

**YELLOWJACKET MILL  
PRELIMINARY ASSESSMENT REPORT  
LEMHI COUNTY, IDAHO**

**STATE OF IDAHO  
DEPARTMENT OF ENVIRONMENTAL QUALITY**

December 2002

Submitted To:  
U.S. Environmental Protection Agency  
Region 10  
1200 Sixth Avenue  
Seattle, WA 98101



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10  
1200 Sixth Avenue  
Seattle, WA 98101

1110010  
RECEIVED  
JUL 14 2003  
D.E.Q. STATE WASTE  
MANAGEMENT & REMEDIATION DIVISION

July 9, 2003

Reply To  
Attn Of: ECL-115

Myrnalee Steen  
631 St. Claire Dr.  
Palo Alto, CA 94306

Dear Ms. Steen:

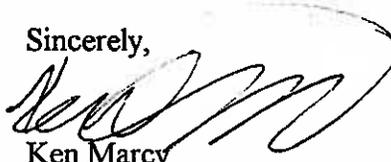
The Idaho Department of Environmental Quality (DEQ) has completed a report summarizing the findings of a visit conducted at the Yellowjacket Mill site in August, 2002. A copy of the report, called a Preliminary Assessment, is enclosed.

Based on a review of this assessment, EPA has determined that no further action is warranted at the site. A no further action designation means that no additional steps under the Federal Superfund Program will be taken at the site unless new information warranting further Superfund consideration is discovered. EPA's no further action designation does not relieve your facility from complying with appropriate Idaho state regulations.

In accordance with EPA's decision regarding the tracking of no further action sites, the above named site will be removed from the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) data base and placed in a separate archival data base as a historical record. Archived sites may be returned to the CERCLIS site inventory if new information necessitating further Superfund consideration is discovered.

We appreciate your cooperation during the site visit. If you have any questions, please feel free to contact me at (206)553-2782.

Sincerely,



Ken Marcy  
Site Assessment Manager

Enclosure

cc: Bruce Schuld, Idaho Department of Environmental Quality  
Monica Lindeman, US EPA, ECL-115  
Craig Conant, EPA SF Records Center, ECL-076



11157

1, 11.8.10



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

1410 North Hilton • Boise, Idaho 83706-1255 • (208) 373-0502

Dirk Kempthorne, Governor  
C. Stephen Allred, Director

January 10, 2003

Myrnalee Steen  
Yellow Jacket Mining Company  
631 Saint Claire Drive  
Palo Alto, California 94306

RE: Preliminary Assessment of the Yellow Jacket Mine.

Dear Ms. Steen;

After investigating the Yellow Jacket Mine (Site), the Idaho Department of Environmental Quality (DEQ) completed a Preliminary Assessment of mine workings on your property. DEQ appreciates your cooperation with our inspectors. The Preliminary Assessment Report (attached), which resulted from our visit, documents DEQ's findings relative to issues at the Site related to the use, handling and disposal of hazardous or deleterious materials. In brief, DEQ did not find anything which may pose a risk to human health or the environment, and I am, therefore, not recommending any additional site visits or actions at the Site.

Although DEQ did not find any problems related to the Site, I would greatly appreciate the opportunity to assist you if you have any questions or concerns which may arise in the future. Thank you again.

Sincerely,

Bruce A. Schuld  
Mine Waste Projects Coordinator  
Waste Management & Remediation Division

BAS:ab C:\My Documents\Bruce\Correspondence\PA Letter Yellow Jacket Mine\ January 8.doc

attachment

cc: Jim Johnston, DEQ Idaho Falls Regional Office  
Reading File  
Source File

## TABLE OF CONTENTS

TABLE OF CONTENTS.....	II
LIST OF FIGURES.....	III
LIST OF ACRONYMS.....	III
1. INTRODUCTION .....	1
2. SITE BACKGROUND .....	2
2.1 SITE LOCATION.....	2
2.2 SITE DESCRIPTION/OWNERSHIP HISTORY.....	4
2.3 SITE OPERATIONS AND WASTE CHARACTERISTICS.....	7
2.4 DEQ ACTIONS.....	7
3. MIGRATION/EXPOSURE PATHWAYS AND TARGETS.....	11
3.1 GROUND WATER MIGRATION PATHWAY.....	11
3.2 AIR MIGRATION PATHWAY .....	12
3.3 SOIL EXPOSURE PATHWAY .....	12
3.4 SURFACE WATER MIRGRATION PATHWAY .....	12
REFERENCES.....	16
APPENDIX A .....	17
APPENDIX B.....	18

## LIST OF FIGURES

Figure 2-1	Site Vicinity Map.....	3
Figure 2-2	Site Map.....	10
Figure 3-1	4-Mile Radius Map .....	14
Figure 3-2	15-Mile Map .....	15

## LIST OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
amsl	above mean sea level
DEQ	Idaho Department of Environmental Quality
EPA	United States Environmental Protection Agency
gpm	gallons per minute
PPE	Probable Point of Entry
TDL	Target Distance Limit

## 1. INTRODUCTION

The Department of Environmental Quality (DEQ) was contracted by Region 10 of the United States Environmental Protection Agency (EPA) to provide technical support for completion of a preliminary assessment (PA) at the Yellowjacket Mill site located near Challis, Idaho, in Lemhi County. DEQ completed PA activities in accordance with the goals listed below.

The specific goals for the Yellowjacket Mill PA, identified by the DEQ, are to:

- Determine the potential threat to public health or the environment posed by the site.
- Determine the potential for a release of hazardous constituents into the environment.
- Determine the potential for placement of the site on the National Priorities List.

