UNITED STATES DEPARTMENT OF THE INTERIOR

U.S. GEOLOGICAL SURVEY

Analytical results for platinum, palladium, rhodium, ruthenium, and iridium in rock samples from selected mines and prospect areas, Delta 1^0 x 2^0 quadrangle, Utah

by

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Open-File Report 92-370

1992

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STUDIES RELATED TO CUSMAP

This report supplements results of a geochemical survey of the Delta 1^0 x 2^0 quadrangle, Utah. Geochemical samples from within and close to the Delta quadrangle were collected as one of several multidisciplinary studies associated with the Conterminous United States Mineral Assessment Program (CUSMAP).

INTRODUCTION

Beginning in 1986 and continuing through 1989, the U.S. Geological Survey conducted a geochemical survey of the Delta 1^0 x 2^0 quadrangle and nearby areas, Utah and Nevada. The geology of the quadrangle and surrounding areas has been succinctly described by Hintze (1988). Rocks range in age from Late Precambrian to Recent and were subjected to compressive stresses during the late Mesozoic and extensional stresses during the late Cretaceous.

METHODS OF STUDY

These data represent geochemical abundances for rock samples collected from a number of mines and prospect areas in the study area. Analyses of altered or mineralized rocks may provide useful geochemical information about the major- and trace-element assemblages associated with a mineralizing system.

