Fairview District

LOCATION

The Fairview district is located about 45 miles east-southeast of the town of Fallon and encompasses the area on both sides of Fairview Peak extending from U.S. Highway 50 on the north to Crown (Bell) Canyon on the south. An unimproved dirt road following the bottom of Crown Canyon provides the only public access to the southern part of the district. Crown Canyon can be reached by driving east from State Highway 31 at a point about 8 miles south of Highway 50. The east side of the district is no longer accessible via Crown Canyon, The eastern portion of the district is, however, accessible by a dirt road leading south from Highway 50 that parallels the east side of Fairview Peak. Access to mines north of Crown Canyon on the west side of the district is possible either by road through restricted bombing range from the west or by foot from the Nevada Fairview mine north of Crown Canyon. On the north end of the district, the major mining area southeast of the old townsite of Fairview is accessible by a poorly-maintained dirt road that leads south from U.S. Highway 50 about 4 miles east of Frenchman. This route also crosses an existing Naval bombing range.

HISTORY

The discovery of rich float by F. O. Norton in the summer of 1905 led to the location of silver-bearing veins on the northwest side of Fairview Peak later that same year. By July 1906, prospectors and miners has staked close to 400 claims covering 12 square miles. The most valuable claims were staked in January 1906 by Perly Langdell of Colorado who located the Boulder and Boulder No. 1 claims on an ore-bearing, 18-inch quartz vein in an andesite outcrop near the head of a narrow canyon. The Boulder claims were sold to W. A. Webber in March 1906 for $7,500; Webber cleared $8,000 on the first ore shipped from the claims. Later the same year, the claims were sold to the Nevada Hills Mining Company for $25,000. The Nevada Hills Mining Company, in 1911, consolidated with the Fairview Eagle Mining Company, forming the nucleus of properties thereafter known as the Nevada Hills Mines (Schrader, 1947, p. 65-66). The Nevada Hills Mine was the major producer in the Fairview district from the time of consolidation until 1917 when it closed for lack of ore. From 1906 to 1922 the camp produced over 48,000 ounces of gold and over 4,700,000 ounces of silver, most of which was credited to the Nevada Hills Mine (Vanderburg, 1940, p. 25). The mine was opened to a depth of 1,100 feet and was mined on 9 levels from more than 43,000 feet of workings. The years of peak production were 1906 to 1916; the highest yearly production was achieved in 1912.

During this same time period (1906-1916) a number of smaller properties were located along the west-central and southern portions of the district. The most notable of these include the Mizpah, Grand Central, and Jelinek mines in the west-central area and the Nevada Crown, Nevada Fairview (Snyder or Gold Coin) and Bluff Mines to the south. Although some of these mines have very sizeable workings, no production is recorded from any of them.

Following the closure of the Nevada Hills mill in 1917, the district rapidly declined. In 1919 the Fairview Post Office closed and the town, for all practical purposes, ceased to exist. Claims in the Fairview district have been maintained over the years, however, and sporadic prospecting continues in the area. Recently, several major mining companies have examined the district searching for bulk-mineable deposits of gold and silver. In the late 1960's, patented mining claims covering a large portion of the Fairview district were acquired by the Howard Hughes organization. When the Hughes company, Summa Corporation, later divested itself of its mineral holdings, the Fairview properties were sold to Houston Oil and Minerals Company. Houston was later acquired by Tenneco Minerals. Tenneco Minerals, in late 1986, was purchased by Echo Bay Mines, a large Canadian gold mining company. Houston explored its holdings at Fairview and South Fairview in the late 1970's but these properties are not active at the present time.

GEOLOGIC SETTING

The oldest rocks exposed in the Fairview district are schist, limestone, shale, and slate of Triassic age. The limestone and shale crop out in a narrow belt on the northwest side of the district, west of Fairview Peak. The schist, shale, and slate crop out both north and south of Crown Canyon in an area that is otherwise dominantly volcanic. Schist is exposed at the Nevada Crown shaft just north of Crown Canyon while both schist and slate are exposed along the margin of a granite window west of the Nevada Crown adit. According to Schrader (1947, p. 73), quartz monzonite forms the core of Fairview Peak and the northern part of the range. It is exposed on the north slope of Fairview Peak and at the foot of the mountain about 2 miles south of the peak. We observed granite in outcrop just north of Crown Canyon and also due west of Fairview Peak where it is in contact with metasedimentary rocks.

Fairview Peak and most of the surrounding district are covered by a thick sequence of welded and non-welded, largely silicic tuffs of Miocene age. All of the tuffaceous rocks, according to Willden and Speed (1974), are sufficiently quartz-rich to be classified as rhyodacite, quartz latite, and rhyolite rather than dacite as described by Schrader (1947). The so-called "lode andesite" of Schrader is classified as dacite by Willden and Speed, also on the basis of its quartz content. Both pre- and post-ore faults are numerous throughout the district; some of the veins follow the pre-ore faults.

Just south of the district, but extending into the withdrawal area, are the contact deposits of Slate Mountain. Slates and limestone in contact with granodiorite are exposed along the southeast flank of the mountain in the vicinity of the Slate Mine (Midday Mine).

ORE DEPOSITS

Two types of mineral occurrences have been mined within the Fairview mining district. The most important of these, precious metal-bearing quartz vein deposits, occur mainly along the west side of Fairview Peak. The vein deposits were developed in three general areas: on the northwest slopes of Fairview Peak (the Nevada Hills, Eagle, Dromedary Hump and adjacent mines); on the lower, west slopes of Fairview Peak (the Mizpah, Big Ledge or Jelinek,

and Grand Central Mines); and on the southwest slopes of Fairview Peak, near Crown Canyon (the Nevada Fairview or Gold Coin, Bluff. and Nevada Crown Mines). The Crown Canyon area is sometimes referred to as the South Fairview district.

South of Crown Canyon, on the southern slopes of Slate Mountain, small contact deposits of tungsten have been prospected and mined. These deposits were discovered in the 1940's and their production is insignificant in comparison to the precious metal production recovered from the vein deposits to the north.

The major productive quartz veins in the Fairview district trend northwesterly in or along the margin of a dacite intrusive (the lode porphyry of Schrader, 1947) where it cuts silicic tuffs. The vein systems are cut by numerous faults which acted, in part, as conduits for three separate stages of mineralization. Although the veins occur in or near fractures, they are largely replacement veins consisting of quartz and altered rock, partly or wholly replaced by quartz, adularia, and other gangue minerals. They are mostly massive or brecciated and show the fine-grained replacement quartz and ore grading laterally into the silicified wall rock. Large parts of them are well banded and crustified, recording deposition in successive layers on the walls of open fissures (Schrader, 1947, p. 83). The ore minerals, which are selectively distributed in both the quartz ore and some of the adjoining wall rock, are: acanthite, cerargyrite, embolite, ruby silver, bromyrite, polybasite, pyrite, sphalerite, stephanite, tetrahedrite, and native gold.

In general, the veins pinched out with depth or became too low grade to justify further mining. The drastic reduction in ore grade with depth is exemplified by conditions recorded at the Nevada Hills Mine. At this deposit, outcrops and near-surface ore shoots contained as much as 92 ounces gold and 4,300 ounces silver per ton. During 1906 to 1910, the average grade of ore from the upper workings ranged from 1 to 3 ounces gold per ton and to over 100 ounces silver per ton. Later, during the period of maximum production from 1914 to 1916 when ore was being mined from the lower levels of the mine, grades dropped to 0.08 ounces gold per ton and 7.8 ounces silver per ton (Vanderburg, 1940, table 3).

The veins, or vein groups, are accompanied by zones or masses of hydrothermally altered, highly silicified, pyritic andesite porphyry wall rock; such rock is generally most abundant along the wider parts of the veins. In all cases, for both veins and adjacent wall rocks, silicification was reported to decrease with depth (Schrader, 1947, p. 84).

PROPERTIES WITHIN OR ADJACENT TO PROPOSED WITHDRAWAL AREA

Nevada Hills Mine: The Nevada Hills Mine, which includes consolidations with the Eagle Mining Company, encompasses 107 acres of patented ground along the northwest side of Fairview Peak. The over 43,000 feet of workings of this mine explored the major quartz veins within the Fairview district. The main workings lie immediately northeast of the boundary of the proposed withdrawal area; the vein structures may project into the area.

The most productive vein within this property was the Nevada Hills, a structure over 2,200 feet long and 1 to 15 feet wide that was mined to a depth of over 800 feet. Secondary enrichment in crevices and seams in wall rock adjacent to the vein formed bonanza orebodies extending from surface into the upper levels of the mine. The surface ore was mined through a glory-hole 200 feet long, 12 feet wide, and 70 feet deep that forms a prominent open cut along the strike of the vein. Almost all of the 4,475 ounces of gold and 356,000 ounces of silver produced at Fairview in 1916 came from the upper 100 feet of the Nevada Hills vein (Schrader, 1947, p. 92).

