GEOLOGY OF THE SOUTH SLOPE OF PEAVINE PEAK AND ADJACENT TRUCKEE RIVER VALLEY, WASHOE COUNTY, NEVADA.

SUBMITTED IN FULFILLMENT OF GEOLOGY 451, FIELD GEOLOGY

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MAY 1969

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ABSTRACT

The south slope of Peavine Peak and the adjacent Truckee River Valley were chosen as a mapping project in fulfillment of Geology 451, Field Geology. The oldest rocks exposed in the area are Mesozoic metamorphosed sedimentary and volcanic rocks. A Cretaceous granodiorite stock intrudes the metamorphic complex. Tertiary andesites lie unconformably on the metamorphics and grandiorite. The andesites and granodiorite have been extensively altered by the action of acid ground water. Fluvo-lacustrine beds of the Coal Valley Formation lie between the fault blocks forming the Carson Range to the south and Peavine Peak to the north. Olivine basalts, the youngest volcanics in the mapped area, overlie the Coal Valley Formation. Outwash debris from Tahoe glaciation can be found along the Truckee River flood plain.

LOCATION AND ACCESSIBILITY

Peavine Peak, northwest of Reno, Washoe Country, Nevada, is an outlying peak of the Sierra Nevada of California. Only the southern slope of Peavine Peak and the adjacent lower Truckee River canyon were mapped. The 22 square-mile area includes parts of 24 sections within adjoining corners of T.19 and 20N., and R.18 and 19E., Reno 15-Minute Topographic Quadrangle.

The lower Truckee River canyon lies between the northern end of the Carson Range and Peavine Peak to the north. The buildings of Mogal, five miles due west of Reno, Nevada, lie at the western boundary of the mapped area. The Southern Pacific Railroad parallels U.S. Highway 40 through the Truckee River canyon. The valley floor is accessible by an excellent network of dirt roads, some of which are seasonally maintained by the Pacific Power and Gas Compnay in order to service their utility lines. A few jeep trails attempt to assend Peavine Peak from the south, most ending at srings or small mine dumps. A graded road has been built to the summit of Peavine Peak. Its approach is located on the north side of the mountian on old Highway 395 North. Only during the summer months and early fall is the area readily accessible.