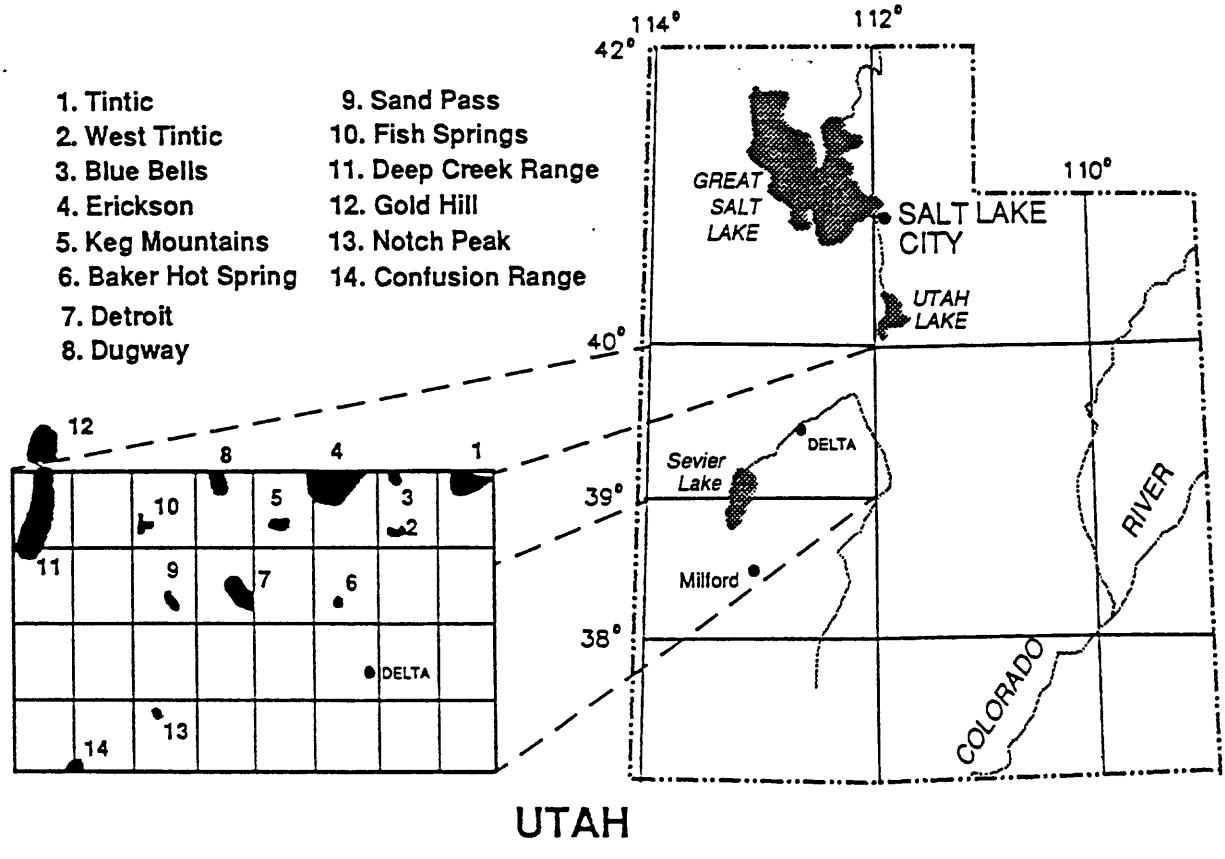
Sample Collection

Rock samples were collected from outcrops or mine dumps in the vicinity of the sample location maps provided for the entire set of rock samples collected in the Delta 1^0 x 2^0 quadrangle (fig. 1), except those collected in the Dugway mining district, (Zimbelman and others, 1991). These samples generally represent a variety of alteration or mineralization types in any given district or prospect area, including skarn, vein, replacement, source rock, and host rock types.

Sample Analysis

The samples were analyzed for five elements, Pt, Pd, Rh, Ir, and Ru using a fire assay method that employees nickel sulfide collection, followed by Inductively Coupled Plasma Mass Spectrometry (Meier and others, 1991). The limits of detection are 0.5 parts-per-billion (ppb) or less for Pt, Rh, Ir, and Ru, and Pd in a 10 gram sample. Precision is better than 5% relative standard deviation for replicate analysis of homogeneous materials.

Figure 1. Index location map of mining districts prospect areas in and close to the Delta 1^0 x 2^0 quadrangle, Utah.



DESCRIPTION OF DATA TABLE

Table 1 lists the results of analyses for rocks samples. In addition to the platinum-group elements presented here, gold analyses are also presented for comparative purposes. These gold analyses have been previously reported (Zimbelman and others, 1991) and were obtained by an atomic absorption spectroscopy method described by Thompson and others (1968).

SAMPLE DESCRIPTIONS

Appendix 1 provides a brief sample description, consisting of information gathered during field examinations. Zimbelman and others (1991) provide detailed sample location maps for the samples.

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Zimbelman, D.R., Arbogast, B.F., Hageman, Phil, Hill, R.H., Fey, D.L., and Bullock, J.H., Jr., 1991, Analytical results and sample locality maps for rock samples collected in and near the Delta 1^0 x 2^0 quadrangle, Tooele, Juab, Millard, and Utah counties, Utah: U.S. Geol. Survey Open-File Report 91-114, 256 p.

Table 1. Results of analyses for Pt, Pd, Rh, Ru, and Ir--values in parts per billion (ppb). Also listed, for comparative purposes, are results of analyses for Au, values in parts per million (ppm), as reported in Zimbelman and others (1991).

SAMPLE NO.	MINE/ PROSPECT	Pt ppb	Pd ppb	Rh ppb	Ru ppb	Ir ppb	Au ppm
BAKER HOT SPRINGS PROSPECT AREA							
6DK5124B	TUFA	<.5	<.8	<.5	<10	<.5	.35
CONFUSION RANGE PROSPECT AREA							
8HD5702D		<1	<.8	<.5	<10	<.5	.20
8HC5706B		<1	<.8	<.5	<10	<.5	1.6
8HC5706E		<1	<.8	<.5	<10	<.5	1.3
8HC5707F		<1	<.8	<.5	<10	<.5	.20
8HC5708C		18	4.8	2.0	<10	.9	.50
DEEP CREEK RANGE PROSPECT AREAS							
6XX5036B	WILLOW SPRINGS	.8	<.8	<.5	<10	<.5	0.4
6XX5039B	WILLOW SPRINGS	<.5	<.8	<.5	<10	<.5	0.4
8BA5510C	ORO DEL REY	<1	<.8	<.5	<10	<.5	1.0
8AA5529A	ARTS CN	<1	<.8	<.5	<10	<.5	<.05
8BB5544F	SILVER SPRINGS	<1	1.0	<.5	<10	<.5	1.4
8AB5560B	IBAPAH PLUTON	<1	<.8	<.5	<10	<.5	.05
8AB5562F	CHOKECHERRY CN	7.5	5.3	1	<20	<1	.75
8CA5567B	TROUT CREEK	<2	7.2	<1	<20	<1	.10
8BB5568E	GOLD BOND	<4	<3	<2	<40	<2	5.8
8BB5569B	GOLD BOND	<5	<8	<5	<50	<5	15.0
8AB5573C	ORO DEL REY	<1	<.8	<.5	<10	<.5	51.0
DETROIT MINING DISTRICT							
7DH5210C	DRUM MINE	3	1.6	<.5	<2	<.5	17.0
7DH5210E	DRUM MINE	<1	<.8	<.5	<2	<.5	.15
7DH5211B	DRUM MINE	1	2.1	<.5	<10	<.5	7.5
7DH5212B	DRUM MINE	<1	<.8	<.5	<2	<.5	3.4
7DH5212C	DRUM MINE	<.5	<.8	<.5	<10	<.5	.75
7DH5214A	PORPHYRY	<6	<5	<3	<60	<3	.15
7DH5214B	PORPHYRY	<.5	<.8	<.5	<10	<.5	.05
7DH5273B	COPPERRHEAD	<1	<.8	<.5	<10	<.5	6.7
7DH5277C	MARTHA	<4	5.7	<2	<40	<2	2.8
7DH5278	DIORITE	<1	<.8	<.5	<10	<.5	<.05
7DH5281A	EPH	4	6.4	2	<40	<2	1.4
7DH5282B	UNNAMED-SW	<1	<.8	<.5	<10	<.5	.75
7DH5283B	KEYSTONE	<4	<3	<2	<40	<2	.95