Conducting the PA included reviewing existing site information, collecting receptor information within the site's range of influence, determining regional characteristics, and conducting a site visit. This document includes a discussion of site background information (Section 2), a discussion of migration/exposure pathways and potential targets (Section 3), and a list of pertinent references. Photographic documentation is included in Appendix A and sample analyses are included in Appendix B.

2. SITE BACKGROUND

2.1 SITE LOCATION

Site Name: Yellowjacket Mill

CERCLIS ID No.:

Location: Lemhi County, Idaho

Latitude: 44° 59' 15"N

Longitude: 114° 31' 10"W

Legal Description: Section 24, Township 19N, Range 16E, Boise Meridian

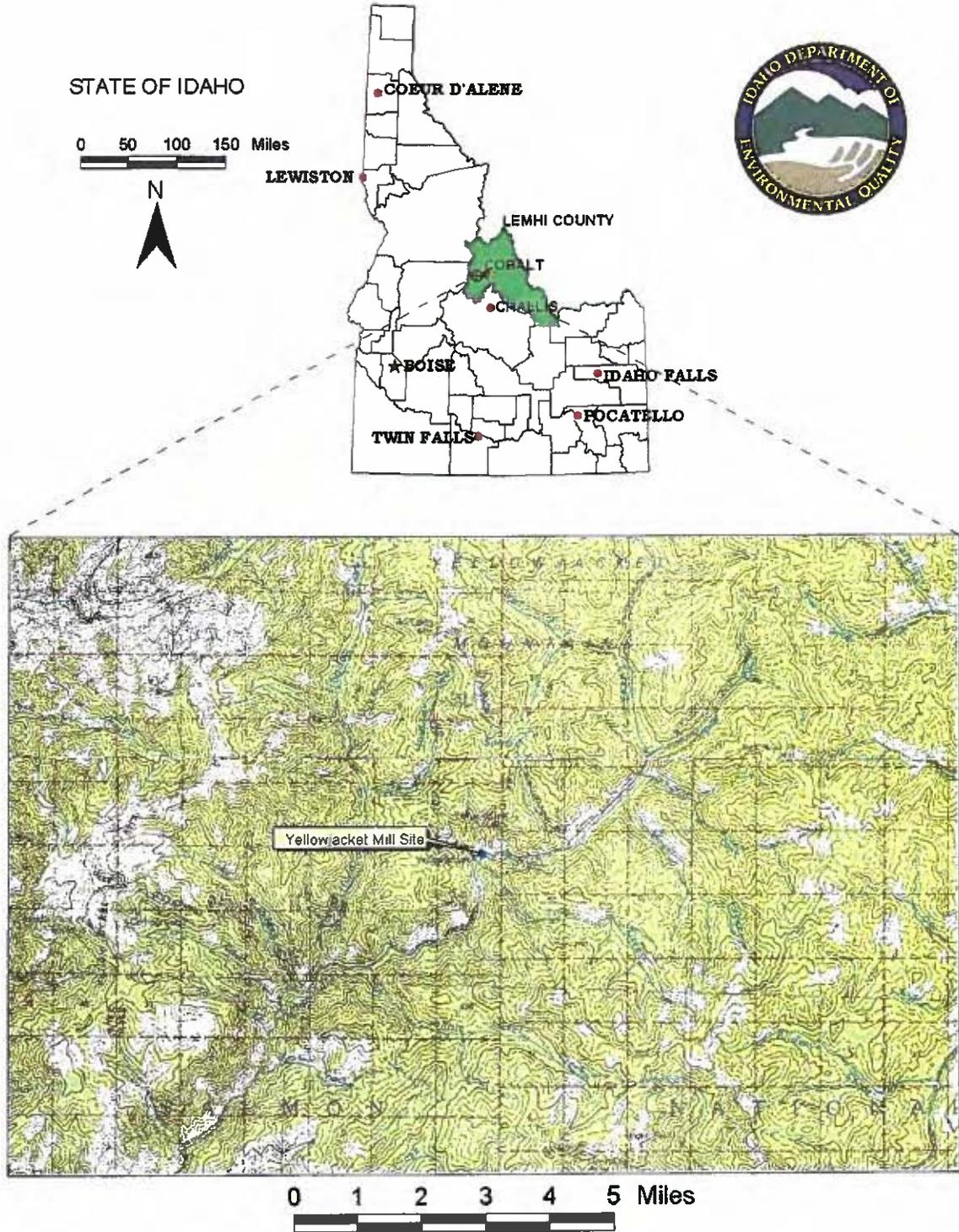
Congressional District: Idaho

Site Owner: Yellow Jacket Mining Company  
c/o Myrnalee Steen  
631 St. Claire Dr.  
Palo Alto, CA 94306

Site Contact: Myrnalee Steen  
631 St. Claire Dr.  
Palo Alto, CA 94306

**FIGURE 2-1**

**Fig 2-1 Site Vicinity Map; Yellowjacket Mill Site**



## 2.2 SITE DESCRIPTION/OWNERSHIP HISTORY

Yellowjacket Mill (Mill) is a former gold milling facility located in Lemhi County, Idaho, approximately 50 miles north-northwest of Challis, Idaho, 50 miles southwest of Salmon, Idaho, and 20 miles southwest of the former townsite of Cobalt, Idaho (Figure 2-1). The Mill located at the Yellowjacket town site (Photo CP0560) on Yellowjacket Creek at an elevation of 6,000 feet above mean sea level (amsl), lies approximately 0.75 miles south-southeast of the Yellowjacket Mine.



