

SOIL SURVEY AND INTERPRETATIONS
PRELIMINARY VEGETATION SURVEY
for
Blazon Mining Company
March 11, 1980

SOIL SURVEY AND INTERPRETATIONS
PRELIMINARY VEGETATION SURVEY
for

Blazon Mining Company

March 11, 1980

Gary Moreau, District Conservationist

Earl Jensen, Soil Scientist

George Cook, Range Conservationist

The proposed Blazon Mine area is located one mile south of Clear Creek, Utah, in Carbon County. At the request of Joe Harvey representing Blazon Mining Company and the Price River Watershed Soil Conservation District, the Soil Conservation Service performed a soil survey on the proposed mining site. The survey was designed to comply with the Permanent Regulatory Program, Office of Surface Mining Reclamation and Enforcement, Department of Interior.

The soils included in the inventory cover approximately 25 acres of land near Mud Creek and Little Snider Canyons, Section 4, T. 14 S., R. 11 E., SLBM. The soils are shown on the attached map. Each soil is identified with a three letter symbol, and the pattern and extent denoted by the soil boundary lines on the map. All areas having the same symbol are essentially the same kind of soils. There may be small areas of included soils that are slightly different. The soils have not been named or correlated. When the overall county survey is completed, small areas may become inclusions in other map units. Immediately following the soil descriptions is a table pointing out limitations of the soils for a variety of uses.

The vegetation was analyzed using the range site methods of the Soil Conservation Service. Range sites are shown on the attached map. Only preliminary information was obtained before a light snow arrived in the survey area. Another field trip will be required to identify the low growing grasses and forbs, and therefore, to assess present vegetation, productivity, and range condition. Presented in this report are the range site delineations with potential productivity according to favorable and unfavorable precipitation years.

More detailed information is on file in the Price Field Office of the Soil Conservation Service.

SOIL LEGEND

<u>Soil Symbol</u>	<u>Soil Mapping Unit Name</u>
BIG	BI stony loam, 50 to 70 percent slopes
CIG	CI loam, 40 to 65 percent slopes
DIB	DI loam, 2 to 5 percent slopes

DESCRIPTIONS OF THE SOILS

BIG BI stony loam, 50 to 70 percent slopes

This BI soil is moderately deep and well drained. It occurs on very stony mountain sideslopes along Mud Creek at elevations of 2590 to 2680 meters (8500 to 8800 feet). This soil formed in colluvium and residuum derived mainly from sandstone and shale.

The average annual precipitation is 56 to 64 centimeters (22 to 25 inches). Mean annual air temperature 2 to 3°C (36 to 37°F), mean annual soil temperature is 3 to 4°C (37 to 39°F), and the average freeze-free season is 57 days. Slopes are 50 to 70 percent and east, west, and north facing. They are medium and long in length and concave-convex in shape.

Vegetation is dominantly aspen, Douglas fir, white fir, peavine, blue wildrye.

Included in mapping are small areas of rock outcrop near the foot of the slopes.

In a representative profile the surface layer is dark grayish brown stony loam about 8 centimeters (3 inches) thick. The subsurface layer is light yellowish brown stony sandy loam about 20 centimeters (8 inches) thick. The subsoil is pale brown and light brownish gray, very stony clay loam about 74 centimeters (29 inches) thick over sandstone at a depth of 102 centimeters (40 inches).

Permeability is moderately slow. Available water capacity is about 13 centimeters (5 inches). Organic matter content in the surface layer is 5 to 10 percent. Effective rooting depth is about 102 centimeters (40 inches). Surface runoff is slow and erosion hazard is slight under potential native vegetation and very high if vegetation is removed and the soil is left bare. Erodibility is moderate.

This soil is used for range, wildlife habitat, and woodland.

Taxonomic classification is fine-loamy, mixed typic cryoboralfs.

A representative pedon of BI stony loam, 50 to 70 percent slopes was described near the proposed portal of Blazon Company Mine.

O1—2.5 to 0 centimeter (1 to 0 inch); leaves and fir needles.

A1—0 to 8 centimeters (0 to 3 inches); dark grayish brown (10YR 4/2) stony loam, very dark brown (10YR 2/2) when moist; moderate coarse granular structure; soft, friable, slightly sticky, slightly plastic; many very fine to large roots; 5 percent stones, 5 percent cobbles, 10 percent gravel; neutral reaction (pH 6.8); abrupt wavy boundary.