SAMPLE NO.	MINE/ PROSPECT	Pt ppb	Pd ppb	Rh ppb	Ru ppb	Ir ppb	Au ppm
7DH5284B	IBEX	<4	<3	<2	<40	<2	15.0
7DH5286	BELOW IBEX	<4	<3	<2	<8	<2	.1
7DH5287A	STAATS MINE	<1	<.8	<.5	<10	<.5	.40
7DH5393B	DRUM MINE	<1	<.8	<.5	<10	<.5	6.0
7DH5395E	MIZPAH	1	.8	<.5	10	<.5	1.4
7DH5432B	PORPHYRY	<.5	<.8	<.5	<5	<.5	<.05
ERICKSON MINING DISTRICT							
6AK5082	NW ANTELOPE SPG	<.5	<.8	<.5	<10	<.5	<.05
6AK5088B	DEATH CN WASH	<.5	<.8	<.5	<10	<.5	.05
6AK5094	INDIAN SPGS	<.5	<.8	<.5	<10	<.5	<.05
6AK5095	RAUL CANYON	<.5	<.8	<.5	<10	<.5	<.05
6AL5105	HARKER CN	<4	<3	<2	<8	<2	.15
6AL5108	HARD TO BEAT CN	<.5	<.8	<.5	<10	<.5	<.05
6AM5109	SHEEPROCK CN	<.5	<.8	<.5	<10	<.5	<.05
6AM5114	LITTLE VALLEY	<.5	<.8	.5	<10	<.5	.15
7AL5444	COPPER JACK	<.5	<.8	<.5	<5	<.5	<.05
FISH SPRINGS MINING DISTRICT							
6BE5015A	GALENA MINE	<.5	.8	<.5	<10	<.5	<.05
6BE5029B	W QZ LTT	<.5	<.8	<.5	<10	<.5	<.05
7BE5378A	E QZ LTT	<1	<.8	<.5	<10	<.5	<.05
7BE5379B	EMMA	<4	4.5	<2	<40	<2	1.25
7BE5385A	CACTUS	<2	3	<2	<20	<2	.50
GOLD HILL MINING DISTRICT							
8XX5597A	BLOOD MTN	5	<2	<1	<20	<1	1.0
8XX5598E	MIDAS TREND	1	<.8	<.5	<10	<.5	.50
8XX5600B	MIDAS TREND	<1	2.5	<.5	<10	<.5	9.0
8XX5602A	MIDAS TREND	<1	<.8	<.5	<10	<.5	2.5
8XX5610A	REAPER MINE	<2	<2	<1	<20	<1	.40
8XX5610D	REAPER MINE	<4	<3	<2	<40	<2	2.8
8XX5620B	GOSHUTE WASH	<4	17	7.5	<40	<2	3.8
8XX5632A	GARRISON AREA	<1	<.8	<.5	<10	<.5	<.05
8XX5641B	SW WOODMAN PK	<1	<.8	<.5	<10	<.5	.30
8XX5642B	SW WOODMAN PK	6	6.9	2.2	20	<1	1.7
8XX5644B	SW WOODMAN PK	<1	<.8	<.5	<10	<.5	<.05
8XX5653B	GOLD HILL MINE	<4	<3	<2	<40	<2	<.05
8XX5661B	SE US MINE	<1	1.3	<.5	<10	<.5	6.0
8XX5664B	LUCKY DAY KNOB	5	<3	<2	<40	<2	.70
8XX5670B	CANE SPRING	<1	<.8	<.5	<10	<.5	18.0
8XX5671D	STARDUST	2	<.8	<.5	<10	<.5	.30
8XX5672A	E GOLD HILL	<1	1.0	<.5	<10	<.5	.05
8XX5673A	E GOLD HILL	1	4.3	.6	<10	<.5	.60
8XX5676B	RODENHOUSE	<1	<.8	<.5	<10	<.5	<.05