CP0560

Yellowjacket town site (August, 1926), hotel (center),  
blacksmith shop (lower left), miners cabins (upper left)

The Yellowjacket Mine (Mine) consisted of "vein and replacement deposits in a broad zone of complexly shattered quartzite of the Yellowjacket Formation" (Mitchell, 1997, p.1). The ore, located in veins and stringers, consisted of "free gold in a limonite stained quartz gangue" (ibid.) and secondary mineralization of pyrite, chalcopryite, and galena. In addition, alluvium and ore float capping the lode and covering the slope "below the mine for at least 1,500 feet has been worked as placer" (ibid.). Anderson (1953) estimated this placer volume to exceed one million cubic yards.

Ownership history of the Yellowjacket Mine and Mill is extensive and somewhat contested. The Yellowjacket District was discovered in 1869. The principle mine, the Yellowjacket, which was located on the North and South American patent claims, changed hands several times and was worked at intervals before 1897. In the 1870's, ore from the Mine was processed with arrastres (Umpleby, 1913), but later replaced in 1882 or 1883 by a 10-stamp mill. This water wheel powered stamp mill was supplied by a wooden flume which could process 30 tons of ore per day (Shelton, 1920). In 1884, the 10-stamp mill burned, but the flume and water wheel survived and was replaced in 1894 with the Mill, currently located at the Yellowjacket townsite (Photo CP0541).



CP0541

Yellowjacket Mill (left center), flume visible on hillside above roofline of Mill

The Mill originally "contained 30 stamps but its capacity was gradually increased so that it now contains 12 batteries of 5 stamps each and 2 additional stamps for sampling" (Shelton, 1912, p.221). An aerial tramway with buckets capable of carrying 125 pounds each of ore was constructed in 1892. The Mill was closed down in 1897 remaining "idle until the spring of 1910, at which time it was acquired by the Yellow Jacket Gold Mining Company and work resumed" (Umpleby, 1913, p. 165). "Between 1893 and 1897 was the most productive period for the mine" (Mitchell, 1997, p.12).

Work between 1911 and 1914 was primarily exploration and cyanide treatment of existing tailings. In 1914, Mandarin Mines, which operated the Mine and Mill for the Yellow Jacket Gold Mining Company, processed 150 tons per day (tpd) through the addition of a crusher, the 60 stamps, and 6 vats of cyanide with a capacity of 45 tons each (ibid.).

The Mine remained idle until 1923 when New York – Idaho Exploration Co. leased the property. The new lessors built a new hotel (Photo CP0563), but failed to prove additional ore reserves.



CP0563

Hotel and camp buildings, August 9, 1926

In 1935 Buckhorn Gold Corp. leased the mine and in 1936 began treating "low-grade gold ore from the Yellowjacket Mine by flotation-concentration" (Mitchell, 1997, p. 16). The Mill was updated to include a 300-horsepower hydroelectric plant, a jaw crusher, two gold cloth tables, a conditioner, an amalgamation barrel, a 4-cell flotation unit, reagent feeders, and a dryer, with a capacity of 125 tpd (*ibid.*). In 1937, the Mill was expanded to include another jaw crusher, ball mill and classifier. In 1939, the Condor Gold Company operated the Mill and "treated several hundred tons of gold ore in the flotation plant" (*ibid.* p.19). In November 1940, the Condor Gold Company forfeited its charter. The Mill continued operation under the Yellow Jacket Gold Mining Company which processed 700 tons of gold ore by flotation in 1941 (*ibid.*). During World War II, operation of the Mine and Mill was suspended by War Productions Board Order L-208, which closed all nonessential mines for the duration of the war (*ibid.*).

In 1948, Edwin F. and Heber S. Steen, whose father had owned and operated the mine between 1888 and 1892, acquired the Mill and Mine. "The Steen brothers rehabilitated the mill to work the placer deposits and material that covered the main deposit" (*ibid.* p.20). The Mill was operated periodically but production figures are unknown. It is believed the Mill ceased operating in 1969. From 1970 to 1987, exploration and assessment work was performed primarily to evaluate potential reserves. In 1977, the Steen family consolidated their holdings, including the Yellowjacket and Columbia-Continental mines and the Yellowjacket and Columbia mills, under the name of Yellow Jacket Mines, Inc. (*ibid.*).

In 1987 U.S. Antimony Corp. acquired a 50 percent interest in the Mine and began production as an open pit mine. In 1991, a flotation mill was constructed at the mine site. Apparently, the old Mill was never refurbished for these later mining activities. The Mine operated until 1998 when the lack of suitable ore coupled with growing environmental concerns forced its closure. Under oversight provided by the U.S. Forest

Service, Salmon District Office, Mine reclamation activities were instituted shortly thereafter.

### 2.3 SITE OPERATIONS AND WASTE CHARACTERISTICS

The mineral deposits of the Yellowjacket Mine consist chiefly of gold and silver with lesser copper, lead and zinc values. Oxidized gold ore encountered as limonite stained quartz gangue was initially processed through stamp milling and gravity separation operations. By 1914, cyanide flotation-concentration was added to the milling process. The usage of flotation milling continued until 1969.

Historical production records before 1910 are lacking but Umpleby (1913) estimated that the majority of the \$450,000 of ore shipped from the mining district came from the Mine. The total production between 1910 and 1969 "yielded 3,149 ounces of gold, 3,578 ounces of silver, 3,112 pounds of copper, 9,050 pounds of lead, and 100 pounds of zinc" (Mitchell, 1997, p.27).

Mill tailings from decades of operation lie within the Yellowjacket Creek drainage. Mill operations slurried the tailings into piles along and into Yellowjacket Creek, east and southeast of the Mill. The Mill is located approximately 100 feet above Yellowjacket Creek.