A2—8 to 30 centimeters (3 to 11 inches); light yellowish brown (10YR 6/4) stony sandy loam, yellowish brown (10YR 5/4) when moist; moderate coarse platy structure; slightly hard, friable, nonsticky, nonplastic; common very fine to medium roots; 5 percent stones, 5 percent cobbles, 10 percent gravel; neutral reaction (pH 6.6); clear smooth boundary.

B21t—30 to 61 centimeters (11 to 24 inches); pale brown (10YR 6/3) stony clay loam, brown (10YR 4/3) when moist; moderate medium subangular blocky structure; extremely hard, very firm, sticky, plastic; common very fine to large roots; common moderately thick clay films; 5 percent gravel, 5 percent cobbles, 10 percent stones; neutral reaction (pH 6.6); abrupt irregular boundary.

B22t—61 to 102 centimeters (24 to 40 inches); light brownish gray (10YR 6/2) very stony clay loam, dark grayish brown (10YR 4/2) when moist; moderate medium subangular blocky structure; hard, firm, sticky, plastic; common very fine to large roots; 10 percent gravel, 20 percent cobbles, 10 percent stones; mildly alkaline (pH 7.8); abrupt irregular boundary.

R—102 centimeters (40 inches); sandstone.

CIG CI loam, 40 to 65 percent slopes

This CI soil is moderately deep and well drained. It occurs on very steep mountain sideslopes on the east side of Mud Creek at elevations of 2560 to 2620 meters (8400 to 8600 feet). This soil formed in local colluvium and residuum derived mainly from shale and sandstone.

The average annual precipitation is 56 to 64 centimeters (22 to 25 inches). Mean annual air temperature is 2 to 3°C (36 to 37°F), mean annual soil temperature is 3 to 4°C (37 to 39°F), and the average freeze-free season is 57 days. Slopes are 40 to 65 percent and west facing. They are medium and long in length and convex-concave in shape.

Vegetation is dominantly aspen, snowberry, blue wildrye, and native bluegrass.

Included in mapping are small areas of rock outcrop near the foot of the slopes.

In a typical profile the surface layer is dark brown loam about 10 centimeters (4 inches) thick. The underlying layer is brown, gravelly loam about 20 centimeters (8 inches) thick. The next layer is very pale brown, stony loam and stony clay loam about 66 centimeters (26 inches) thick. Depth to soft shale is 97 centimeters (38 inches).

Permeability is moderately slow. Available water capacity is 11 to 13 centimeters (4.5 to 5 inches) to a 97 centimeter (38 inch) depth. Organic matter content in the surface layer is 5 to 10 percent. Effective rooting depth is about 97 centimeter (38 inches). Surface runoff is medium and erosion hazard is moderate under potential native vegetation and very high if vegetation is removed and the soil is left bare. Erodibility is moderate.

This soil is used for range and wildlife habitat.

Taxonomic classification is fine-loamy, mixed typic cryoborolls.

A typical pedon of CI loam 40 to 65 percent slopes was described in the excavation east of the junction of Long Canyon and Mud Creek.

A11—0 to 10 centimeters (0 to 4 inches); dark brown (10YR 4/3) loam, very dark brown (10YR 2/2) when moist; moderate medium granular structure; soft, very friable, slightly sticky, slightly plastic; many very fine and fine, common medium and coarse roots; 10 percent gravel; neutral reaction (pH 6.8); abrupt wavy boundary.

A12—10 to 30 centimeters (4 to 12 inches); brown (10YR 5/3) gravelly loam, very dark grayish brown (10YR 3/2) when moist; weak medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine, fine and coarse roots; 15 percent gravel, 5 percent cobbles; neutral reaction (pH 6.6); clear wavy boundary.

C1—30 to 81 centimeters (12 to 32 inches); very pale brown (10YR 7/3) stony loam, brown (10YR 4/3) when moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common very fine, fine, and coarse roots; 15 percent gravel, 10 percent cobbles, 10 percent stones; slightly acid (pH 6.4); clear wavy boundary.

C2—81 to 97 centimeters (32 to 38 inches); very pale brown (10YR 7/3) stony clay loam, grayish brown (10YR 5/2) when moist; rock structure; very hard, very firm, very sticky, very plastic; few very fine and fine roots; 15 percent gravel, 10 percent cobbles, 10 percent stones; slightly acid (pH 6.4); abrupt smooth boundary.

C35—97 centimeters (38 inches); soft shale.

DIB DI loam, 2 to 5 percent slopes

This DI soil is very deep and moderately well drained. It occurs on flood plains and alluvial fans at elevations of about 2590 meters (8500 feet). This soil formed in alluvium derived mainly from sandstone, quartzite and shale.