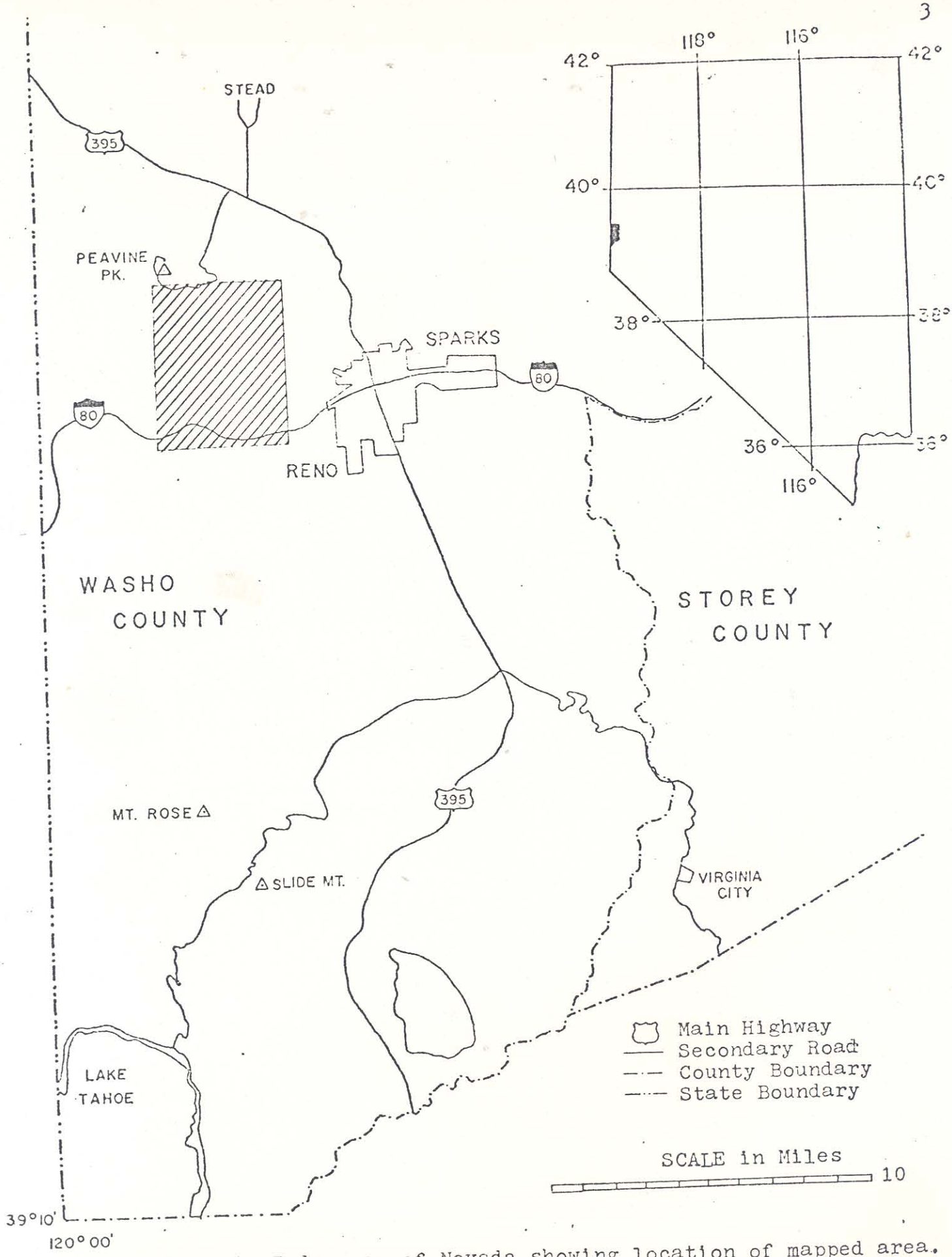

Figure 1. Index map of Nevada showing location of mapped area.

CLIMATE AND VEGETATION

The climate is semi-arid, with the yearly rainfall average being about 10 inches. The temperature in the lower elevations exceeds 100°F in midsummer and drops below 0°F during the winter. In general, during early fall, the peak becomes inaccessible due to snow that persists until June.

Vegetation varies with elevation, direction of slope, and rock outcrop. At higher elevations, sagebrush (Artemisia tridentate), and mountain mahogany (Cercocarpus ledifolius) grow abundantly, large hedges of manzanita (Arctostaphylos sp) mark areas where snow lies the longest, and quaking aspens (Populus tremuloides) surround the springs. In a few areas, pines (Pinus ponderosa), which normally only flourish to the west where rainfall is more abundant, selectively grow on acid-altered rock. The valley floor, where ranching is quite prominent, aquires most of its water by irrigation methods.

PHYSICAL AND CULTURAL FEATURES

The lowest elevation (4595') is in the southeastern corner of the mapped area at the Truckee River, while the highest elevation (7640') is located in the northwest corner. Peavine Peak, located approximately three-forths of a mile north of the northwest corner of the mapped area, reaches an elevation of 8266 feet. The maximum elevation differential within the mapped area is 3055 feet.

The northern area is characterized by steep slopes that flatten at the base where the sedimentary contact is met. The highlands are a rejuvinated old erosin surface with poor drainage, while the lower slopes are a youthful dissected surface.

Drainage is provided by a large number of intermittent dendritic streams, all of which drain toward the Truckee River. Numerous springs provide many of the intermittent streams with small water holes.

The Truckee River meanders slightly through the youthful canyon, but no distinctive flood plain has developed. The Truckee River drops approximately 30 feet per mile as it flows through the southern edge of the mapped area.

Basalt capped sedimentary buttes, hills largely of diatomaceous material or hills of well-rounded granitic boulders separated by small washes, typify the landscape immediately north of the Truckee River.

Most cultural features are located in the southern portion of the mapped area, along old U.S. Highway 40.

The new Interstate 80, which parallels old Highway 40. has been completed within the last nine months. Also in the southern portion, the Pacific Power and Gas Company maintains a gas and power line. The Southern Pacific Railroad follows the Truckee River. In the northern portion of the mapped area, a power line and road leading to a radio station and Bell System relay station located on top of Peavine Peak are the only recent cultural features. On the slopes of Peavine Peak, Numerous small mine workings are abandoned from the days of the Peavine Mining District.

INDUSTRY

Cattle ranching and dairy farms are the major industries in the area. During the summer, the higher elevations are grazed by sheep. The Truckee River supplies ampel water to irrigate land for production of winter feed. Tourism is very important to the city of Reno, just east of the mapped area. Numerous motels and small restaurants are located along the highway. For the sportsman, fishing is good in the Truckkee River and hunting becomes good when the weather is poor in the higher mountains. Mining in the immediate area was once very important. The mapped area is located in the Peavine Mining District. The majority of mine workings, however are located on the northern slopes of Peavine Peak at the site of Poeville and the Copper Field area.

PURPOSE AND METHOD OF INVESTIGATION

A geologic map with a field report was prepared during the summer of 1967-1968, and the intervening school years, in fulfillment of Geology 451, Field Geology. With the aid of Army Map Service aerial photographs (1:62,000 scale approx.), field work was plotted directly on an enlargement (1:24.000 scale) of the Reno 15 Minute Topographic Quadrangle. A library search was conducted in order that previously published works on nearby areas could be compared.