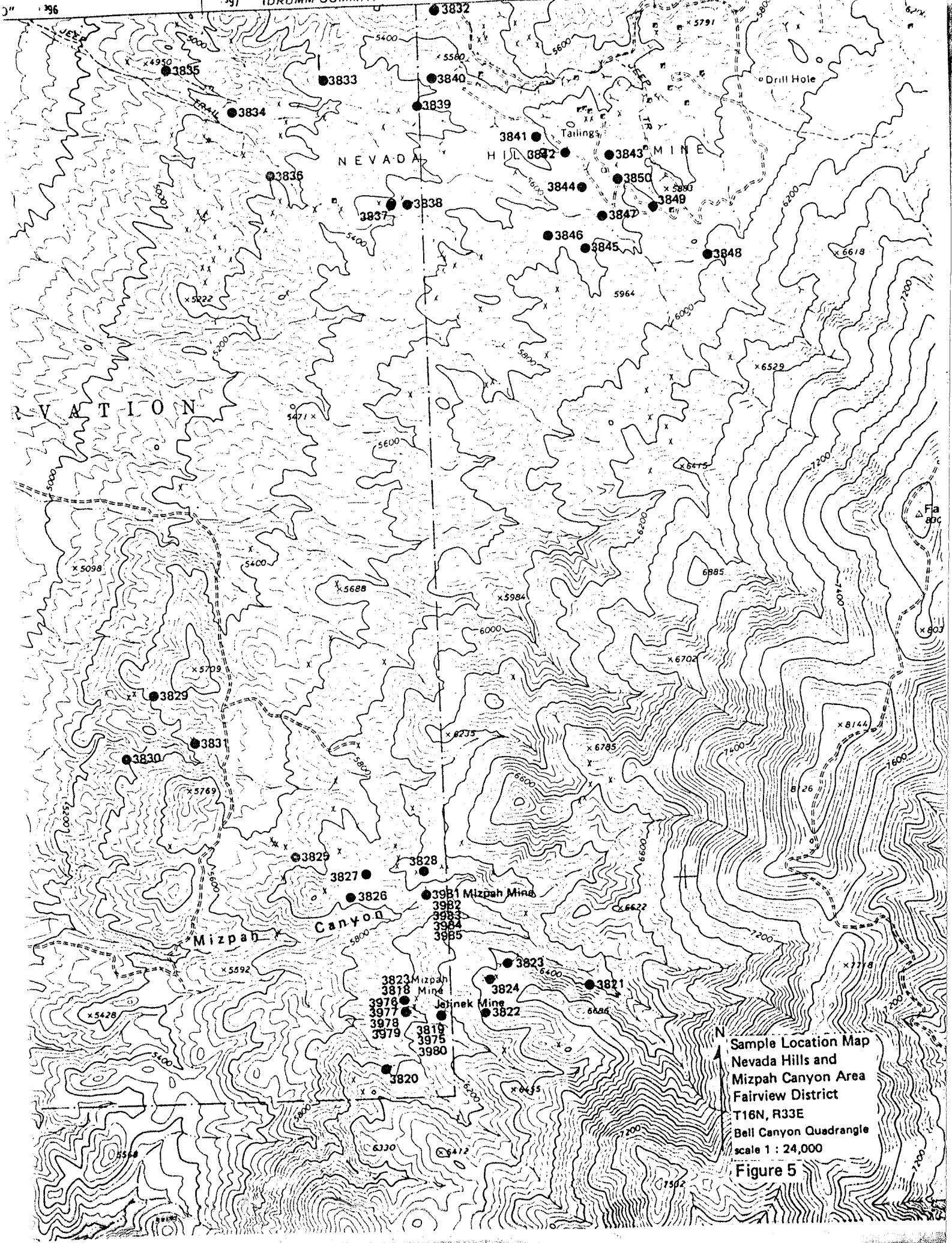
The second most productive vein system at Fairview was also within the Nevada Hills property. This vein, the Eagle, parallels the Nevada Hills vein on the northeast. The Eagle vein varied in width from 2 to 40 feet, was over 1,000 feet long, and was opened on 5 levels. The Eagle vein differs from the other major veins, containing larger amounts of calcite, rhodochrosite, rhodonite, pyrolusite, and wad than do the other veins (Schrader, 1947, p. 96).

Most of the Nevada Hills ground is currently owned by Tenneco Minerals (now Echo Bay Mines). Tenneco conducted a major surface and underground mapping and sampling program in the district between 1977 and 1978 in an attempt to develop sufficient ore for an open-pit mine. The consensus of opinions from several company reports indicates that they believe there is low potential for such a mine within their land holdings. This conclusion was based on a number of factors substantiated by the results of their drilling and sampling program. Among the factors were: very low gold-silver values were found in both surface and underground sampling; little or no ore reserves were found associated with the old workings; vein swarms between the larger veins contained only very weak gold-silver values or were found to be barren; no stockworks silicification was found; no permeable, tuffaceous host rocks were found which would be amenable to the formation of blanket-like bulk-mineable deposits; and the three areas within the property deemed large enough to host an open pit deposit were found to be barren (Jonson, 1986a, p. 2-6). Tenneco also felt that the proximity of the existing Navy bombing range was a major deterrent to exploration or development within the district. The presence of the range was assessed as creating a real hazard to both people and property as well as limiting access to adjacent property resulting in a cost increase for any potential mineral development.

The results of our sampling at the Nevada Hills Mine (see fig. 5 for sample locations) reported very high silver values with gold values ranging from 0.02 ppm to 32 ppm. Copper and zinc values were high, lead was variable, and molybdenum values were low.

Samples 3832, 33, 39, 40, 44, 45, 47, 48, 49, and 50, all taken from other, nearby veins in volcanic rocks reported low silver values, occasional gold values and generally low base metal values.

Samples 3834, 35, and 36, were taken from a line of shafts to the west of the Nevada Hills Mine that follow a contact between shaley metasedimentary rocks and granite. Sample results from this area were generally high in base metals, low in precious metals, and devoid of tungsten.


3832
3835
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Tailings
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Drill Hole
NEVADA
HILL
MINE
3829
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3827
3826
3831 Mizpah Mine
3832
3833
3834
3835
Mizpah
Canyon
3823
3824
3821
3822
3823 Mizpah
3818 Mine
3976
Jelinek Mine
3977
3978
3819
3979
3975
3980
3820
N
Sample Location Map
Nevada Hills and
Mizpah Canyon Area
Fairview District
T16N, R33E
Bell Canyon Quadrangle
scale 1 : 24,000

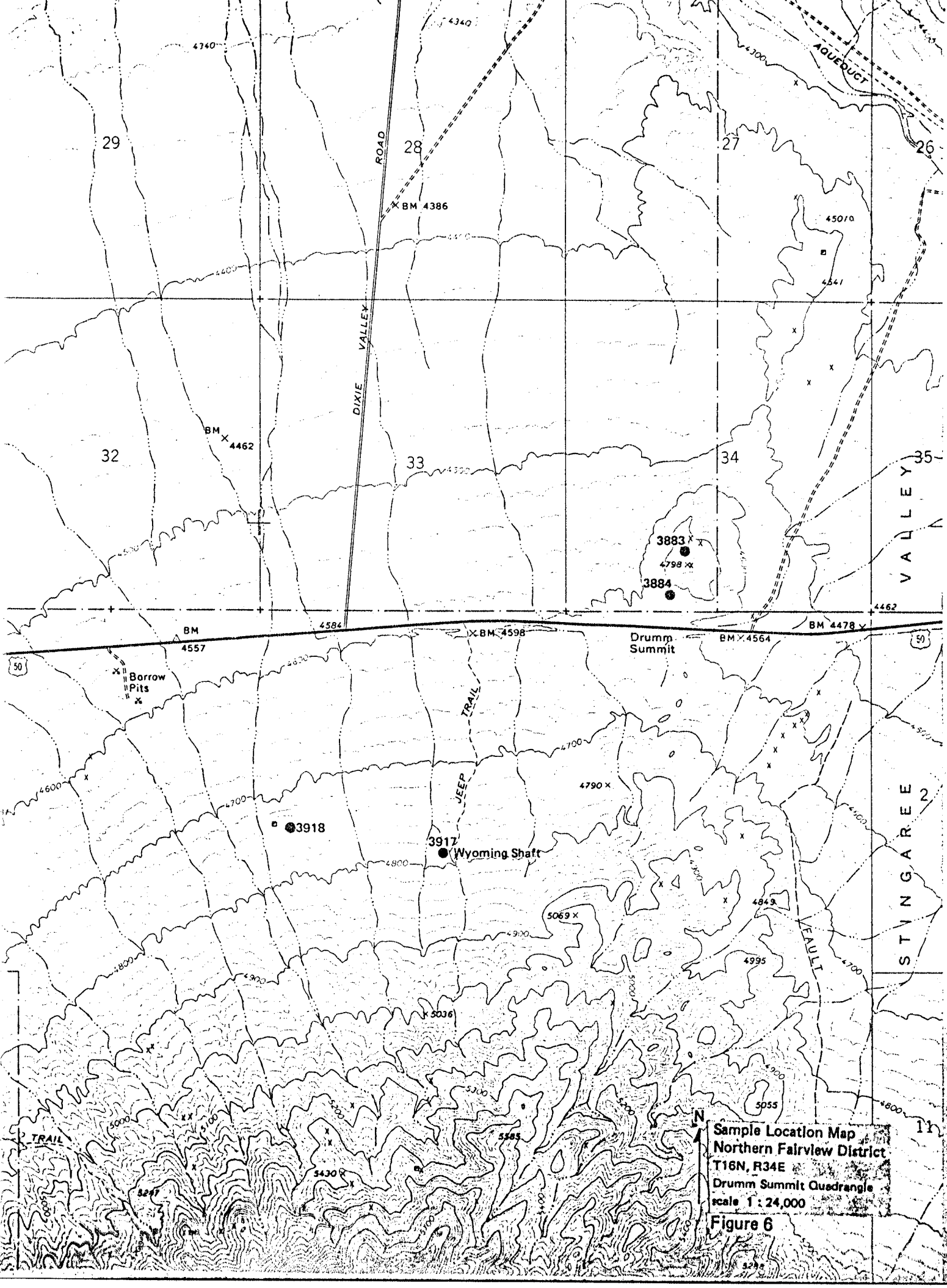
Figure 5

Samples 3837, 38, and 46 came from workings located to the south of the Nevada Hills area which explore granite-andesite and granite-sedimentary rock contacts. These samples have a uniquely different but uniform geochemical association that may be showing the influence of the nearby andesite (dacite?) intrusive. Assay results from these samples were very high in lead, zinc, and copper. Silver was moderately anomalous at 200 ppm in all three samples; molybdenum was moderately anomalous, ranging from 70 to 200 ppm; gold was anomalous in all three with values of 0.30 ppm, 0.20 ppm, and 0.60 ppm respectively.