### 2.4 DEQ ACTIONS

DEQ conducted a site visit on August 6, 2002. The owner of the property, Mymalee Steen, was present during the site visit. Mrs. Steen provided historical accounts of the townsite of Yellowjacket, the Mill and Mine. The Steens vacation on the property during the summer months, occupying a restored cabin (not pictured). She accompanied DEQ around the site. The site was not fenced and easily accessible from the adjacent Yellowjacket Road, but posted with "Private Property" and no trespassing signage. Site features include the old Mill, which is rapidly falling into ruin, and its associated tailings piles and other structures of the old mining camp (not included in this PA). The Steens are endeavoring to forestall the ravages of weather and time by restoring some of the original structures at the mining camp including the blacksmith shop, barn and icehouse. The Mill that once operated 60 stamps could not be inspected due to safety concerns (Photo Mvc-001s).



Mvc-001s

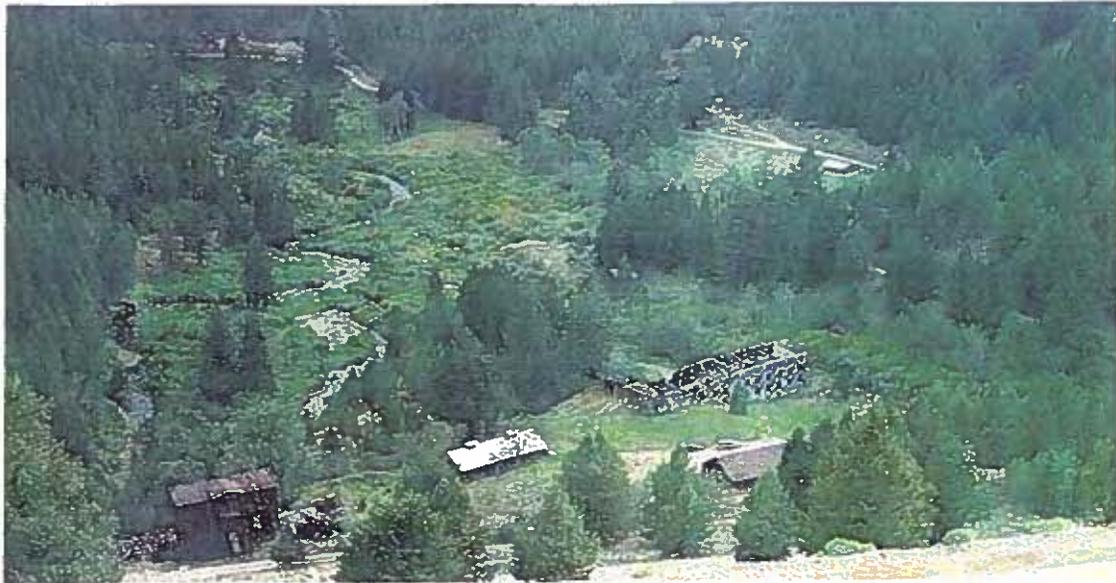
Mill - Stamp Batteries (24 stamps visible at center)

The tailings piles that supported a healthy growth of grasses, shrubs and trees (Photos Mvc-002s and Mvc-007s) appeared fine-grained in texture and composed primarily of silica.



Mvc-009s

Mill tailings (vegetative cover)



Mvc-007s

Mill ruins (lower left), blacksmith shop (tin roof), hotel ruins, barn (lower right).  
Tailings piles (below Mill) lie within Yellowjacket Creek, beaver dams in creek.

The remaining tailings are located in the flood plain of Yellowjacket Creek. DEQ collected a soil sample from one of the tailings piles lying adjacent to the creek (Appendix B). The creek appears to be eroding the old tailings, but discoloration of the water or creek bed is not evident.