PREVIOUS INVESTIGATION

The immediate Peavine area has been investigated by many persons, since the laying out of a mining district in 1867, but little has been written in detail, especially pertaining to the southern slopes of Peavine Peak.

The first mention of the Peavine District was by Browne (1868), in his report on the operating mines of western Nevada. King (1869), in the Fortieth Parallel Survey, mapped Peavine Peak. The primary concern of Lindgren (1897) and Louderback (1907,1926) was the dating of the tectonic events. Anderson (1910), in investigating petroleum possibilities in the Reno area, describes the Truckee (Coal Valley) Formation. Hill (1915) prepared a sketch map of the Peavine District. Gianella (1948) discussed the occurrence of fused lacustrine rocks near Verdi, Nevada. Moore (1952), in an U.S. Geological Survey open file report, mapped the Mount Rose area to the east. Axelrod (1957, 1958) dated the various Tertiary continental deposits of the immediate region. Godwin (1958) in a master's thesis mapped the west slope of Peavine Peak and prepared a sketch map of the bleached rocks in the southern portion of the Reno Quadrangle. Booth (1960) also fulfilled his master's requirement by doing a heavy mineral study of the Coal Valley sediments. Thompson and White (1964),in a U.S. Geological Survey Proffessional Paper, reported on the geology and geochemistry of the Steamboat Springs area. Birkeland (1963) and Dalrymple and others (1967) correlated the Loustown Basalt of the Virgina Range with the Truckee area flows. Birkeland (1968) has described

the glacial outwash deposits of the Tahoe glaciation along the Trukee River. Bonham (in press) has just completed a geologic study of Washoe County for the Nevada Bureau of Mines.

ACKNOWLEDGMENTS

To Dr, D.B. Slemmons goes my sincere thanks for the initial idea of the study and field assistance. Discussions with Dr. Joseph Lintz, Dr. M.J. Hibbard and H.F. Bonham during the research problem were very helpful. Also I wish to acknowledge the able advice and assistance of Thomas Smith during the preparation of the Map.

INTRODUCTION TO STRATIGRAPHY

In the immediate vicinity of the mapped area, according to Louderback (1907), the bedrock complex consists chiefly of granitic rocks with residual masses of more or less metamorphosed sedimentary and igneous rocks into which they were intruded. This bedrock complex is found in the Sierran front on Peavine Peak, and in a number of small ranges to the north and northeast of Reno, and in the Carson Range to the south. A period of erosion followed the emplacement of the Cretaceous granodiorite. A series of Teriary andesite flows were then extruded onto the erosion surface. The flow rocks are flanked by sediments of the Coal Valley Formation. They are exposed in the terraced foothills sloping from Peavine Peak to the river. These Tertiary sediments , consisting of diatomaceous earth, sand , original and reworked tuff, clay, gravel and minor lignitic beds are freshwater or subaerial. Then in late Pliocene much of the canyon was covered by a thin veneer of basalt flows. In the Truckee Canyon, glacial outwash is found on some of the terraced surfaces. The foothills, river terraces and the valley floor in the Reno region are mantled with Quaternary alluvium.

FIGURE 2

OUTLINE OF ROCK FORMATIONS OF THE SOUTH SLOPE OF PEAVINE PEAK AND ADJACENT TRUCKEE RIVER VALLEY, WASHOE COUNTY, NEVADA

QUATERNARY	ALLUVIUM	Chiefly stream deposits, poorly sorted subrounded gravels, interbedded with fine sand and silt.
	GLACIAL GRAVELS	Large (size 10 feet), poorly sorted granitic and volcanic boulders.
	unconformity	
TERTIARY	OLIVINE BASALT	Olivine basalt flows forming flows and intrusions. 400 Feet.
	unconformity	
	COAL VALLEY FORMATION	Fluvo-lacustrine, andesitic sandstones and conglomerates, alternating with tuffaceous shale, diatomite, soft lake clay, and locally with liginite beds. 2100 Feet.
	unconformity	
	KATE PEAK ANDESITE	Pyroxene andesite flows, breccias, and small intrusions.
	unconformity	
	ALTA ANDESITE	Varying lithology of basalts, olivine and pyroxene andesites, and hornblende andesites. Much of the section is highly altered.
	unconformity	
CRETACEOUS	GRANODIORITE	Hornblende-biotite granodiorite
	unconformity	
JURASSIC	METAMORPHICS	Metavolcanics as basic flows and tuffs. Metasediments as marbles, slates and conglomerates.

METAMORPHICS

The metamorphic rocks consist of metasediments and metavolcanics of Jurassic age. These rocks, covering approximately 6 square miles of the northern portion of the mapped area, form the bedrock complex. The siliceous rocks are resistant to weathering and stand out as ridges, where as slates and metatuffs crumble readily on weathering and commonly form genltle slopes and canyons, (Godwin, 1958).