Centurion Prospect: In the northern part of the district, just south of U.S. Highway 50, a line of lode mining claims (Centurion group) has recently been staked to cover what is described as a Tonopah-type epithermal vein. The vein structure can be traced on the surface for over a half mile and is thought to extend further both east and west along its strike. Should this structure extend beyond the claim group to the west, it would project into the eastern part of the proposed withdrawal area. The vein is hosted in volcanic rocks that form the bedrock of a pediment covered by a thin veneer of soils and gravels and is exposed only in two areas where earlier exploration penetrated the covering material. According to A. L. Payne, owner of the Centurion claims, the exploration target within his claim group is a precious metal ore shoot that could occur anywhere along the strike length of the vein. Payne plans a series of crosscutting trenches as an initial prospecting technique to test the vein structure.

Our samples 3917 and 3918 (see fig. 6) were taken from the Wyoming shaft on the southeast end of the Centurion vein and from a prospect atop a small rounded hill on the west end of the exposed vein. Assay results from these samples showed only minor gold-silver content associated with high arsenic and low base metal values.

Mizpah Mine: The Mizpah Mine, formerly the Austrian Mine, is located near the middle of the western slope of Fairview Peak in the upper part of Mizpah Canyon. According to Schrader (1947, p. 107-108), ore-grade mineralization was discovered at this site by Otto Steinheimer and his brother in 1906. They, together with several partners, discovered an ore shoot along an east-west trending vein and followed it downward with a 70-foot shaft. The shaft was sunk on the vein near the summit of a hill about 200 feet above the bottom of Mizpah Canyon. They were reported to have been in ore all the way down in a vein about 20-feet thick. Soon thereafter, the mine was sold to D. J. Kennedy of Reno who organized the Mizpah Mining Company and began the major development work on the deposit. Because the upper 200 feet of the east-west striking vein system rises above the floor of Mizpah Canyon, a crosscut adit was driven north from the bottom of the canyon, intersecting the vein about 270 feet from the its portal (see fig. 7). Development drifting on this level, the 4th level of the mine, eventually totaled about 960 feet. By 1911, the mine was developed by five levels, three above the adit level and one below, and had over 1,600 feet of underground workings. Most of the work was done through the 4th level adit which became the main haulageway for both waste and ore.


AQUEDUCT
ROAD
DIXIE VALLEY
VALLEY
STINGAREE
TRAIL
JEEP
TRAIL
FAULT
BM 4386
BM 4462
BM 4557
BM 4598
BM 4564
BM 4478
Drumm Summit
Borrow Pits
3883
3884
3918
3917
Wyoming Shaft
4798
4790
5069
5036
5055
5585
5430
4995
4849
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26
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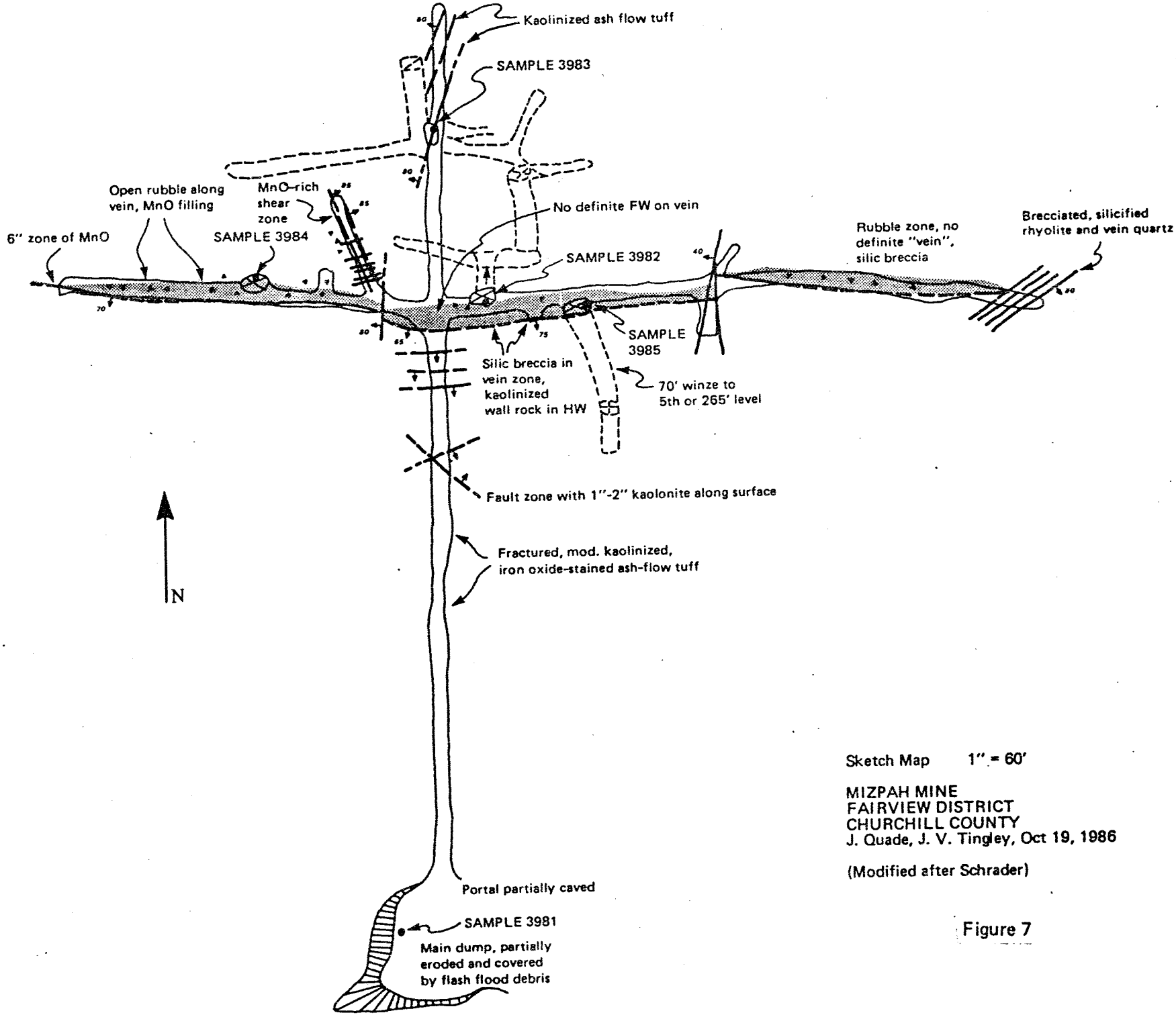
Sample Location Map
Northern Fairview District
T16N, R34E
Drumm Summit Quadrangle
scale 1 : 24,000

Figure 6



Sketch Map 1" = 60'

MIZPAH MINE
FAIRVIEW DISTRICT
CHURCHILL COUNTY
J. Quade, J. V. Tingley, Oct 19, 1986

(Modified after Schrader)

Figure 7

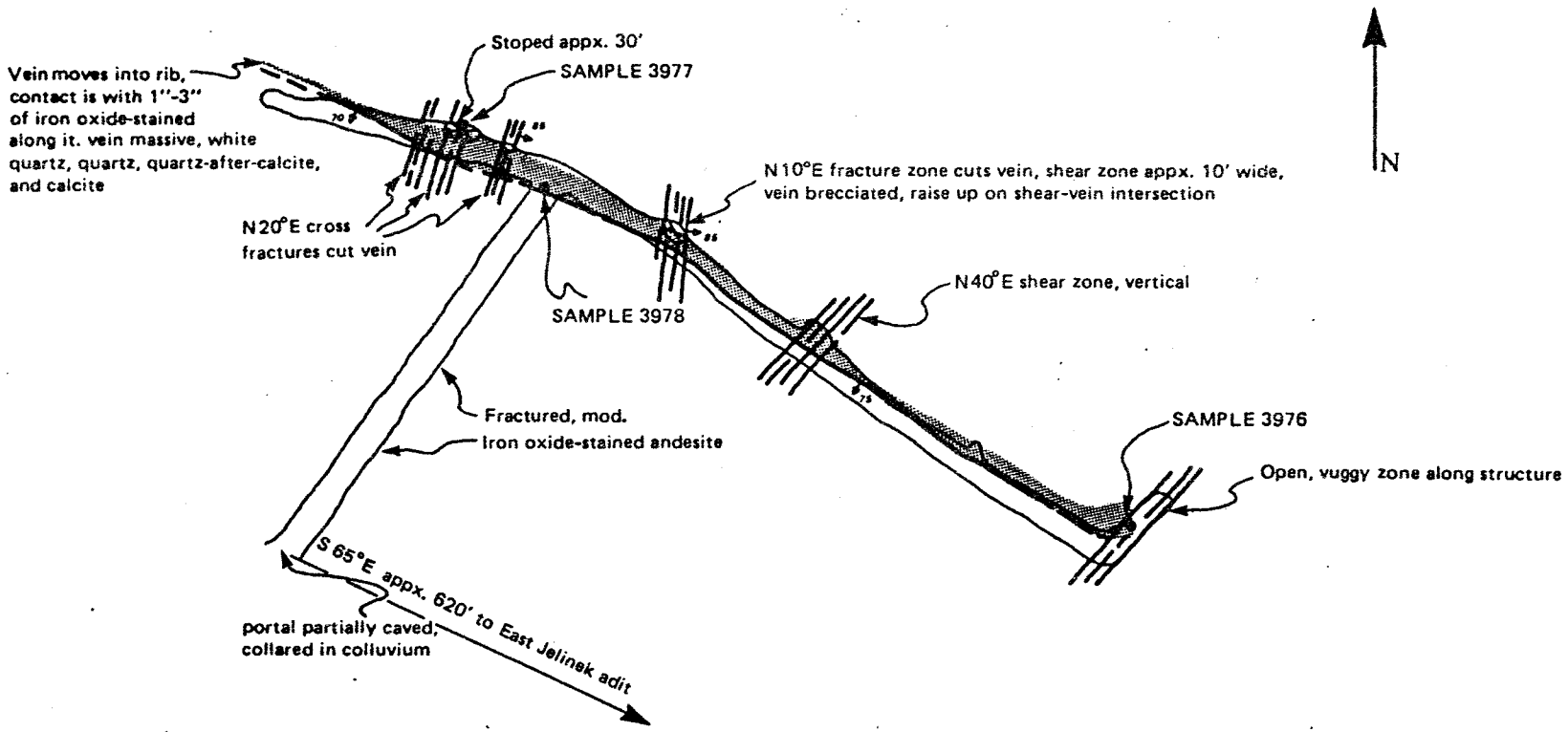
The Mizpah Mine is located within, but on the eastern border of, existing Target Area Bravo 17. The eastern end of the mine workings extend into the proposed withdrawal area and the major vein structure continues east into the area.