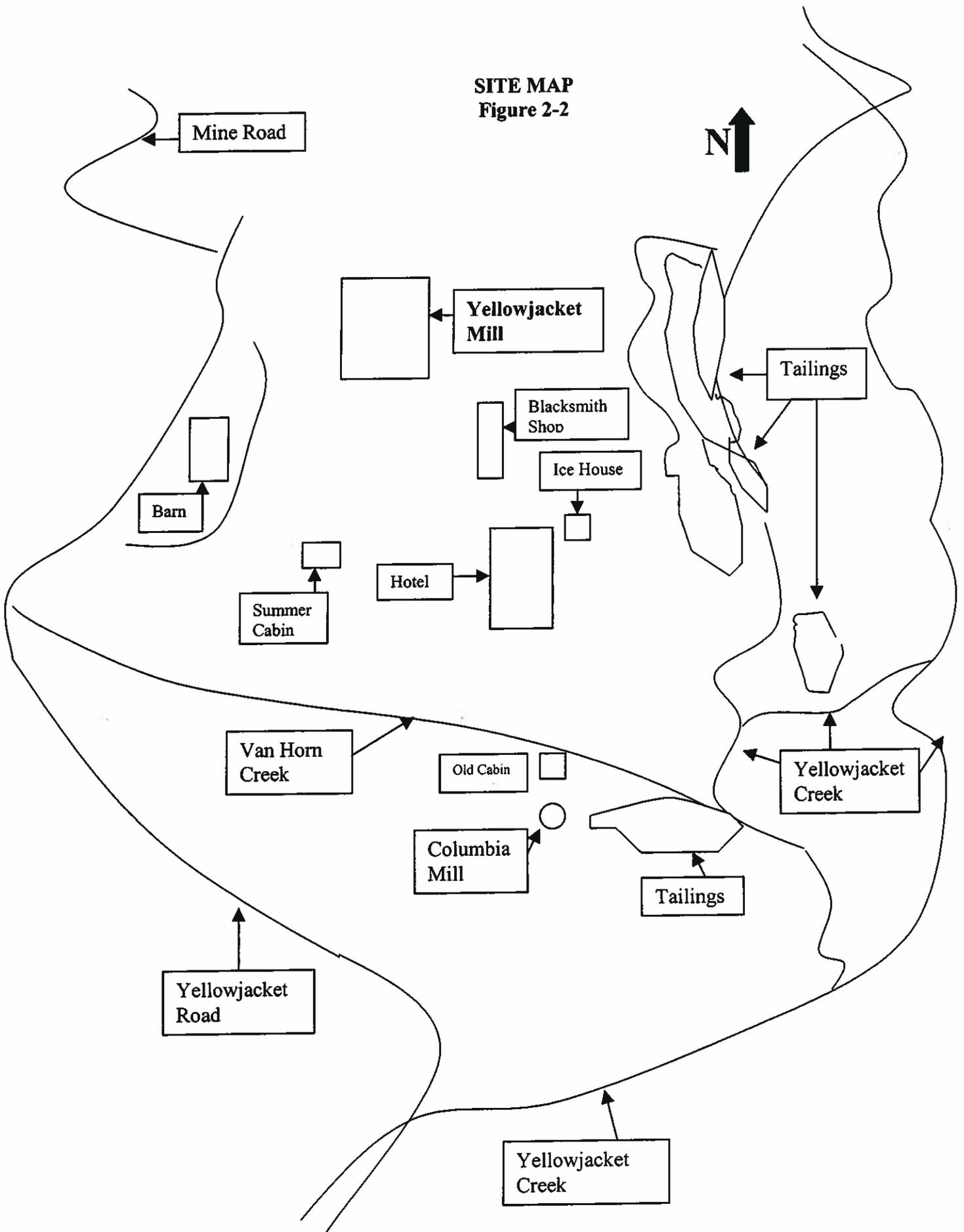
The Mine, located approximately 0.75 miles up the mountain from the Mill, was undergoing final reclamation activities. Reclamation oversight was provided by the U.S. Forest Service based at Salmon, Idaho. The ore deposits had been covered and graded to apparent natural contours (Photo Mvc-009s). The open pit area that is shown in the left center of the photograph remains visible, but has been graded to a relatively flat landing area with a scrape face.



Mvc-009s

Yellowjacket Mine Reclamation

**SITE MAP**  
**Figure 2-2**



### 3. MIGRATION/EXPOSURE PATHWAYS AND TARGETS

The following sections describe migration/exposure pathways and potential targets within the site's range of influence (Figures 3-1 and 3-2). Receptors in the area have been identified as summer residents, hunters and occasional tourists.

#### 3.1 GROUND WATER MIGRATION PATHWAY

The Yellowjacket Mine is near the top of the ridge north-northwest of the town of Yellowjacket and is connected by a winding road about 0.75 miles long. The mine was formerly connected with the mill at the base of the ridge by an aerial tramway. The Mine was developed in a large irregular group of open cuts enlarged by stopes from below and by extensive underground workings on several levels, now almost completely caved (Sheldon, 1912).

The country rock is dark-gray quartzite containing calcareous beds belonging to the Yellowjacket Formation, a member of the Belt Group. The attitude of the beds varies markedly in different outcrops, but in general they strike west of north and dip northeast. A normal fault, which may have considerable displacement, passes a short distance west of the mine strikes N. 30° E and dips northwest. The beds are crenulated, have numerous joints, and are probably broken by many smaller faults. Small dikes of granophyre, granite prophyry, kersantite, and other rocks are describes as numerous in the workings. Most of the dikes are believed to be later than the mineralization, but some described as brecciated and altered, may be older (Ross, 1934).

Definitive age relations within the area are largely concealed. The veins are younger than the joints, which determine their position and are older than the present topographic features. Deposits represent both fissure fillings and metasomatic replacements. Included are fragments and rough crustification suggesting an open fissure, and the local mineralized condition of the hanging wall indicates metasomatic processes (ibid.).

Due to regional metamorphism and structure within the Yellowjacket Formation, primary porosity is expected to be very low with groundwater flow controlled by fractures, joints, faults and bedding-plane surfaces related to folding. In the absence of groundwater monitoring wells in the area, ground water is assumed to exist within fractures and joints in the bedrock and within the unconsolidated deposits. The Mill foundation rests upon unconsolidated poorly sorted sediments possibly glacial in nature.

No precipitation data is available for the Yellowjacket townsite. Therefore, precipitation data, maintained from 1951 through 1960, was used from the Blackbird Mine located 12 miles northeast and comparable in elevation to this site. The mean annual precipitation is 21.44 inches, and the 100-year, 24-hour event is 1.52 inches (WRCC, 2002).

There are not any drinking water or irrigation wells located within the 4-mile Target Distance Limit (TDL). The site is not located within a wellhead protection area (DEQ<sup>2</sup>, 2002).

### 3.2 AIR MIGRATION PATHWAY

The nearest permanent individual residence to the Yellowjacket Mine is approximately twenty-one miles away in Cobalt, Idaho. There are two summer residences within 0.25 miles from the Yellowjacket town site. The Middle Fork lookout tower, located approximately 4 miles southwest from the site, is manned by one individual during the fire season which runs from June through October each year.

The site is comprised of unconsolidated alluvial material from the surrounding mountains and Yellowjacket Creek. Fine-grained tailings deposits remaining below the mill area exhibited a strong binding characteristic, and the surface appeared "gummy" to contact. The likelihood of aerial dispersal from the former tailings piles appears remote.

### 3.3 SOIL EXPOSURE PATHWAY

The Mill is easily accessible from the adjacent Yellowjacket Road, but posted with "Private Property" and no trespassing signage. The only apparent soils of concern (the old tailings) are located several hundred feet from the old town site and would not be an area tourists or hunters would frequent. There are no workers or residences within 200 feet from the site. No schools or day-care facilities are located within 200 feet from the site.