The average annual precipitation is 56 to 64 centimeters (22 to 25 inches). Mean annual air temperature is 2 to 3 C (36 to 37 F), mean annual soil temperature is 3 to 4 C (37 to 39 F), and the average freeze-free season is 57 days. This soil occurs adjacent to Mud Creek.

Slopes are 2 to 5 percent and north facing. They are short in length and concave-convex in shape.

Vegetation is dominantly sedge, slender wheatgrass, and native bluegrass.

Included in mapping are small areas of poorly drained soils with wet meadow vegetation. These areas are located near the stream and may be flooded at times.

In a typical profile the surface layer is dark grayish brown loam about 71 centimeters (28 inches). The underlying layer is brown, very fine sandy loam 43 centimeters (17 inches) thick. The next layer is grayish brown, cobbly very fine sandy loam to a depth of more than 152 centimeters (60 inches). The water table is at a depth of about 114 centimeters (45 inches) for a short time in the spring.

Permeability is moderate. Available water capacity is 20 to 23 centimeters (8 to 9 inches) to a depth of 152 centimeters (60 inches). Organic matter content in the surface layer is 5 to 10 percent. Effective rooting depth is more than 152 centimeters (60 inches). Surface runoff is slow and erosion hazard is slight under potential native vegetation and moderate if vegetation is removed and the soil is left bare. Erodibility is moderate.

This soil is used for range and wildlife habitat.

Taxonomic classification is fine-loamy, mixed cumulic cryoborolls.

A typical pedon of DI loam, 2 to 5 percent slopes was described near the stream bank of Mud Creek about 15 meters (50 feet) south of the junction of Little Snider Canyon and Mud Creek.

A1—0 to 8 centimeters (0 to 3 inches); dark grayish brown (10YR 2/2) loam, very dark brown (10YR 2/2) when moist; moderate medium granular structure; soft, very friable, slightly sticky, slightly plastic; common fine and very fine roots; neutral reaction (pH 6.6); clear smooth boundary.

A12—8 to 61 centimeters (3 to 24 inches); dark grayish brown (10 YR 4/2) loam, very dark brown (10YR 2/2) when moist; moderate medium subangular blocky structure; slightly hard, friable, slightly sticky, slightly plastic; common fine and very fine roots; neutral reaction (pH 6.8); abrupt smooth boundary.

A13—61 to 71 centimeters (24 to 28 inches); dark grayish brown (10YR 4/2) loam, very dark brown (10YR 2/2) when moist; moderate medium granular structure; slightly hard, friable, slightly sticky, slightly plastic; neutral reaction (pH 7.0); clear smooth boundary.

C1—71 to 114 centimeters (28 to 45 inches); brown (10YR 5/3) very fine sandy loam, dark brown (10YR 3/3) when moist; massive; slightly hard, very friable, slightly sticky, nonplastic; 10 percent gravel; neutral reaction (pH 7.0); clear wavy boundary.

C2—114 to 152 centimeters (45 to 60 inches); grayish brown (10YR 5/2) cobbly very fine sandy loam, very dark brown (10YR 2/2) when moist; massive; soft, very friable, slightly sticky, nonplastic; 15 percent gravel, 20 percent cobbles; neutral reaction (pH 7.0).

SOIL INTERPRETATIONS AND LIMITATIONS**

Blazon Mine Survey Area

Use	Soil		
	CIG	BIG	DIB
Shallow Excavation	Severe—Slope	Severe—Depth to rock, slope	Slight
Local Roads and Streets	Severe—Slope	Severe—Low strength, slope	Moderate—Low strength, floods
Roadfill	Poor—Slope	Poor—Low strength, slope	Fair—Low strength, wetness
Topsoil	Poor—Large stones, slope	Poor—Large stones, slope	Good
Pond Reservoir Area	Severe—Slope	Severe—Slope	Moderate— Seepage, slope
Embankments, Dikes, Levees	Moderate—Thin layer, large stones	Moderate— Thin layer, piping, large stones	Severe—Piping
Seeding	Poor—Slope, large stones	Poor—Slope, large stones	Good

** Ratings are based on criteria in the National Soils Handbook,
SCS, USDA

DESCRIPTION OF VEGETATION

The Blazon Mine site was visited late in the fall after the first snow had fallen. Present vegetation and productivity was not attained but will be recorded in early summer. Enough information was received to evaluate the sites for potential productivity according to range site analysis methods of the Soil Conservation Service. The following sites are keyed to the attached vegetation map.