SAMPLE NO.	MINE/ PROSPECT	Pt ppb	Pd ppb	Rh ppb	Ru ppb	Ir ppb	Au ppm
NOTCH PEAK MINING DISTRICT							
6GE1083		<.5	<.8	<.5	<10	<.5	<.05
6GE5002A	PINE PEAK	<.5	<.8	<.5	<10	<.5	<.05
6GE5002C	PINE PEAK	<1	<2	<1	<20	<1	.40
6GE5227C	BALDY PEAK	2	50	<.5	<2	<.5	<.05
7GF5310A	KLONDIKE	<1	<.8	<.5	<10	<.5	<.05
7GE5318C		<1	<.8	<.5	<10	<.5	<.05
SAND PASS PROSPECT AREA							
7DE5176		<1	<.8	<.5	<10	<.5	<.05
7DE5190A	ROADSIDE	<1	<.8	<.5	<10	<.5	.85
7DE5190C	ROADSIDE	1	<.8	<.5	<10	<.5	1.2
TINTIC MINING DISTRICT							
7BP5251A	VOLCANOE RIDGE	2	2	<.5	<10	<.5	.10
7AP5401B	TINTIC STANDARD	<4	<3	<2	<40	<2	3.9
7A95404A	CHIEF OXIDE	<2	<3	<2	<20	<2	<.05
7AP5406B	TRIXIE	13	9	<5	<50	<5	5.2
7AP5408F	AJAX SHAFT3	30	14	5.2	<10	<2	.4
7AO5409A	GOLDEN SUNSET	13	1.9	.5	<5	.5	.50
7AP5411B	SIOUX	1.4	<.8	<.5	<5	.6	1.6
7AP5413B	IRON BLOSSOM1	<1	.8	<.5	<10	<.5	2.2
7AP5415A	CHIEF NO.2	<1	<.8	<.5	<10	<.5	2.8
7AP5416C	EAGLE & BLUEBELL	2.9	1.2	<.5	<5	<.5	3.8
7AP5419A	SWANSEA	23	<8	<5	<50	<5	.30
7AP5419D	SWANSEA-VNS	<.5	<.8	<.5	<5	<.5	<.05
7AP5435A	NORTH STANDARD	<.5	<.8	<.5	<5	<.5	<.05
7AP5438	BIG HILL	<.5	<.8	<.5	<5	<.5	<.05
7AP5439C	TREASURE HILL	4.3	2.6	.6	<5	<.5	.25
7AP5439D	TREASURE HILL	4.5	2.7	.9	<5	<.5	.55
7AP5441A	SHOWERS	<5	<8	<5	<50	<5	.10
WEST TINTIC MINING DISTRICT							
6BM1099	SE	<.5	<.8	<.5	<10	<.5	.55
6BM1100	SE	<.5	<.8	<.5	<10	<.5	.85
6BM5064B	ORIENT	<.5	<.8	<.5	<10	<.5	.70
6BM5069	BATES TREND	<.5	<.8	<.5	<10	<.5	<.05
6BM5075A	SCOTIA	20	33	14	<50	8	6.0
6BM5078A	ORO PLATA	<.5	<.8	<.5	<10	<.5	<.05
6BM5078B	ORO PLATA	<.5	<.8	<.5	<10	<.5	.10
6BM5081	SW	<.5	<.8	<.5	<10	<.5	<.05
8AN5710F	SABIE MTN-HG	<1	<.8	<.5	<10	<.5	<.05
8AN5712B	SABIE MTN-HG	<1	<.8	<.5	<10	<.5	.10
8AN5713E	SABIE MTN	<1	<.8	<.5	<10	<.5	<.05
8AN5713F	SABIE MTN-HG	<.5	<.8	<.5	<5	<.5	<.05
8BM5750A	IRON KING MINE	<5	<8	<5	<50	<5	<.05