The DEQ collected a representative soil sample from the tailings (Appendix B). Total metals analysis indicates risk from levels of barium, cadmium, chromium, lead, selenium and silver are below  $1 \times E^{-6}$  (or 1 in 1,000,000), conservatively assuming an industrial exposure scenario, and risk from mercury is approximately  $5 \times E^{-5}$ , using the same exposure scenario (EPA, 2002). No visible staining or odoriferous soils were noted during DEQ inspections of the town site.

### 3.4 SURFACE WATER MIRGRATION PATHWAY

There is no surface run-off in the proximity of the Mill or tailings. The only visible surface runoff is in the Van Horn Gulch drainage to the west of the town site. This drainage creates a small wetland west and south of the town site and enters Yellowjacket Creek approximately 400 feet southeast from the townsite. DEQ estimated the flow of the Van Horn Gulch tributary at approximately 100 gallons per minute.

The Mine encompasses the top of a large hill above the Mill site. Although there are no natural drainage channels in the mine vicinity, precipitation will drain in all directions off the hill. The reclamation activities this summer were designed to mitigate effects of run-off from the mine area. From our observations this summer, it appears the Forest Service did an excellent job of re-contouring and re-directing potential run-off from the mine area to prevent future run-off problems.

Soil survey data for the site is unavailable, but direct observation suggests glacial till is an integral component. Direct observation revealed a coarse-grained sandy loam underlain by characteristic glacial debris. Based upon observation during the site visit, moderate to high infiltration rates would be expected.

Commercial and subsistence fishing are not conducted within the surface water Target Distance Limit (TDL). Sport fishing occurs on Yellowjacket Creek around the old town site and down stream. Fish catch data, however, could not be determined.

Bull trout (*Salvelinus confluentus*), listed as a threatened species (NWS, 2002), are known to populate Yellowjacket Creek, Camas Creek and the Middle Fork of the Salmon River, all of which are located within the site's TDL. Wetlands within the TDL are estimated at approximately 7.50 acres (DEQ<sup>1</sup>, 2002). The wetlands are restricted to the Yellowjacket town site area.

The use of surface water for watering of livestock has not been verified. However, livestock grazing may be prohibited due to the Mill's proximity to Wilderness boundaries. Black bear, elk and deer were noted by direct observation. Despite direct observation of numerous beaver dams along Yellowjacket Creek, beaver population could not be verified.

There are no drinking water intakes within the TDL. Traversing south and southwest, the surface water pathway is enjoined by Van Horn Gulch tributary at 0.10 miles, at Little Jacket Creek at 4.0 miles, Hoodoo Creek at 5.0 miles, Lake Creek at 5.5 miles, Camp Creek at 5.75 miles, Jenny Creek at 6.25 miles, Buckhorn Creek at 6.75 miles, Jackass Creek at 8.5 miles, and several unnamed creeks before Camas Creek merges at 10.25 miles. Camas Creek continues within the 15-mile TDL for another 4.75 miles to the west where it enjoins the Middle Fork of the Salmon River at 15 miles from the site.

One Probable Point of Entry (PPE) is the erosion of the tailings piles by Yellowjacket Creek. Direct observation revealed the incising of the tailings by the creek. Though not observed, a second PPE could be run-off across the site into Yellowjacket Creek.