Host rocks at the Mizpah Mine are predominantly ash-flow tuffs and rhyolite flows that have been silicified, locally brecciated, and kaolinized along numerous fractures within and along the margins of the veins. The main vein strikes about east-west and dips variously between 60 and 75 degrees to the south. The vein varies from 4 to 20 feet in thickness and may average about 6 feet; the mine workings have opened the vein to a depth of 265 feet. Numerous slickensided surfaces are present along the exposed portions of the vein attesting to post-vein movement along the structure. The vein is mostly hard white quartz, formed by replacement, and silicified rhyolite breccia. It is locally vuggy and large portions of the vein are composed of quartz and adularia pseudomorphic after calcite. Schrader (1947, p. 107), described the Mizpah ore as occurring in irregular streaks and bands, depending on the character of the opening. The mineralization formed after the enclosing rock was brecciated and often followed the silica matrix. The Mizpah ore minerals are mainly dark silver sulfides (acanthite and stephanite), some cerargyrite, and native silver and gold.

When Schrader visited this mine in 1916, all of the workings above the 4th level were open. At the time of our visit, however, only the 4th level was accessible. Three fairly large stopes extend up from the 4th level but there are no production records to indicate what was recovered from them. It is also not clear from our mapping (fig. 7) why mining was halted as the main vein appears to continue both east and west beyond the limits of the mine workings.

We collected six samples of ore material from underground vein exposures and dumps at the Mizpah Mine. Four of the six samples contained gold with values ranging from 0.10 ppm up to 18 ppm. Silver values ranged from 5 ppm to 2,000 ppm and all of the samples reported very low base metal values.

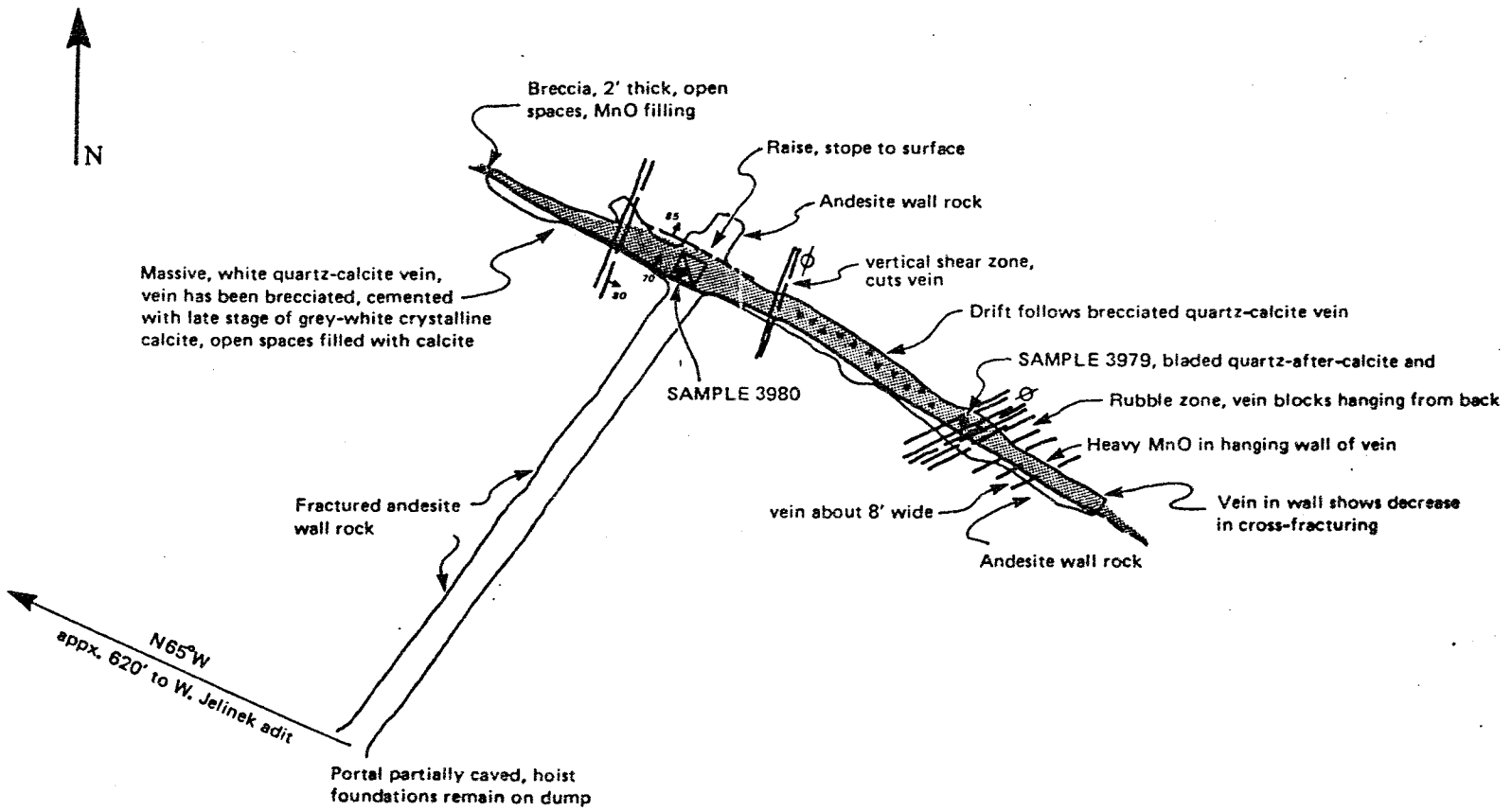
Jelinek (Big Ledge) Mine: The Jelinek Mine is about one half mile south of the Mizpah Mine in a narrow, east-west trending tributary that parallels Mizpah Canyon. The Jelinek Mine is mislabeled as the Mizpah Mine on the U.S.G.S. Bell Canyon 7 1/2' quadrangle map. According to Schrader (1947, p. 109-112), John Horgan and R. L. D'Arcy discovered mineralization in vein croppings on the south side of Mizpah Canyon in 1906. During the 10 years up to 1916, only development work was done on the property although some 23 tons of ore are reported to have been shipped. In 1916, W. M. Jelinek purchased the property and by 1918 had shipped another 6 tons of ore that ran 47 ounces silver and about 1 ounce gold per ton. When Schrader visited the mine in 1920 it contained about 1,000 feet of workings, mostly driven from Mizpah Canyon. By 1928, development on the southwest end of the Big Ledge had increased the total workings to about 2,500 feet. These later workings were driven from the tributary canyon northeast to intersect the vein structure (see figs. 8, 9).



1" = 40' Sketch Map

JELINEK MINE (West)
FAIRVIEW DISTRICT
CHURCHILL COUNTY
Big Ledge no.2 Claim adit
J. Quade, J. V. Tingley, Oct 19, 1986

Figure8



Sketch Map 1" = 40'

JELINEK MINE (East)
FAIRVIEW DISTRICT
CHURCHILL COUNTY
Big Ledge no. 3 Claim adit
J. Quade, J. V. Tingley, Oct 19, 1986

Figure 9

The eastern workings of the Jelinek Mine, developed through workings driven from Mizpah Canyon, are entirely within the proposed withdrawal area. The southwestern workings, those on the Big Ledge claims and developed from the canyon south of Mizpah Canyon, are within existing Target Area Bravo 17. Projections of this part of the Big Ledge vein would, however, carry it into the area of the proposed withdrawal.

The country rock at the Jelinek Mine consists of siliceous, light colored volcanic rock, mostly rhyolite and latite, cut by silicified rhyolite and, in places, andesite dikes. The veins vary in width from 2 to 20 feet and form bold outcrops of vein and silicified wall rock. It was reported by Schrader (1947, p. 110) that in places where the vein croppings pinch or vanish, the course of the vein and fissures continues to be well marked by prominent reefs of silicified wall rock. The veins in large part appear to occupy fissures but the deposits also include replaced wall rock. The veins consist mainly of vein quartz, fragments of silicified and replaced breccia, and quartz-adularia pseudomorphic after calcite. The ore minerals are dark gray silver sulfides that occur as specks disseminated in the white quartz-adularia-calcite gangue. Some cerargyrite and native gold, associated with acanthite and stephanite, were reported to be present.

The main Big Ledge vein, that portion lying directly south of Mizpah Canyon, has an exposed strike length of approximately 3,000 feet; the vein strikes N70^{o}E and dips 80^{o}S or, in places, stands vertical. This vein was opened by several different workings from the east end overlooking Mizpah Canyon, by a shaft and adit from the top of the hill between the two canyons, and by prospects along its strike to the southwest. Schrader (1947, p. 111) reported the lower workings of the mine to be in good ore following a 2- to 20-foot vein and he believed that the vein world remain strong at depths of several hundred feet.

Our sample 3823 was taken from the caved shaft atop the hill south of Mizpah Canyon (fig. 5). This sample, chipped from vein outcrop and including some ore from the dump, assayed 2,000 ppm silver and 14 ppm gold. Sample 3824, collected from a small prospect shaft to the southwest, contained 1500 ppm silver and 17 ppm gold. Both of these samples contained very low base metal values.

The adits in the canyon south of Mizpah Canyon explore what Schrader (1947, p. 111-112) describes as the Big Ledge No. 3 vein. Schrader's descriptions of this vein structure are somewhat confusing, he first describes the Big Ledge and Big Ledge No. 3 veins meeting at an angle of 40 degrees, then he says that they do not meet, then he describes the strike of the two structures as parallel (N70^{o}E). Our mapping of the two adits (figs. 8, 9) verifies Schrader's first observation. The two veins must intersect at an angle near 40 degrees and the intersection may be exposed in one of the two adits.