Table 1, continued

Appendix 1--Succinct descriptions of rock samples collected from selected mining districts and prospect areas, Delta 1^0 x 2^0 quadrangle, Utah. Descriptions generally formatted as follows: color of fresh rock; texture; mineralogy; alteration; other comments. NOTE: all information is based on information estimated during examinations in the field. Abbreviations: **approx**-approximately, **ba**-barite, **bt**-biotite, **bx**-breccia, **cc**-calcite, **cg**-coarse grained, **cm**-centimeters, **do**-dolomite, **fd**-feldspar (undifferentiated), **fg**-fine grained, **ix**-iron oxide minerals, **m**-meters, **mg**-medium grained, **microxln**-microcrystalline, **mm**-millimeters, **mv**-muscovite, **py**-pyrite, **qz**-quartz, **vcg**-very coarse grained, **vfg**-very fine grained, **2nd**-secondary.
For sample location maps and full sample descriptions, see Zimbelman and others, 1991.

SAMPLE NO.	ROCK TYPE
BAKER HOT SPRINGS PROSPECT AREA	
6DK5124B	**Manganese-rich Wad**--black; frothy; manganese minerals; forms mounds.
CONFUSION RANGE PROSPECT AREA	
8HD5702D	**Jasperoid**--grey, purple, and white; fg to mg, bx; qz, cc, fluorite.
8HC5706B	**Jasperoid**--grey, brown; fg, bx; qz, cc.
8HC5706E	**Limestone**--grey; fg, well-bedded; cc, ba; local pockets
8HC5707F	**Jasperoid**--grey, brown, white; bx; qz, ba, ix.
8HC5708C	**Jasperoid**--grey, brown; mg to vcg, scattered vugs; qz,
DEEP CREEK RANGE PROSPECT AREAS	
6XX5036B	**Jasperoid**--gray, yellow; cg, vuggy; qz, ix; total replacment.
6XX5039B	**Jasperoid**--white to medium brown; vfg, vuggy; qz; pervasive replacment.
8BA5510C	**Dike**--white; fg, granular; qz, fd, garnets; no visible alteration, aplitic.
8AA5529A	**Vein**--white, light brown; vfg, microxln; ba, cinnabar, py, ix.
8BB5544F	**Vein**--white; vfg, massive; qz, ix; varying proportion of ix staining along qz vein.
8AB5560B	**Granodiorite**--light-grey; vcg, porphyritic; fd, qz; deeply weathered.
8AB5562F	**Carbonate**--dark brown; mg to cg; cc, ix, galena; partially replaced carbonated with vugs and stringers of galena.
8CA5567B	**Replacement**--brown; frothy; qz, ix.

8BB5568E **Vein**--brown; mg to cg, massive; py, ix, chalcopyrite; from pervasive replacement zone.
8BB5569B **Replacement**--brown; earthy; ix, qz.
8AB5573C **Vein**--white, brown; vfg to cg, vuggy; qz, hm, py, chalcopyrite.

DETROIT MINING DISTRICT

7DH5210C **Gouge**--varied colored, mostly shades of yellow; kaolinite, hematite, cc; from intensely altered zone that parallels bedding.
7DH5210E **Breccia**--white; porphyritic; clays, sericite, fd; pervasively sericitized.
7DH5211B **Jasperoid**--gray, brown; microxln, bx; qz, ix.
7DH5212B **Jasperoid**--brown; bx; qz, ix; includes scattered, angular to rounded quartzite clasts.
7DH5212C **Limestone**--gray, red; bx; cc, clay, qz; partially silicified.
7DH5214A **Porphyry**--white, brown; porphyritic; clays, sericite, ix; highly altered.
7DH5214B **Dike**--white; microxln; cuts porphyry.
7DH5273B **Jasperoid**--gray, brown; microxln, bx; qz.
7DH5277C **Jasperoid**--green, blue, brown; massive; qz, ix, malachite, chrysocolla.
7DH5278 **Diorite**--green; vfg, equigranular; fd; no visible alteration.
7DH5281A **Jasperoid**--brown; frothy; ix, qz, malachite.
7DH5282B **Jasperoid**--brown, gray; massive to frothy, microxln; ix; from zone .3-.7 m wide that cuts across limestone bedding.
7DH5283B **Jasperoid**--brown; massive to bx; qz, ix.
7DH5284B **Jasperoid**--brown, green; massive; ix, qz, malachite; from zone that is up to several m thick, cuts across limestone bedding.
7DH5286 **Limestone**--gray; microxln; cc; cut by cc veinlets.
7DH5287A **Replacement**--black, brown; vcg, massive; Mn-oxide minerals, ix, rhodochrosite.
7DH5393B **Dike**--gray, yellow, brown; bx; silicified zone with clasts of rounded quartzite and jasperoid pebbles.
7DH5395E **Replacement**--black, brown, red; frothy; Mn-oxide minerals, ix; complete replacement of carbonate host rock.
7DH5432B **Porphyry**--green; porphyritic, phenocrysts to 4 mm; clorite, clay, quartzite pebbles.