Fig 3-1 Yellowjacket Mill Site 4-Mile Radius Map

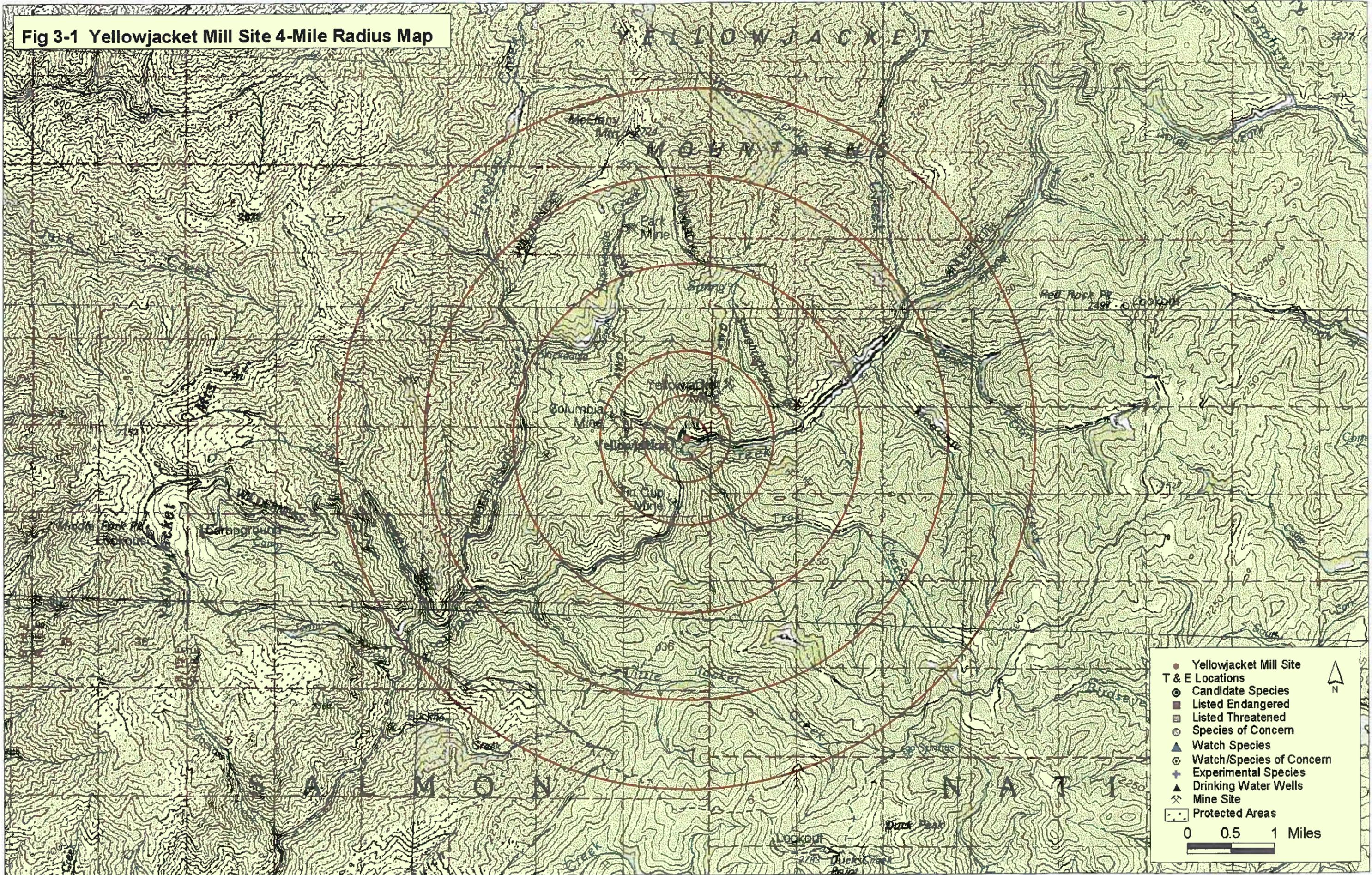
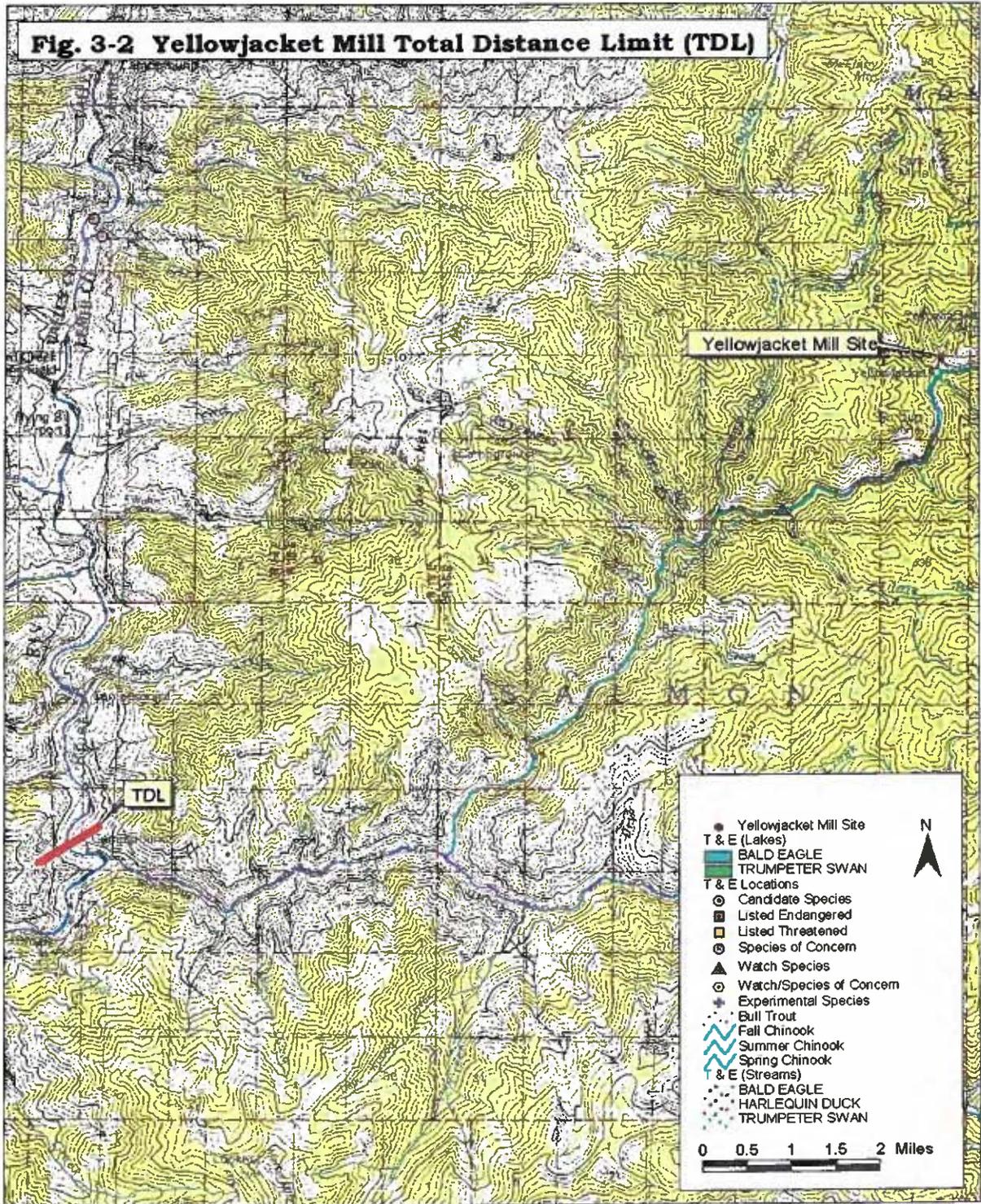


FIGURE 3-2



## REFERENCES

Anderson, A.L., 1953, Gold-copper-lead deposits of the Yellowjacket district, Lemhi County, Idaho: Idaho Geological Survey Pamphlet No. 94, p.41

DEQ<sup>1</sup> (Department of Environmental Quality), 2002, Personal Communication from M. Jeffers, Technical Services Division.