Site A—Woodland Ecosystem—High Mountain Loam (Aspen)

This woodland community occurs on steep mountain slopes of 50 to 70 percent. Elevation ranges from 2590 to 2680 meters (8500 to 8800 feet). It occurs on all exposures but is primarily on the north and east in the survey area.

Climate is cool and humid with average annual precipitation ranging from 56 to 64 centimeters (22 to 25 inches).

Quaking aspen is the dominant overstory plant. Canopy density will vary from 25 to 70 percent, but is most common from 40 to 55 percent. Shade tolerant plants such as blue wildrye, bearded wheatgrass, mountain brome, nodding bluegrass, sweetanice, meadowrue and edible valerian are the dominant understory species.

Vegetation is an overstory of quaking aspen. The understory consists of approximately 60 percent grasses, 30 percent forbs and 10 percent shrubs and tree reproduction. Total vegetation is 40 percent aspen, 35 percent grasses, 20 percent forbs and 5 percent shrubs.

This woodland site relates to the BIG soil.

The following table lists the potential plant community for the high mountain loam (aspen) woodland site. These species have been identified on similar sites. Those occurring on the Blazon Mine site will not be known until after the 1980 summer field trip. Those species occurring at higher percentages of air dry weight constitute more important species at the site.

Nature of Potential Plant Community—High Mountain Loam (Aspen)

Species	Canopy Class		
	Sparse 25-50% %/wt	Med 51-65% %/wt	Dense 65% %/wt
GRASSES AND GRASS-LIKE			
Bearded wheatgrass	5	3	T
Blue wildrye	13	5	T
Columbia needlegrass	1	1	T
Dryland sedge	5	10	10
Kentucky bluegrass	1	5	10
Mountain brome	30	20	5
Nodding bluegrass	6	3	T
Nodding brome	1	1	T
Oniongrass	1	1	T
Slender wheatgrass	3	2	1
FORBS			
Aster	1	1	1
Bluebell	1	5	10
Butterweed	5	3	T
Cow cabbage	1	1	T
Descurainia	1	5	10
Edible valerian	5	1	-
Geranium	1	1	1
Horsemint	1	5	1
Jacob's ladder	2	1	-
Lupine	1	2	3
Meadowrue	1	5	5
Peavine	5	5	10
Poison vetch	1	5	5
Senecio	1	5	5
Stellaria	1	1	-
Sweetanice	6	3	-
Tall larkspur	1	5	10
Violet	1	2	5
Wild carrot	1	1	-
Western coneflower	1	5	15
Yarrow	1	5	5
SHRUBS AND TREES			
Chokecherry	1	2	5
Elderberry	1	1	-
Mountain ash	1	1	1
Oregon grape	1	1	5
Quaking aspen	*5 40	*5 50	*10 70
Rose	1	T	-
Serviceberry	1	1	-
Snowberry	1	5	10
Willow	1	1	5

* Production to 1.37 meters (4.5 feet) height

The following table shows the total annual production on air dry weight basis for a sparse canopy class of high mountain loam (aspen). This data is based on 162 plots taken in excellent condition, 373 plots in good condition, 410 plots in fair condition, and 83 plots in poor condition.

TOTAL ANNUAL PRODUCTION OF VEGETATION
For Sparse Canopy Class

	Total All Vegetation <u>Kg/Ha</u>	Total All Vegetation <u>Lbs/Ac</u>	Total Below 1.37m(4.5 Ft) <u>Kg/Ha</u>	Total Below 1.37m(4.5 Ft) <u>Lbs/Ac</u>
Favorable years	5,625	5,000	3,650	3,250
Average years	3,925	3,500	2,550	2,275
Unfavorable years	2,250	2,000	1,450	1,300

Site B—High Mountain Loam

This range site occurs on very steep mountain slopes. It is found on west exposures in the study area. The slopes are mostly 40 to 65 percent. The elevation ranges from 2560 to 2620 meters (8400 to 8600 feet).

The climate of the site is cool and humid with cold, snowy winters. The average annual precipitation varies from 56 to 64 centimeters (22 to 25 inches). Distribution of this moisture is generally 23 to 35 percent during the plant growing season. Thus, most of the effective moisture comes from snowmelt from winter precipitation.