Our sample 3818, collected from a dump near an adit and open stope on the west side of Big Ledge No. 2 claim, contained 1,500 ppm silver and 13 ppm gold. Samples 3976, 77, and 79 taken from within the Big Ledge No. 2 claim adit (see fig. 8), contained 1,500 ppm, 1,500 ppm, and 1,000 ppm silver; 1.6 ppm, 1.4 ppm, and 0.75 ppm gold respectively. Sample 3819, collected from

the dump of the Big Ledge No. 3 claim adit, contained 1,500 ppm silver and 18 ppm gold. Samples 3979 and 3980, taken underground here (see fig. 9), contained 100 ppm and 10 ppm silver, and 1.5 ppm and 0.15 ppm gold. All of these samples contained low base metal values.

Grand Central Mine: The Grand Central Mine is located about one mile west-northwest of the Mizpah Mine and is about a quarter of a mile east of the road that crosses Target Area Bravo 17. The Grand Central Mine is entirely within the existing Target Area.

Mineralization was discovered in outcrop at this deposit in 1915 and, when visited by Schrader in 1916, the owners had just mined and shipped 2 1/2 tons of highly silicified ore that ran 48 ounces silver and about 1/3 ounce gold per ton.

The Grand Central Mine workings are very small, consisting of a 50-foot deep shaft, a 40-foot long crosscut adit, and several drifts (see fig. 10).

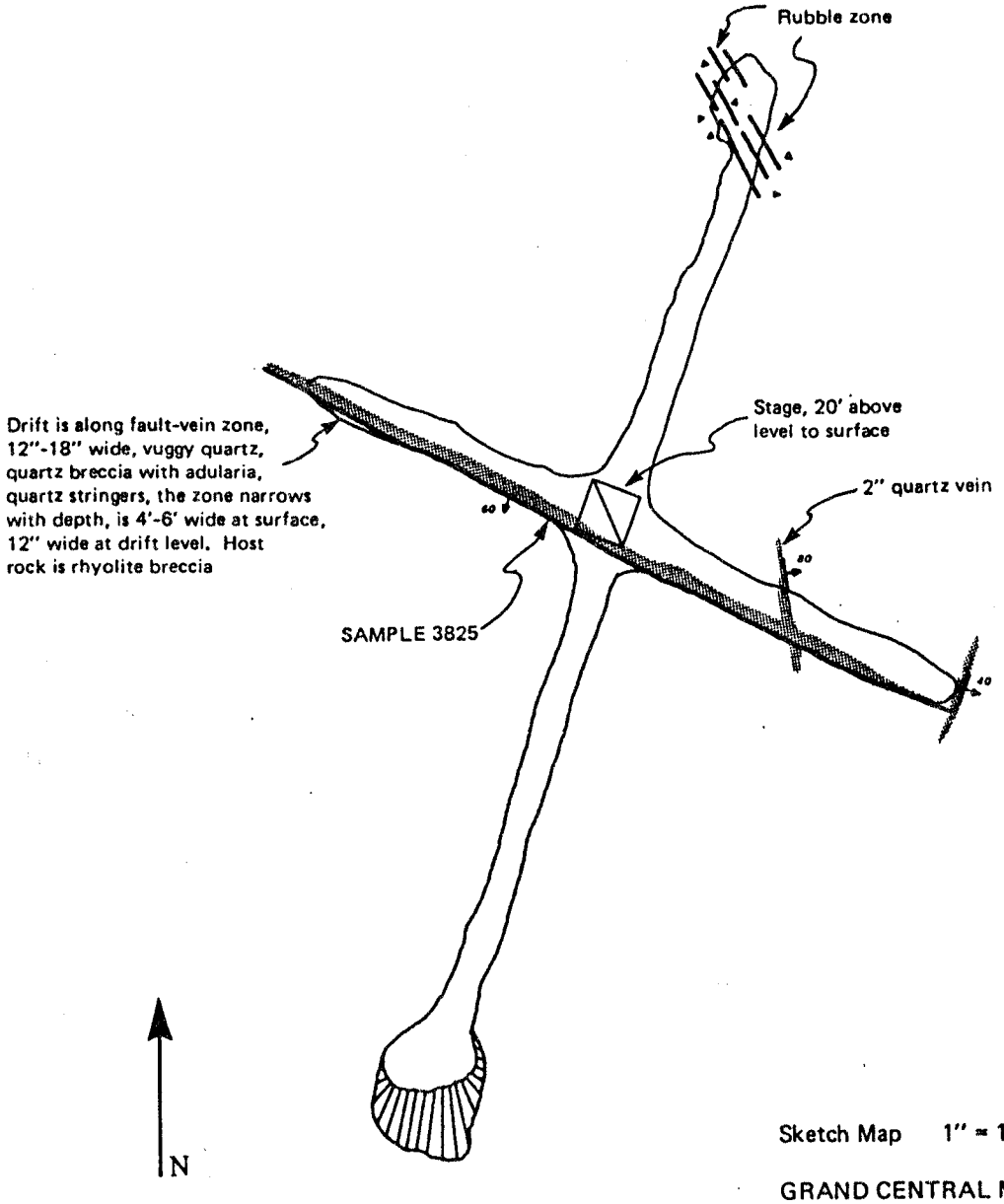
The geology and mineralogy of this occurrence is similar to other epithermal veins in the district. The main vein is a silicified rhyolite breccia that bears N80^{o}W, is nearly vertical, and stands about 5 feet above the surrounding terrain in outcrop. The structure is about 40 feet wide and can be traced along its strike for over 100 feet. The host rock is a rhyolite flow-breccia. Schrader (1947, p. 108) reported a strip about 4 feet wide within the vein that was crudely banded, fine-grained, vuggy comb quartz containing, in places, streaks and disseminations of dark silver sulfides (acanthite and stephanite). Very little work appears to have been done at this property since Schrader's visit although much of the exposed vein has been removed.

Our sample 3825, selected from the vein (see fig. 10), contained 2,000 ppm silver, 12 ppm gold, and was essentially barren of base metals.

Nevada Fairview (Snyder, Gold Coin) Mine: The Nevada Fairview Mine is located at the head of Snyder Canyon, a tributary of Crown Canyon, on the rugged southwest side of Fairview Peak. The deposit was discovered by L. H. Bartholomew in 1906. The original claims staked were the Bluff and Gold Coin claims; these names were retained when the claims were patented in 1912. The mine was operated as the Nevada Fairview Mine and is found in literature descriptions under that name. The U.S.G.S. Bell Canyon 7 1/2' topographic map, however, uses the Gold Coin and Bluff designations instead of Nevada Fairview.

Nevada Fairview operated for 10 months in the period following its discovery and again in 1910 when a fair shipment of ore was made. There are, however, no production records from the property.

Most of the development work at the property was concentrated on three of the claims; the Gold Coin, the Gold Coin No. 2, and the Bluff. The old mines contain about 1,700 feet of old workings, mostly accessible through four adits. The Gold Coin-Bluff group of five patented mining claims, containing



Sketch Map 1" = 10'

GRAND CENTRAL MINE
MIZPAH CANYON AREA
FAIRVIEW DISTRICT
CHURCHILL COUNTY
Jack Quade, Sept. 11, 1986

Figure 10

the old Nevada Fairview mine workings, lies completely within the proposed land withdrawal. Currently, the property is owned by Tenneco Minerals Company.

Tenneco completed an intensive sampling and mapping program both on surface and underground within the old workings. This was followed by surface rotary drilling. Drilling was directed from a new road extended northward from Tunnel No. 4, with the objective of exploring for mineralization along the north-trending Tunnel No. 4 structure. Exploration efforts did not succeed in finding the bulk-mineable target that was the object of the work, and Tenneco has not been active on the property for several years. They still, however, hold the property and just this year they commissioned a geologic consultant in Denver to prepare a summary report on all of their Fairview properties. It is possible that all of their holdings in the district will be offered to smaller mining companies who would be interested in exploring the mines for smaller, high-grade orebodies.

Tenneco prepared a comprehensive geologic report on the Nevada Fairview property and the following geologic description is largely abstracted from that report (Saunders, 1978).

Tertiary intrusive and extrusive volcanics are the oldest rocks on the property. These rocks have been cut by a large basin-and-range fault that crosses the entire property in a northerly direction. Rock units can not be correlated across this fault but it is thought that the rocks on the east side are the oldest. Two units are exposed on the east side of the fault, a blue tuff and a rhyolite tuff. The older blue tuff is thin-bedded to massive in appearance and it grades from fine-grained tuff to coarse agglomerate. Lying on the erosional unconformity of the blue tuff is a silicified rhyolite tuff. The basal unit of this tuff is a coarse boulder agglomerate made up of 75% rounded granodiorite boulders, 15% volcanic fragments, and 10% metasedimentary rock fragments. The unit is thought to be over 1,000 feet thick. The lowest unit exposed on the west side of the fault is a repeated sequence of the blue tuff. Lying in an angular unconformity above the blue tuff is an estimated 150 foot thick light green-to-gray trachyte unit. Conformably overlying the trachyte is a steel-gray to black andesite flow.

The sequence of flows and tuffs has been cut by a dike of dacite porphyry which has been intruded along the hanging wall side of the large fault. The dacite is light green, is brecciated, and contains disseminated pyrite throughout.

Two distinct types of mineralization have been recognized in the veins at South Fairview: calcite-quartz veins that are highly manganiferous occur at the Gold Coin No. 2 workings; and a brecciated, replacement-type vein occurs at the Gold Coin No. 1 workings.

The calcite-quartz-manganese oxide veins strike N30°-40°E and dip 70°-80°SE and are exposed for over 1,000 feet on the property. The veins occur as banded fissure fillings and are very irregular in nature. They pinch and swell both laterally and vertically and vary in width from 1 inch to 20 feet. Gangue minerals in these veins are quartz and calcite, with quartz commonly replacing calcite. The veins are highly manganiferous with silver mineralization, presumably argentite, related to the manganese.

The brecciated, replacement-type quartz vein strikes N30°E and dips steeply to the northwest. This vein is 2 to 6 feet wide and is exposed in the Gold Coin No. 1 workings for about 60 feet along strike. Where exposed, the vein contains a fine-grained, black silver sulfide.