ERICKSON MINING DISTRICT

6AK5082 **Gossan**--dark brown; massive, friable; ix, do, 2nd minerals; from fracture zone.
6AK5088B **Vein**--gray; massive to vuggy; qz, ix, 2nd minerals.
6AK5094 **Gouge**--gray; vfg, massive; cc, ix.
6AK5095 **Limestone**--gray, white; vfg, bx; cc, ix; cut by cc

veinlets.

6AL5105 **Vein**--gray; vcg, massive; py, galena, qz, sphalerite, ix.

6AL5108 **Granite**--white; vcg, porphyritic to fg, equigranular; fd, qz, bt, ix; minor ix staining.

6AM5109 **Gouge**--grayish brown; fg, bx; qz, mv, fd, ix; moderate ix staining.

6AM5114 **Tillite**--white and brown; bx; qz, ix, molybdenite; abundant ix replacement of tillite.

7AL5444 **Granite**--white; vcg equigranular; fd, qz, bt; no visible alteration.

FISH SPRINGS MINING DISTRICT

6BE5015A **Dike**--white; vfg, equigranular; qz, bt, sericite; contains minor ix staining.

6BE5029B **Dike**--yellowish brown; microxln; qz, bt, sericite, ix; heavily stained with ix minerals.

7BE5378A **Dike**--gray; porphyritic; qz, aphanitic groundmass; no visible alteration.

7BE5379B **Replacement**--brown; bx; do, ix, Mn-oxide minerals; partial to total replacement of dolomite host rock.

7BE5385A **Replacement**--grey; bx; ix, lithic (quartzite) clasts; brecciated material composed mostly of quartzite.

GOLD HILL MINING DISTRICT

8XX5597A **Jasperoid**--brown, red; bx, microxln; qz ix; occurs along fault zone.

8XX5598E **Granodiorite**--yellowish brown; mg, homogranular.

8XX5600B **Skarn**--light grey, brown; vfg to mg, massive; cc (recrytallized to marble), garnet; replacement zone approx 1 m wide, parallel to bedding.

8XX5602A **Skarn**--grey; fg, bx; qz, py, ix.

8XX5610A **Granodiorite**--grey; mg, fractured; qz, gd, bt, hornblende, ix, malachite, azurite.

8XX5610D **Replacement**--brown, green; vcg, with crystals greater than 15 cm in length, fibrous; actinolite, clay, qz, py, ix, qz, 2nd Cu minerals.

8XX5620B **Vein**--white, brown; vfg, bx; qz, py.

8XX5632A **Dike**--white; fg; clay, sericite, ix.

8XX5641B **Marble**--white; fg to mg, bx; cc, minor ix.

8XX5642B **Replacement**--brown; frothy, bx; ix, qz, cc, 2nd Pb, Zn, and sulfosalt minerals.

8XX5644B **Granodiorite**--grey; mg, homogranular; qz, fd, bt, ix; no visible alteration.

8XX5653B **Replacement**--brown; fg to cg, bx; ix, various sulfide and sulfosalt minerals.

8XX5661B **Marble**--white, brown, green; mg; cc, ix, chrysocolla, scorodite.

8XX5664B **Replacement**--black, white; vcg; actinolite, tourmaline, qz, 2nd Cu minerals.