Plant growth begins about May 10-20 and ends due to killing frosts about September 15 to October 1. Moisture and temperature are such that they are not limiting to plant growth during this period except some years a small moisture deficiency in July and August will slow down growth of herbage and may force grass and forb species into early maturity. The frost-free period is 50 to 90 days. Mean annual air temperature is 2 to 3°C (36 to 37°F).

This range site relates to the CIG soil.

The potential vegetative composition by weight is approximately 55 percent grasses, 25 percent forbs and 20 percent shrubs with a large total number of forb species. The following table shows major plant species and percentages of the total potential plant community by weight that each normally contributes. Those species occurring at higher percentages of air dry weight constitute more important species at the site.

Potential Plant Community--High Mountain Loam

<u>Grass and Grass-Like Plants</u>	<u>Percent</u>
Basin wildrye	5
Bearded wheatgrass	10
Blue wildrye	5
Columbia needlegrass	4
Idaho fescue	5
*Kentucky bluegrass	3
King's fescue	1
Letterman needlegrass	10
Mountain brome	16
Muttongrass	10
Nodding bluegrass	10
Nodding brome	1
Oniongrass	1
Prairie junegrass	1
Sedge	2
Sheep fescue	1
Slender wheatgrass	30
Tall bluegrasses	5

*Not a part of original climax vegetation, but has now established an ecological niche in the potential plant community.

Forbs

Arrowleaf balsamroot	1
Aster	4
Astragalus	1
Bluebell	2
Butterweed	10
Columbine	1
Deathcamas	1
Edible valerian	1
Elk thistle	1
Eriogonum	1
Falsehellebore	1
Geranium	2
Horsemint	4
Indianpaintbrush	1
Jacob's ladder	5
Knotweed	1
Lewis flax	1
Little sunflower	3
Lomatium	4
Low larkspur	1

<u>Forbs (Cont)</u>	<u>Percent</u>
Lupine	2
Mulsear dock	3
Native clover	2
Others	5
Peavine	6
Penstemon	2
Phacelia	1
Senecio	1
Showy elkweed	1
Skeleton loco	1
Sneezeweed	2
Stoneseed	3
Sweetanice	2
Tapertip hawksbeard	1
Tall larkspur	2
Timber poisonvetch	1
Wild carrot	1
Yarrow	3
<u>Shrubs and Trees</u>	
Antelope bitterbrush	2
Big sagebrush	3
Bittercherry	2
Chokecherry	5
Currant	2
Elderberry	7
Mountain snowberry	7
Oregon grape	2
Serviceberry	3
Silver sagebrush	2
Snowbrush ceanothus	5
Threetip sagebrush	2
Wood's rose	1
Yellowbrush	3

No trees occur on this range site.

Vegetative cover by ocular estimate is 70 to 75 percent.

Plant species not apart of the climax plant community that are most likely to invade the site if plant cover deteriorates are annual grasses and annual forbs. When retrogression occurs, shrubs greatly increase primarily sagebrush species.

Potential yields from an excellent condition high mountain loam range site are shown in the following table. This yield data is based on 110 plots in excellent condition, 49 plots in good, 154 plots in fair, and 30 plots in poor condition.

TOTAL POTENTIAL ANNUAL PRODUCTION OF VEGETATION
For Excellent Condition Class
High Mountain Loam Range Site

	Total All Vegetation	
	<u>Kg/Ha</u>	<u>Lbs/Ac</u>
Favorable Years	3360	3000
Median Years	2800	2500
Unfavorable Years	1324	1450

Site C—Semiwet Streambottoms

This site occurs on gently sloping and moderately sloping flood plains in canyon and small valley bottoms and along low benches adjacent to stream bottoms. There are many strongly sloping alluvial fans at the mouth of the tributaries. Slopes are generally 2 to 5 percent. Elevations are about 2590 meters (8500 feet).

The climate of this site is cool and quite humid with cold and snowy winters. The average annual precipitation varies 56 to 64 centimeters (22 to 25 inches). Distribution of annual precipitation is about 20 percent during the plant growing period (May to September), and about 80 percent during the non-growing period, as shown by the Snake Creek weather station records. In the spring and early summer months, a moderately deep water table drops during the late summer months and at this time the more shallow rooted plants are not affected by sub-irrigation.

Plants begin to grow about May 1 to June 1. During the hot and dry part of the summer, the grasses and forbs will become dormant. Some regrowth occurs after September 1, when sufficient moisture is available. Shrub species grow throughout the summer and until fall frosts. The optimum growth period of all plants is during May and June. The frost-free period is from 80 to 95 days which is near June 1 to September 15.

This range site relates to the DIB soil.