We collected samples from each of the two structures described in the Tenneco report (see fig. 11); two samples from the Gold Coin No. 2 contained only low silver values (10 and 30 ppm), trace gold (nil and 0.40 ppm), and low base metals. Samples from the Gold Coin No. 1 contained higher silver (100 and 1,000 ppm), higher gold (0.05 and 1.4 ppm), and low base metals.

Jet Prospect: The Jet prospect area lies slightly less than one mile west of the Nevada Fairview Mine (see fig. 11). The prospect lies within an area of about 160 acres covered by the Jet claim group. Spectrum Exploration of Hawthorne, Nevada staked the Jet claims in the summer of 1986 and carried out a limited program of sampling and exploration.

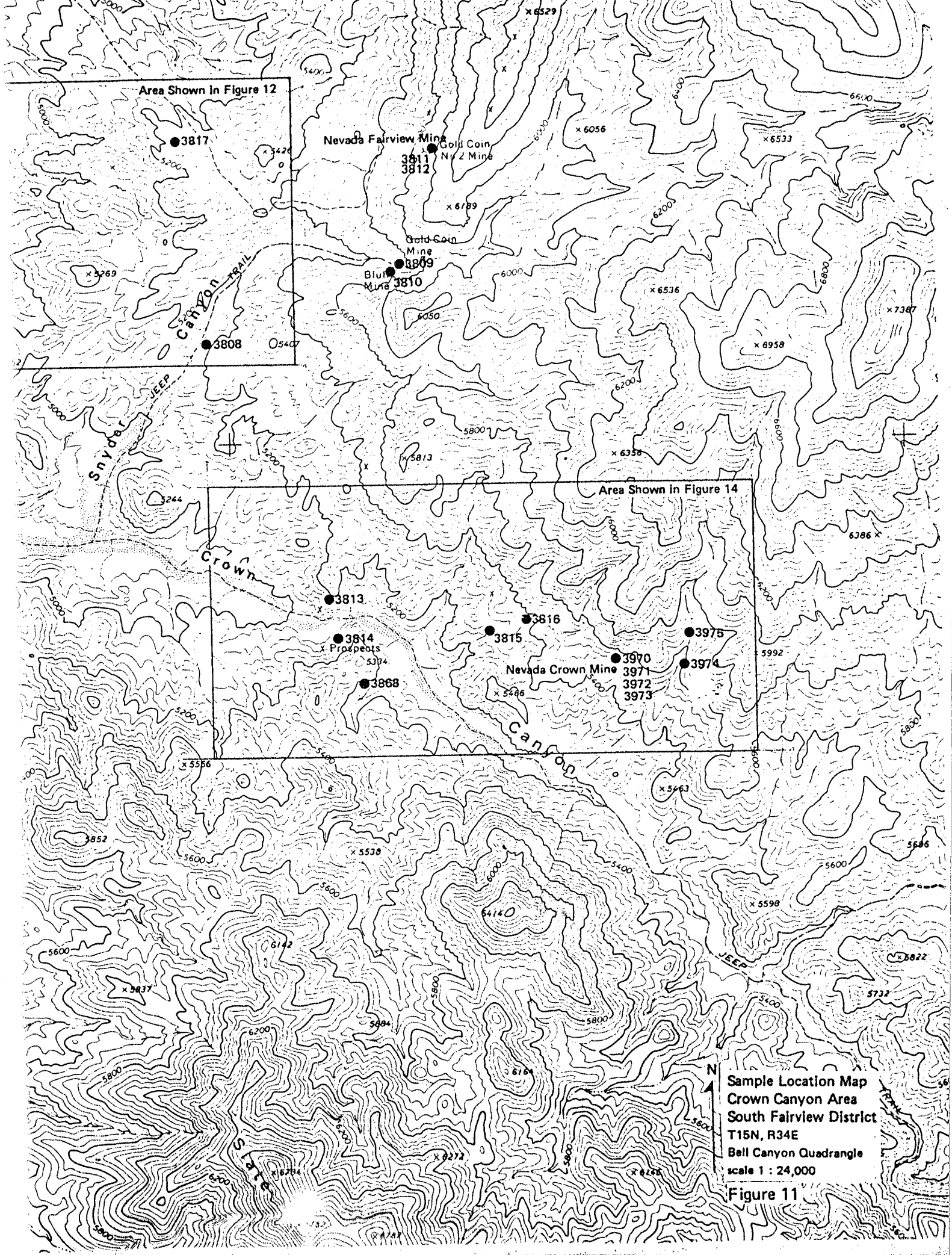
All of the area of the claim group is within the proposed land withdrawal. No record of this claim group was found when we examined the Churchill County records; Spectrum staked the ground, conducted their work, but apparently did not record the claims with either the county or the BLM.

Within the area of the Jet prospect, recent erosion of extensive alluvial cover has exposed an area of strong argillic alteration associated with a stockworks of vuggy, iron-oxide stained quartz veins in latite and andesite (see fig. 12). The alteration is exposed in an area about 4,000 feet long (north to south) by 1,000 feet wide (east to west); the altered zone is partly masked on the north by a thin cover of pediment gravels.

Assay values from nine samples taken by Spectrum and eight additional samples taken by St. Joe American (see fig. 12) were compared with a suite of samples taken by Jonson (1986b, p. 8) who examined the area for Tenneco Minerals. Jonson found that nine of ten samples taken from the stockworks area and associated with intense goethite contained anomalous gold; two of the samples were ore grade with 0.02 and 0.229 ounces gold per ton. Jonson recommended a program of detailed geologic mapping and more closely-spaced sampling to develop an open-pit drilling target. He further concluded that if there was continuity between the silicified zones, as suggested by the preliminary data, there might be the possibility of developing as much as 1.8 million tons of ore in the area (using a depth of 40 feet for calculation).

Nevada Crown Mine: The Nevada Crown Mine is located about one half mile north of Crown Canyon, about one and one half miles east of the junction of Crown Canyon and Snyder Canyon. The deposit was discovered in 1906 by W. H. Port, M. L. Sampson, and W. H. Walker and was worked intermittently until 1909. Sometime later, it was sold to W. T. Morgan and W. Moore, of the Schlitz Brewing Co. (Schrader, 1947, p. 114). The old mine property is partly within claims staked in late 1986 by Roy Spriggs and Don Strachan of Hawthorne, Nevada. The mine and surrounding claim block is completely within the proposed withdrawal area.

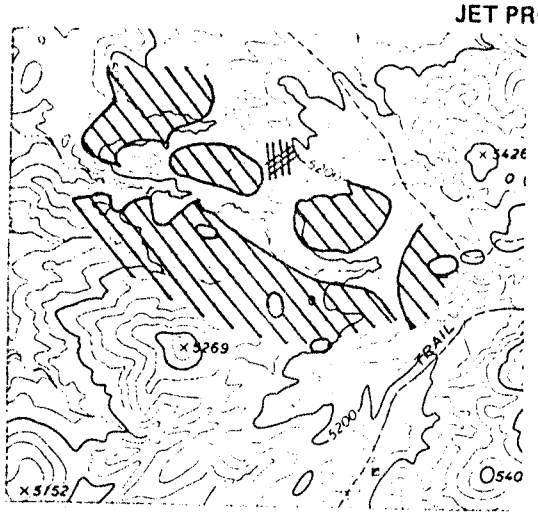
The Nevada Crown workings consist of a 600 foot long adit caved 250 feet from the portal (see fig. 13), a 250 foot deep shaft, and a smaller, exploratory shaft located about 400 feet to the north of the first. The shafts are about



Sample Location Map
Crown Canyon Area
South Fairview District
T15N, R34E
Bell Canyon Quadrangle
scale 1 : 24,000

Figure 11

JET PROSPECT

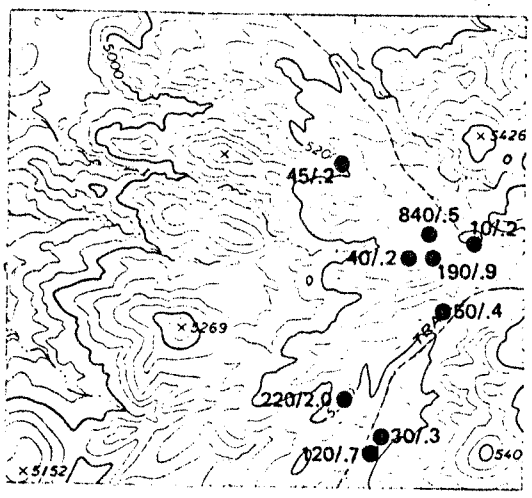


Generalized Alteration Map

Argillic Alteraration

Quartz Stockworks

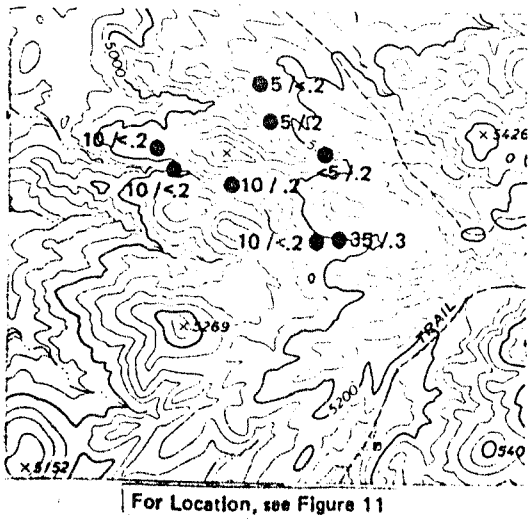
Taken from the map by the St. Joe American Corp.