8XX5670B **Marble**--white, yellowish-brown; vcg, homogranular; cc, wollastonite, ix.
8XX5671D **Skarn**--white, grey, speckled; fg to mg, homogranular; cc, calc-silicate and sulfide minerals.
8XX5672A **Granodiorite**--brown; mg; fd, qz, bt, ix; heavily stained with ix minerals.
8XX5673A **Vein**--brown; ix, qz; cuts granodiorite.
8XX5676B **Gouge**--brown; friable, ix; cuts granodiorite.

NOTCH PEAK MINING DISTRICT

6GE1083 **Granite**--argillically altered; contains qz veins as much as 12.5 cm thick, stained with ix.
6GE5002A **Skarn**--maroon; vcg, granular; massive garnetite contains small segregations of vcg, milky qz.
6GE5002C **Vein**--stained brown; vuggy; qz, ix.
6GE5227C **Replacement**--brown; fg, massive; qz.
7GF5310A **Skarn**--reddish-brown; fg to cg; garnet, qz.
7GE5318C **Granite**--gray; cg, equigranular; qz, fd, bt, py, molybdenite.

SAND PASS PROSPECT AREA

7DE5176 **Quartz Latite**--gray; porphyritic; qz, clay, muscovite, sericite.
7DE5190A **Shale**--gray, yellow; vfg, finely-laminated; cc; contains pockets and veinlets of cc, ix staining along bedding surfaces.
7DE5190C **Jasperoid**--dark red; qz, cc; approx 85% silicification of shaley limestone.

TINTIC MINING DISTRICT

7BP5251A **Volcanic**--green; porphyritic; propylitically altered, cut by qz veinlets and stringers.
7AP5401B **Vein**--grey; vfg to cg; py, qz, ix, barite.
7A95404A **Replacement**--black; vuggy; ix, galena, py, qz, Mn oxide minerals.
7AP5406B **Replacement**--grey, white; fg to mg; qz, galena, py.
7AP5408F **Replacement**--brown; frothy; ix, qz.
7AO5409A **Quartzite**--whtie; bx; qz, ix.
7AP5411B **Replacement**--white, brown; vuggy; qz, barite, do, ix.
7AP5413B **Jasperoid**--white; vcg, euhedral; barite; relatively pure sample of barite.
7AP5415A **Jasperoid**--brown; microxln, vuggy; qz, ix.
7AP5416C **Replacement**--yellowish-brown; frothy; qz, ix.
7AP5419A **Vein**--gray, brown; fg to cg, massive; py, qz, galena.
7AP5419D **Granodiorite**--yellowish-brown; fg; clay, qz; highly altered to clays, sericite, and secondary SiO_2.
7AP5435A **Replacement**--white; microxln; chalcedony.
7AP5438 **Latite**--white and brown; porphyritic; clay, qz, ix; heavily altered and stained with ix.

7AP5439C **Vein**--brown; frothy; qz, sericite, ix; from heavily stained fracture zone.
7AP5439D **Vein**--brown; frothy, bx; qz, ix; cuts rhyolite, 2-8 cm thick.
7AP5441A **Vein**--grey; vfg to mg; qz, py.

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6BM1099 **Replacement**--yellow, brown; cc, ix, 2nd minerals; replaced limestone.
6BM1100 **Limestone**--cc, with replacements of: azurite, chrysocolla, galena, sphalerite.
6BM5064B **Gossan**--brown; frothy; qz, ix; replacement of limestone.
6BM5069 **Skarn**--green, brown; fg to cg; garnet, cc.
6BM5075A **Vein**--brown; microxln; qz, py, galena.
6BM5078A **Granodiorite**--green and white, mottled; cg, porphyritic; fd, bt, chlorite.
6BM5078B **Gossan**--brown; vuggy; ix.
6BM5081 **Granodiorite**--white; fg, equigranular; qz, fd; cut by qz veinlets.
8AN5710F **Jasperoid**--brown, grey; vuggy; qz, ix, stibnite, cinnabar.
8AN5712B **Jasperoid**--grey; vuggy; qz, ix, cinnabar; heavily stained.
8AN5713E **Rhyolite**--white; fg; qz; intensely silicified volcanic.
8AN5713F **Jasperoid**--grey, brown; microxln with scattered vugs; qz, cinnabar, ix; replaced volcanic.
8BM5750A **Skarn**--brown, green; fg to mg; ix, py, chalcopyrite.