CLIENT:

PROJECT No.
 376-007.01/CK200

February 2000

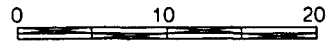
FIGURE 32-5

Approximate




NOTE: No samples taken.

SCALE 1:500 (Approximate)
metres



BASELINE STUDY

KENO No. 9 SYSTEM
PORCUPINE PIT

 **HEMMERA** RESOURCE CONSULTANTS LTD.
Suite 350, 1190 Hornby Street
Vancouver, BC V6Z 2K5

CLIENT:

PROJECT No.
376-007.01/Porcupine

February 2000

FIGURE 32-6



Photo 32-1 : Keno 700. Looking down on site from mountain to the S. (at Comstock-Keno 200).



Photo 32-2 : Keno 700. Mine adit shed (building 7) looking N.W.



Photo 32.3 : Keno 200. Adit shack looking W.



Photo 32-4 : Keno 200. Mine adit water sample.



Photo 32-5 : Comstock-Keno 150. Adit Shack (looking N.).



Photo 32-6 : Comstock-Keno. Vent shaft shack above site (looking N.E.).

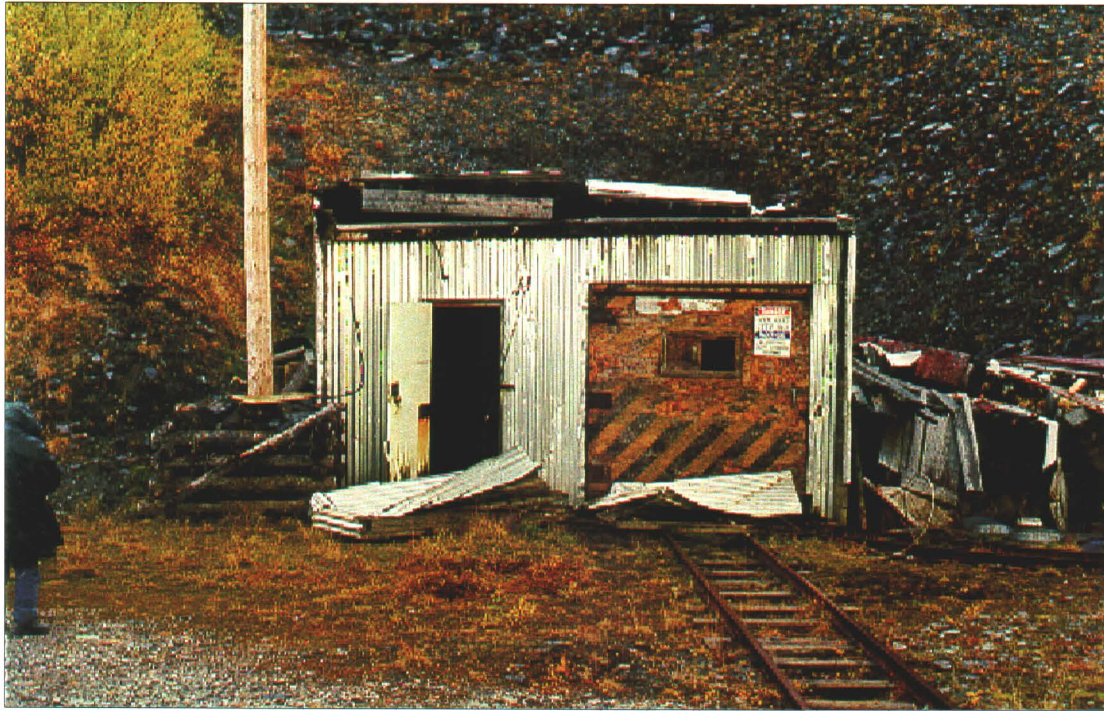


Photo 32-7 : Comstock-Keno 200. Adit entrance (looking N.E.)



Photo 32-8 : Porcupine Adit looking N.W.



Photo 32-9 : Porcupine Adit Pit looking E.



Photo 32-10 : Keno 700. Site looking N.



Photo 32-11 : Keno 200. Old trestle to S.W. of site looking N.E.



Photo 32-12 : Looking downslope (S) to Comstock-Keno 200 (from Comstock-Keno 150).