Rock Sample Map

● Au in ppb / Ag in ppm

Samples taken by Spectrum Exploration. 3/5/86



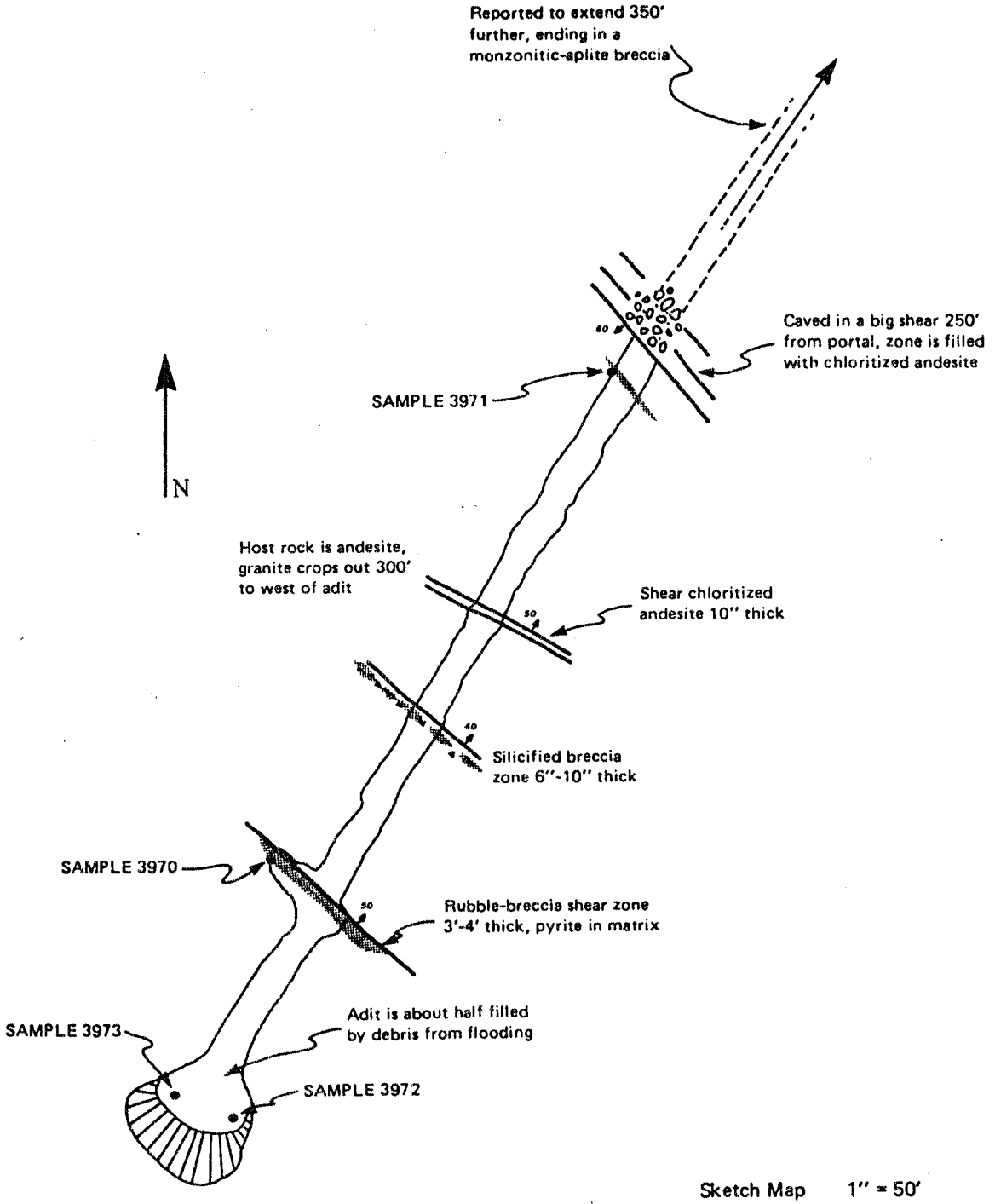
Rock Sample Map

● Au in ppb / Ag in ppm

Samples taken by the St. Joe American Corp.

For Location, see Figure 11

Figure 12



Sketch Map 1" = 50'

NEVADA CROWN MINE
North of Crown (Bell) Canyon)
SOUTH FAIRVIEW DISTRICT
CHURCHILL COUNTY
Jack Quade, Oct. 18, 1986

Figure 13 .

1,000 feet northeast of the adit. The adit runs N35°E, beginning in andesite and undercutting a 10- to 30-foot wide, highly silicified, breccia vein that bears N50°W, 40°NE. Similar fissure veins to the north follow a parallel course and form prominent outcrops extending in places over 30 feet above the adjacent land surface and ranging in width from 20 to 30 feet. Several of these structures can be traced along their strike for 1,500 to 2,000 feet. Most, however, come to an abrupt end in the canyon to the east where they are cut and faulted off by what appears to be a northwest-trending fault that may follow the narrow canyon bottom. To the west, the veins terminate against a granite which, although not shown on the Churchill County geologic map, covers an outcrop area several hundred yards across. Monzonitic aplite, found on the Nevada Crown adit dump and referred to by Schrader (1947, p. 114), is probably related to this granite mass. Our mapping of the Nevada Crown adit (see fig. 13) shows that the accessible portion of the workings is entirely within andesite, locally silicified and chlorotized along shear zones. The monzonitic aplite must occur beyond the limits of the caved adit.

To the east, at the smaller, northern-most shaft was sunk on a N5°E, 70°SE vein that intercepts a second N65°W-striking, vertical vein about 6 to 10 feet wide. Materials from the veins consist of andesite breccia containing pyrite and other sulfides in its matrix, and quartz adularia vein with some sulfides. The material is iron-oxide stained and is argillically altered; areas of strong argillic alteration and silicification appear to be restricted to the veins and to the immediate wall rock.

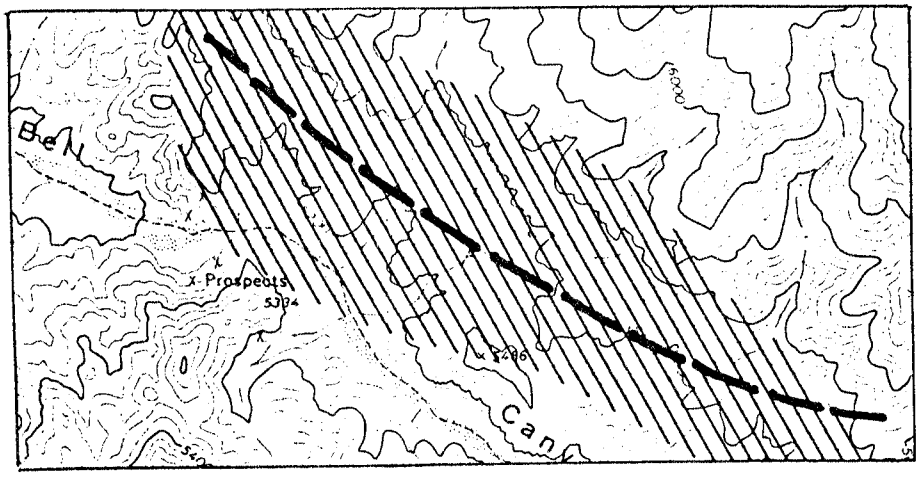
Our samples taken in this area (see fig. 11) were all very low in silver (1 ppm to 15 ppm) and only two contained detectable gold (0.05 ppm and 1.1 ppm). All but one of the samples, however, were anomalous in molybdenum (values of 100 ppm to 150 ppm). All other metallic values were very low in the samples from this area.

Rex Prospect: The Rex prospect includes lands within the Rex claim block staked in 1986 by Roy Spriggs and Don Strachan, Spectrum Exploration, Hawthorne, Nevada. The claims cover an area in Crown Canyon located just to the east of the junction of Crown and Snyder Canyons. The Nevada Crown adit falls within the boundary of the present Rex claim group. All of the Rex claims are within the area of the proposed land withdrawal and the claims were staked in July 1986, after the land was closed to mineral location.

The eastern portion of the Rex claim area is underlain by Jurassic-Triassic metasedimentary rocks which have been intruded by Cretaceous granite. Tertiary volcanic flows, sedimentary rocks, and rhyolite and dacite intrusive rocks underlie most of the western portion of the claim block. The most prominent geologic feature within the claim area is a west-northwest striking fault of regional extent that curves along the north side of Crown Canyon. This fault appears to cut and offset the mineralized structures that extend into Crown Canyon from the Nevada Fairview workings to the north.

Strachan (1986, p. 9) describes the alteration in the claim area as being moderate to intense argillization and silicification spatially associated with both veins and faulting (see fig. 14). Mineralization is described as being unlike the typical epithermal assemblage and more related to the presence of fine-grained pyrite and silver sulfides with gold being associated with areas of hematite. Jonson (1986b, p. 4), examined the Rex

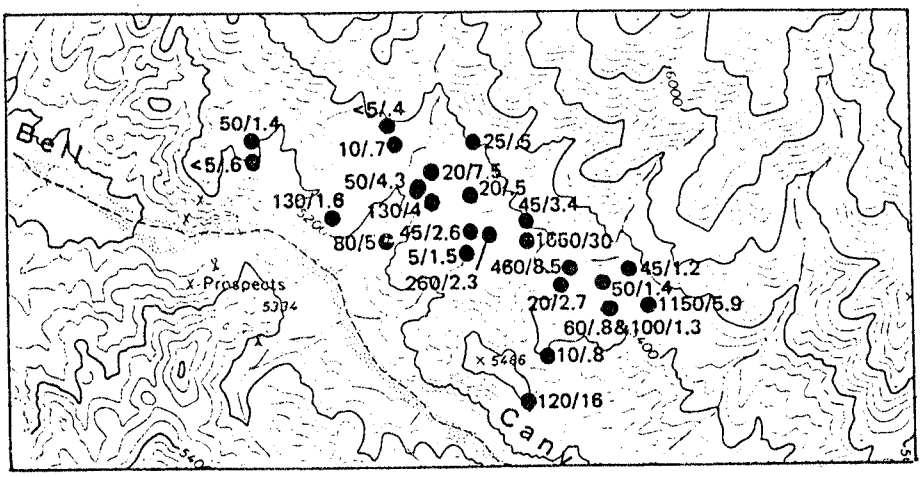
REX PROSPECT



General Area of Alteration

Fault zone 1978 Willden

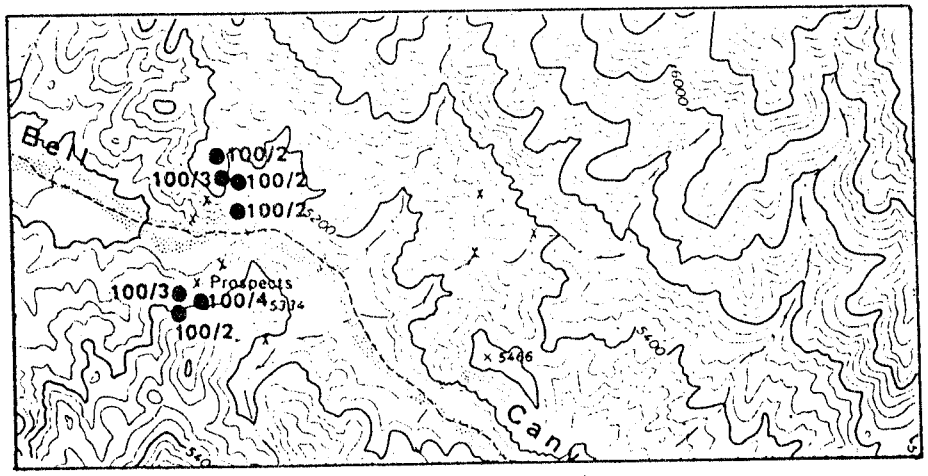
Altered area (Argillization, Silicification, Brecciation (From data of Strachan 1986)