The vegetation of this site usually has a variable overstory of water-loving trees and shrubs of approximately 40 percent of the total production annually on an air dry basis. Grasses are about 45 percent of the plant composition and forbs 15 percent. The following table shows major plant species and percentages of the total potential plant community by weight that each normally contributes. Those species occurring at higher percentages of air dry weight constitute more important species at the site.

Potential Plant Community--Semiwet Streambottoms

<u>Grasses and Grass-Like Plants</u>	<u>Percent</u>
Basin wildrye	5
Bearded wheatgrass	10
Bluebunch wheatgrass	10
Blue wildrye	15
Bottlebrush squirreltail	1
Columbia needlegrass	2
Kentucky bluegrass	10
Letterman needlegrass	5
Mountain brome	10
Muttongrass	10
Needle and thread	5
Nevada bluegrass	5
Oniongrass	2
Rushes	1
Sedge	5
Slender wheatgrass	10
Redtop	5
Western wheatgrass	10
Wiregrass	1
<u>Forbs</u>	
Aster	1
Buckwheat	2
Butterweed	3
Cinquefoil	1
Common cowparsnip	5
Clover	3
Edible valerian	5
Geranium	5
Goldenpea thermopsis	3
Goldenrod	1
Herbaceous sagewort	2
Horsemint	5
Lambstongue groundsel	1
Showy goldeneye	5
Lupine	2
Peavine	5
Starry falsesolomonseal	1
Sweetanise	5
Yarrow	2

<u>Shrubs and Trees</u>	<u>Percent</u>
Big sagebrush	5
Bigtooth maple	1
Blue elderberry	2
Boxelder	5
Chokecherry	5
Currant	1
Dogwood cottonwood	15
Gambel oak	5
Mountain snowberry	5
Oregon grape	1
Quaking aspen	3
Rabbitbrush	1
Redosier dogwood	1
Rockymountain juniper	3
Serviceberry	3
Snowberry	3
Thinleaf alder	5
Virgins bower	2
Water birch	5
Willow	15
Wood's rose	1
Yellowbrush	2

Several water-loving tree species are found in scattered clumps or as single trees throughout this site. Boxelder, Fremont cottonwood, narrowleaf cottonwood, quaking aspen, thinleaf alder, Rockymountain juniper and water birch are present along with tall shrub species such as bigtooth maple, chokecherry, and several species of willow.

These overstory species have an overstory cover of 10 to 40 percent depending on distance from the water table or stream course.

Understory cover of vegetation by ocular estimate is 50 to 60 percent.

Plant species not a part of the climax plant community that are most likely to invade the site if plant cover deteriorates are cheatgrass, cocklebur, curlycup gumweed, lambsquarters, houndstongue, mullein, poverty weed, Canadian thistle, bull thistle, burdock, and rubber rabbitbrush. With excessive grazing use, bigsagebrush, western wheatgrass, and tree species will increase. Big sagebrush may become the dominant plant.

Potential yields for an excellent condition semiwet streambottoms range site are shown in the following table. This yield data is based on 20 plots in good condition and 20 plots in fair condition.

TOTAL POTENTIAL ANNUAL PRODUCTION OF VEGETATION
For Excellent Condition Class
Semiwet Streambottoms Range Site

	Total All Vegetation	
	<u>Kg/Ha</u>	<u>Lbs/Ac</u>
Favorable Years	2800	2500
Median Years	2240	2000
Unfavorable Years	1680	1500

SOIL MAP BLAZON MINE



COAL - TO
CC
SURFACE -
LE
CA

Sec. 4, T. 14S. R. 7E.
Scale 1" = 200'
Contour Interval = 20'