DEQ<sup>2</sup> (Idaho Department of Environmental Quality), 2002, Personal Communication from R. Taylor, Technical Services Division.

EPA (U.S. Environmental Protection Agency), 2002, Region 9 Preliminary Remediation Goals, <http://www.epa.gov/region09/waste/sfund/prg/files/02table.pdf>

FWS, United States Fish and Wildlife Service, 2002.  
<http://ecos.fws.gov/servlet/TESSWebpageVipListed?code=V&listings=0#E>

Mitchell, V. E., April 1997, History of the Yellowjacket Mine, Lemhi County, Idaho, Idaho Geological Survey, Staff Report 97-21.

Ross, C. P., 1926 (June and August), U.S. Geological Survey, Photographs

Ross, C. P., 1934, Geology and ore deposits of the Castro Quadrangle, Idaho: U.S. Geological Survey Bulletin 854, 135 p.

Sheldon, G.L., 1912, The Yellowjacket Mine, Idaho: Engineering and Mining Journal, Volume 93, pp. 221-222.

Sheldon, G.L., 1920, Mining Experiences in Idaho in the Nineties: Engineering and Mining Journal, Volume 110, No. 26, pp. 1212-1214.

Umpleby, J. B., 1913, Geology and ore deposits of Lemhi County, Idaho: U.S. Geological Survey Bulletin 528, 182 p.

WRCC (Western Regional Climate Center), 2002.  
<http://www.wrcc.dri.edu/htmlfiles/id/id.ppt.ext.html>

## APPENDIX A

### PHOTO LOG

#### YELLOWJACKET MINE AND MILL

- CP0541 Reprint 1926, view to north, Mill building (left center), flume visible on hillside above roofline of Mill.
- CP0560 Reprint 1926, view to south, Mill building (left center), Yellowjacket hotel (center), blacksmith shop (lower left).
- CP0563 Reprint 1926, view to south, hotel and camp buildings.
- Mvc-001s View to north, eastside of Mill Building, stamp batteries (5). 24 stamps remain in place (center left).
- Mvc-002s View to east, from blacksmith shop, vegetated tailings piles. Yellowjacket Creek (not visible) lies beyond buff colored tailings at center.
- Mvc-007s View to south-southeast, from Yellowjacket Mine road on hill (approximately 500 feet above site). Mill (lower left), blacksmith shop (tin roof), barn (lower right), boarding house (ruins)
- Mvc-009s View to north-northeast, from vicinity of Red Jacket Mine, reclamation of Yellowjacket Mine

**APPENDIX B**  
**ANALYTICAL DATA**



# IDAHO DEPARTMENT OF HEALTH & WELFARE

DIRK KEMPTHORNE - Governor  
KARL B. KURTZ - Director

RECEIVED

SEP 09 2002

DEPT. OF ENVIRONMENTAL QUALITY  
TECHNICAL SERVICES OFFICE

BUREAU OF LABORATORIES  
RICHARD F. HUDSON, Ph.D., Chief  
2220 Old Penitentiary Road  
Boise, ID 83712  
PHONE 208-334-2235  
FAX 208-334-2382

**Attention:** Brian Gaber  
Dept. of Env. Quality - Boise Regional Office  
1445 N. Orchard Street  
Boise, ID 83706-2239

**Date Collected:** 8/6/2002  
**Time Collected:** 3:40 PM  
**Date/Time Received:** 8/9/2002 2:00:24 PM

**Lab Sample ID Number**

02 08 167

(Please refer to this number when contacting the lab)

DEQB / 4814

**Site:** Yellow Jacket Creek

**Collected By:** Brian Gaber

**Matrix:** Soil

**Sample ID:** YJ-1

**Type / Source:**

Test	Method	Result	Units	Date Completed	Analyst
Arsenic, Total	EPA 7060A	14.4	mg/kg	8/19/2002	stranskyj
Duplicate sample 15.7 mg/kg. Spike recovery = 95.4 %.					
Barium, Total	SM 3111D	155	mg/kg	8/22/2002	stranskyj
Duplicate sample 137 mg/kg. Spike recovery = 90 %.					
Cadmium, Total	EPA 7130	<2	mg/kg	8/16/2002	stranskyj
Duplicate sample < 2 mg/kg. Spike recovery = 92.4 %					
Chromium, Total	SM 3111D	<15	mg/kg	8/22/2002	stranskyj
Duplicate sample <15 mg/kg.. Spike recovery = 104 %					
Lead, Total	EPA 7420	183	mg/kg	8/16/2002	stranskyj
Duplicate sample 183 mg/kg. Spike recovery = 102 %					
Mercury, Total	EPA 7471A	1.9	mg/kg	8/23/2002	stranskyj
Duplicate sample 1.6 mg/kg. Spike recovery = 95 %.					
Selenium, Total	EPA 7740	<1.5	mg/kg	8/20/2002	stranskyj
Duplicate sample <1.5 mg/kg. Spike recovery = 99 %.					
Silver, Total	SM 3111B	<15	mg/kg	8/16/2002	stranskyj
Duplicate sample <15 mg/kg . Spike recovery = 92.5 %					

RECEIVED

AUG 30 2002

DEPARTMENT OF  
ENVIRONMENTAL QUALITY  
BOISE REGIONAL OFFICE

Laboratory Supervisor

Reported: Wednesday, August 28, 2002

EPA Laboratory ID: ID00018