Rock Sample Map

● Au in ppb / Ag in ppm

Samples taken by Spectrum Exploration May, 1986



Rock Sample Map

● Au in ppb / Ag in ppm

Samples taken by the Houston Oil & Mineral Co. 1978

For Location, see Figure 11

Figure 14

claims area as part of his review of the district for Tenneco Minerals, concluded that the silicified zones exposed on the claims were too narrow and much too widely spaced to be collectively mined as an open pit. He also felt that the assay values obtained from the area were too low to justify mining the veins themselves. He did, however, suggest additional sampling of some of the larger breccia outcrops. Figure 14 shows the location and results of sampling by both Tenneco Minerals and Spectrum Exploration.

Our samples 3813, 14, 15, 16, and 68, all taken from within the Rex claims, reported very low silver values (high of 15 pm) and very low base metal values. Three of the five samples contained detectable gold (0.05. 0.05, 1.2 ppm). Four of the five samples were anomalous in molybdenum with values up to 300 ppm. These samples were similar to those collected at the Nevada Crown property immediately east of the Rex claims; considered together the samples define a spotty gold anomaly associated with a moderately strong molybdenum anomaly almost 1 1/2 miles long.

Slate Mine: The Slate Mine (Midnight or Midday Mine) is located on the east side of Slate Mountain in the extreme southern portion of the Fairview district. The mine itself is south of the southern border of the proposed withdrawal area here, but portions of claims north of the mine extend into the area.

Access to the area is by traveling 14 miles south of U.S. Highway 50 via a dirt road that parallels the east side of Fairview Peak. The tungsten deposit at Slate Mountain was discovered by Mark Harris of Fallon, in 1941, and is developed by three short adits and numerous dozer cuts, trenches, and pits. The property was operated intermittently from 1941 to 1957 and has recorded a small tungsten production from ore that averaged 0.5% WO_3 (Stager and Tingley, in prep.).

The principal rock exposures in the mine area are schists, with three distinct limy beds, intruded by granite, aplite and rhyolite sills and dikes. The workings follow narrow, poorly-defined skarn zones in the lime horizons. The workings are only partly accessible and only limited rock exposures are available for examination within the mine. Contact minerals on the mine dump included epidote, garnet, calcite, and minor scheelite.

A line of caved prospects follow narrow veins and veinlets which cut granite exposed in the canyon east of the Slate Mine. These veins display irregular strikes and dips but mineralization within them appears to be quite uniform and consists of chalcopyrite, molybdenite and minor galena. These vein exposures are covered by the Lucky Four claims; the claim group and possibly the described veins extend into the southern portion of the proposed withdrawal area.

Our sampling in this area is shown on figure 15. Sample 3870 taken of skarn material contained anomalous tungsten and molybdenum. Sample 3871, from the vein occurrence, contained very high copper and molybdenum. None of the samples contained detectable gold, only one contained silver (5 ppm).

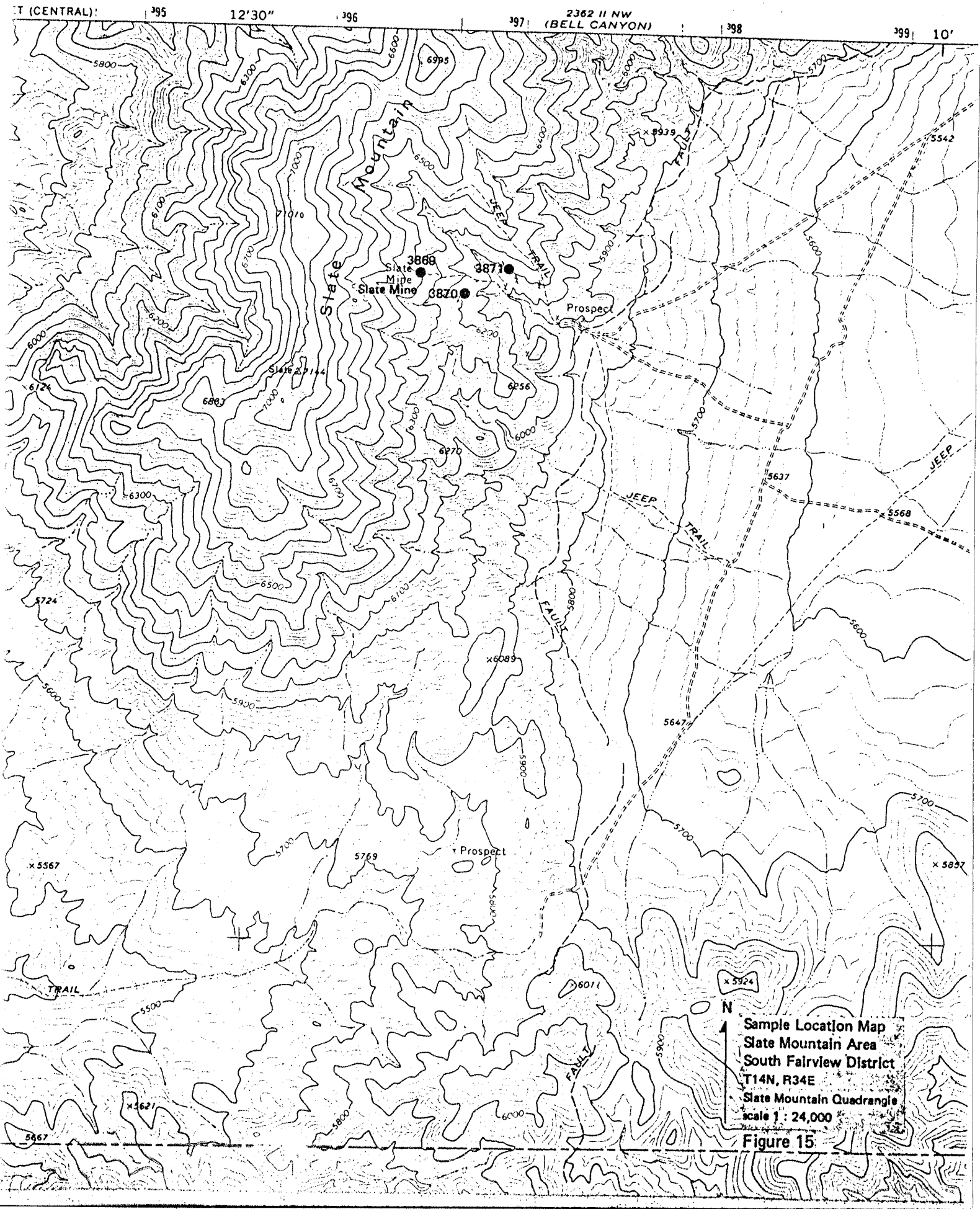

T (CENTRAL)
395
12'30"
396
2362 II NW
(BELL CANYON)
397
398
399
10'
Slate Mountain
Slate Mine
Slate Mine
3869
3871
3870
Prospect
JEEP TRAIL
FAULT
JEEP TRAIL
FAULT
FAULT
Prospect
TRAIL
N
Sample Location Map
Slate Mountain Area
South Fairview District
T14N, R34E
Slate Mountain Quadrangle
scale 1 : 24,000

Figure 15

SELECTED REFERENCES

Jennings, T. L. (1978) South Fairview district, Churchill County, Nevada: unpublished company report, Tenneco Minerals.

Jonson, D. C. (1986a) An evaluation of the mineral potential of the northern Fairview mining district: unpublished report prepared for Tenneco Minerals.

Jonson, D. C. (1986b) An evaluation of the South Fairview district, Churchill Co, Nevada: unpublished report prepared for Tenneco Minerals.

Paher, S. W. (1970) Nevada ghost towns and mining camps: Howell North, Berkeley, California.

Payne, A. L. (1985) Geological report on the Centurian prospect, Fairview mining district, Churchill County, Nevada: unpublished report.

Saunders, F. T. (1978) Preliminary geological examination, South Fairview mining district, Churchill County, Nevada: unpublished company report, Tenneco Minerals.

Schrader, F. C. (1947) Carson Sink area, Nevada: USGS Open-file report

Shamberger, H. A. (1973) The story of Fairview: Nevada Historical Press, Carson City, Nevada.

Stager, H. K., and Tingley, J. V. (in prep.) Tungsten deposits of Nevada: NBMG Bulletin.

Strachan, D. G. (1986) A prospectus, the Rex gold property, Fairview district, Churchill County, Nevada: unpublished report for Spectrum Exploration.

Vanderburg, W. O. (1940) Reconnaissance of mining districts in Churchill County, Nevada: USBM IC 7093.

Willden, R. and Speed, R. C. (1974) Geology and mineral resources of Churchill County, Nevada: NBMG Bulletin 83.