LIMIT OF SURVEY

LIMIT OF SURVEY

BIG

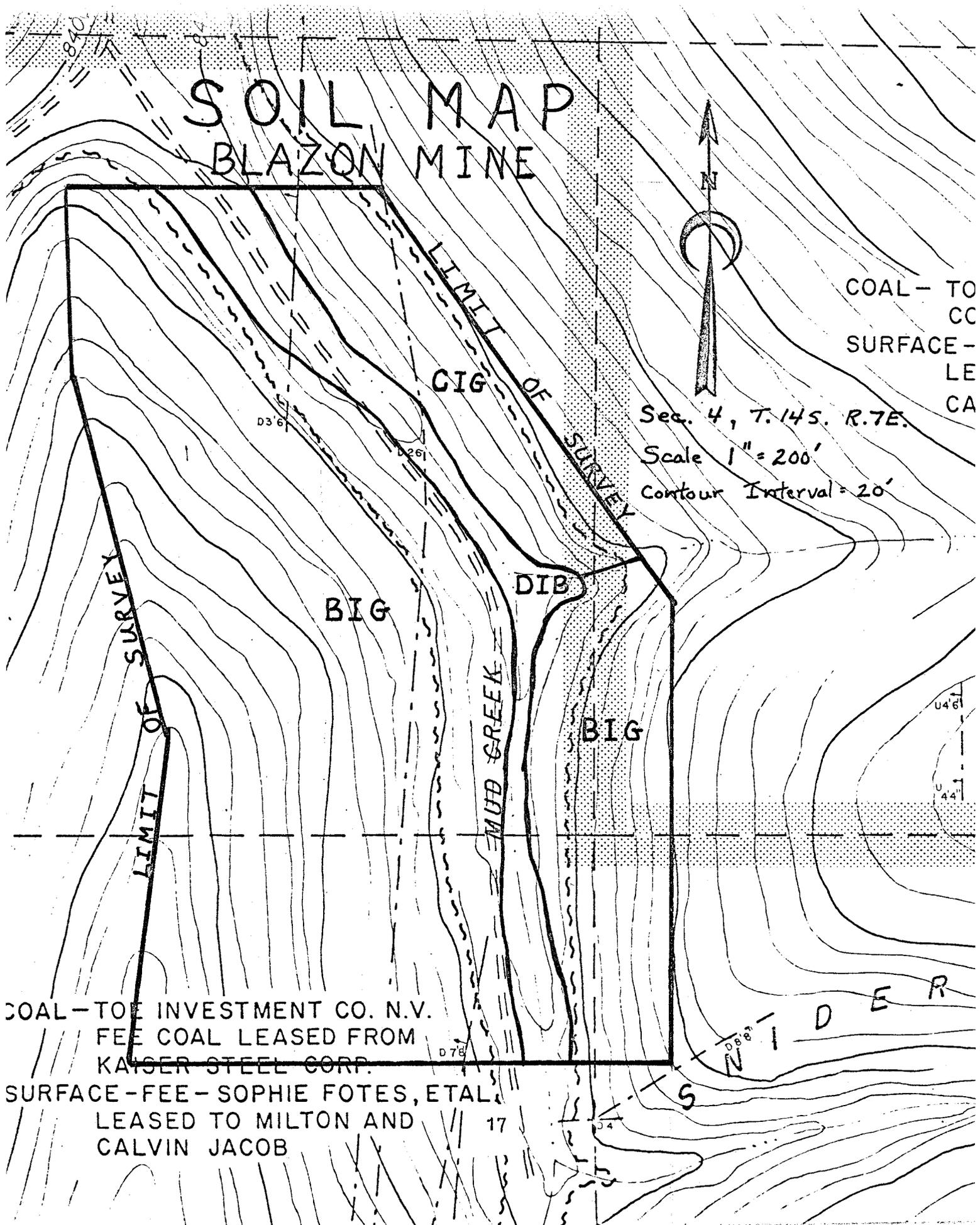
DIB

BIG

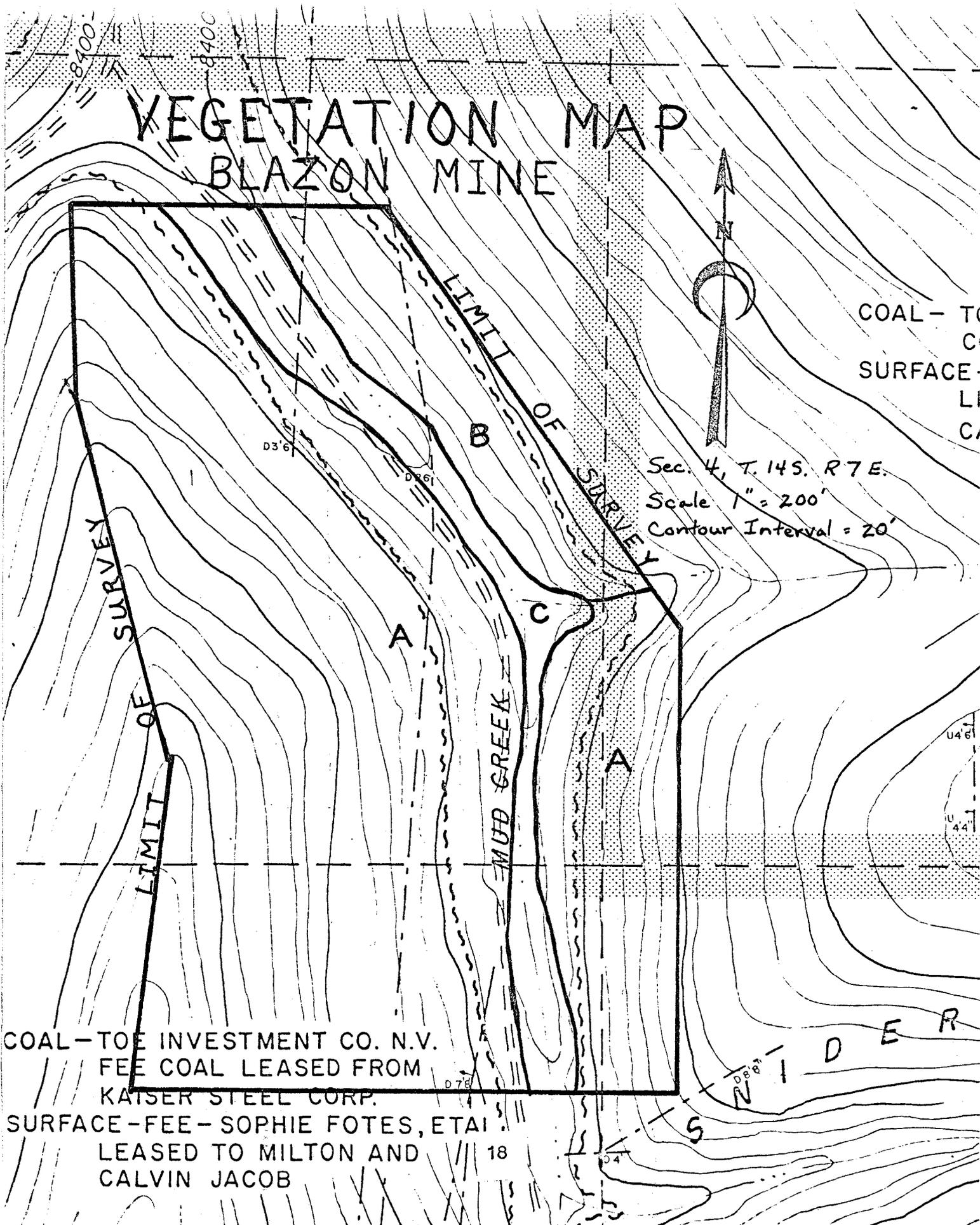
MUD CREEK

COAL - TOE INVESTMENT CO. N.V.
FEE COAL LEASED FROM
KAISER STEEL CORP.
SURFACE - FEE - SOPHIE FOTES, ETAL.
LEASED TO MILTON AND
CALVIN JACOB

S
N I D E R



VEGETATION MAP BLAZON MINE



COAL - TOE INVESTMENT CO. N.V.
SURFACE - FEE - SOPHIE FOTES, ET AL.

Sec. 4, T. 14 S., R. 7 E.
Scale 1" = 200'
Contour Interval = 20'

COAL - TOE INVESTMENT CO. N.V.
FEE COAL LEASED FROM
KAISER STEEL CORP.
SURFACE - FEE - SOPHIE FOTES, ET AL.
LEASED TO MILTON AND
CALVIN JACOB

Glossary

Alluvium—Soil materials, such as sand, silt, or clay and rock fragments that have been deposited on land by streams or moved and redeposited due to the surface movement of water.

Boulders—Rock fragments greater than 3 feet in diameter.

Cobbles—Rock fragments between 3 inches and 10 inches in diameter.

Colluvium—Soil materials and rock fragments moved and redeposited primarily under the influence of gravity.

Depth, soil—In this report the following terms and their meanings are used to describe the depth of the soil over bedrock:

very deep	More than 60"
deep	40-60"
moderately deep	20-40"
shallow	10-20"

Gravel—Rock fragments from 2 millimeters to 3 inches in diameter.

Leaching—The removal of soluble material from soils or other material by percolating water.

Pedon—A three dimensional unit with its lateral dimension being the smallest size necessary to represent the variability in soil properties of the soil being described.

pH value—a numerical means of designating acidity and alkalinity in soils. A pH value of 7.0 indicates precise neutrality; a higher value—alkalinity; and lower value—acidity.

Residuum—Soil materials weathered from the parent material in place.

Stones—Rock fragments between 10 inches and 3 feet in diameter.