Photo 32-13 : Keno 700. Mess hall facing south (building 2).



Photo 32-14 : Keno 700. Old bunkhouse site (building 3) looking north.



Photo 32-15 : Keno 700. Mining manager's residence looking N.W. (Building 5).



Photo 32-16 : Keno 700. Vehicle maintenance shed (building 6) looking S.W.



Photo 32-17 : Keno 700. Mud room, office & ambulance garage (building 8) looking west.



Photo 32-18 : Keno 700. Generator shack (building 9) looking north - oil staining in front.



Photo 32-19 : Keno 700. Paint shed (building 10) looking E.



Photo 32-20 : Keno 700. Boiler shack / filter plant (building 12) looking N.E.

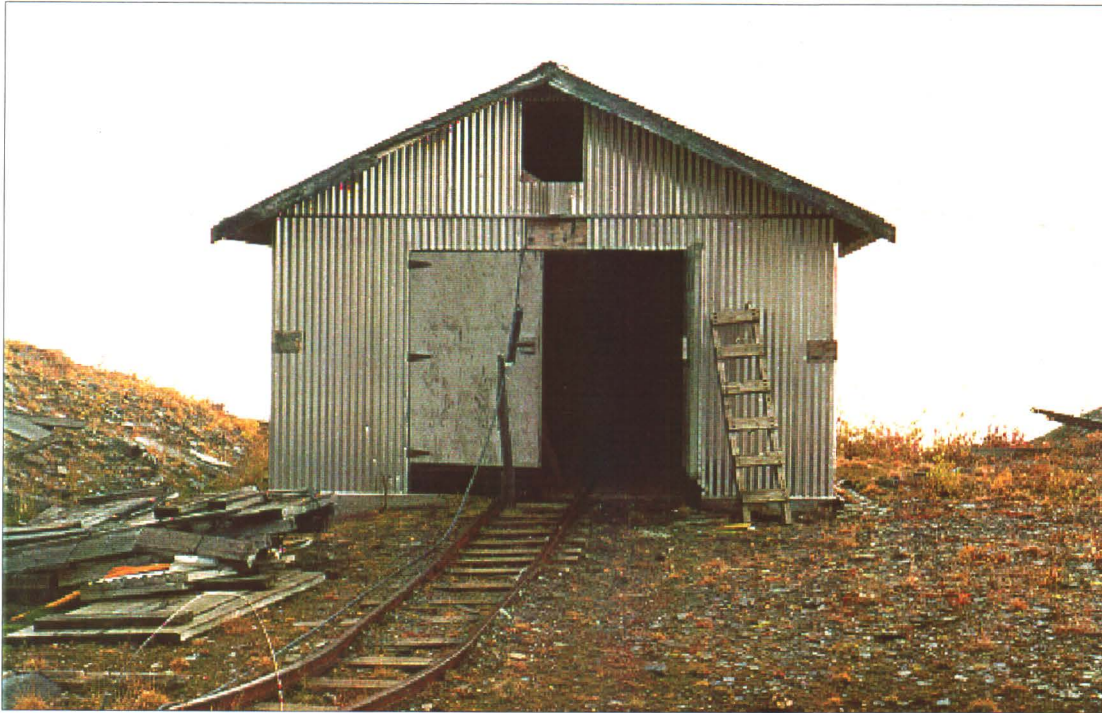


Photo 32-21 : Comstock-Keno200. Maintenance building looking E.



Photo 32-22 : Keno 700. Truck loading trestle at S. end of site.



Photo 32-23 : Comstock-Keno 150. Adit shack & truck-loading trestle.



Photo 32-24 : Keno 700. Landfill exposed debris looking upslope & S.W.
(N.E. side of waste-rock pile).



Photo 32-25 : Keno 700. Transformer site looking N.E.



Photo 32-26 : Keno 200. Fallen capacitor / transformer by tower.



Photo 32-27 : Keno 700. Engine shop platform (feature 1) looking S.E. from erosion channel.



Photo 32-28 : Keno 700. Waste-rock pile outwash area looking W. Adit culvert at top.



Photo 32-29 : Stream below outwash area.