The metmorphic rocks are cut by randomly oriented quartz veins. Prospect holes have been dug in almost every outcrop, but no large commercial lodes have been discovered. Poor outcrops and alteration made differentiation and mapping of the various lithologic types difficult.

In the most northern portion of the mapped area, relic textures are suggestive of andesitic flows. Also present are extensive outcrops of a light gray to buff colored rocks, probably old tuffs of rhyolitic composition. The outcrops of these units are often highly fractured, with iron-and manganese-staining. In section 26, T.20N., R.18E. a metasedimentary facies was observered with well rounded pebbles in a dark colored medium grained, poorly sorted sandstone matrix. The pebbles were very apparent on weathering surfaces, where matrix material weathered more easily. The majority of the relic pebbles were of volcanic composition, indicating rhyolites, andesites, and basalts. Also observed in the same area were dark to medium gray, fine grained metamorphics which were probably shales, limestones and fine grained

sandstones. The metamorphic rocks in the lower portion of the mapped metasediments ans metavolcanics were darker in color than those at higher elevations. They are fine grained equigranular and may have been an old basic flow or tuffs.

The chief folding of the bedrock complex undoubtedly took place at the time of the extensive post-Jurassic orogenic disturbances that affected so strongly the regions just east and west of the Truckee area (Louderback, 1907).

GRANODIORITE

Louderback (1907) describes Peavine Peak as part of the Sierra Front, which consists of granites (in part granodiorites). The pluton, according to Evernden, Curtis, and Lipson (1957) is an essentially non-foliated igneous rock, probably of early Cretaceous age which intrudes the metamorphic complex. The stock is exposed over a seven square mile area, just west of the mapped area. It also outcrops as low hills north of an area between Mogul and Lawton, and several outcrops are located at the base of Peavine Peak near the sedimentary contact.

The light-gray granodiorite weathers to large, pale brown, stained boulders and a coarse arkosic sand (Fig. 3). The main constituents of the granodiorite are plagioclase feldspar, orthoclase, quartz, biotite and hornblende with common accessory minerals of sphene, apitite, magnitite and zircon. Moore (1952) in mapping the Mount Rose area, just south of the Peavine mapping area, also noted that outcrops of a granular plutonic rock best described as a hornblende-biotite granodiorite, were common throughout the entire Carson Range.

Figure 3. Outcrop of granodiorite showing typical rounded boulders with pale brown staining.

ALTA ANDESITE

At its type area in the Virginia City region 20 miles southwest of the mapped area, Alta Andesite (Gianella, 1936 and Thompson, 1956) comprises a sucession of pyroxene and hornblende andesite flows. Andesites similar to the Alta Andesite are exposed on the lower flanks of Peavine Peak north of the Truckee River (Godwin,1958).

The lithology of the Alta Andesite varies radically in composition, texture, and color with sucessive flows. The varying lithologies include basalt, olivine and pyroxene andesites, and hornblende andesites. Plagioclase and hornblende phencrysts are readily visible in most of the samples. The color may vary from dark browns, purples, greens to grays. This series of titlted Tertiary volcanics lies unconforably on weathered granodiorite and metamorphosed rocks. Parts of the section have been altered especially near the larger faults where the rocks are commonly white to yellow, reddish and rust brown, with iron oxide staining often present. Not all of the alteration seems related to faulting. In some areas away from faults, the alteration may have been controlled by the complex joint systems. On the altered areas, where there is no soil, pines (Pinus ponderosa) grows to the exclusion of most other vegetation.

McCrea (1953) mapped the basic andesites and basalts in section 34 and 35, T.20N. R.18E., as Tertiary basalts. It is felt by the writer that McCrea was mistaken in his

intrusive relationship between the volcanic rocks and the pluton, inwhich he believed that the granodiorite has intrudded the basalt. The writer found in section 2, T.19N., R.18E., near the volcanic-sedimentary contact, an exposure of andesite with the typical granodiorite boulders within the flow. Also the outcrops in the McCrea mapped area are poor and the darker metavolcanics and metasediments are easily confused with some of the darker and more massive Teriary volcanics.

ALTA ANDESITE INTRUSIVES:

An andesite dike and a remant plug located in the northern portion of the mapped area, may have partly supplied the volcanic material. Sucessive flows of Alta Andesite vary radically in composition.

Figure 4. Andesite dike intruding metamorphics.

KATE PEAK ANDESITE

The Kate Peak Andesite rest horizontally on the erroded, titled and bleached Alta Andesite. The Kate Peak is known only to be present as a small remanent on the western boundary of the mapped area. It's type area, in the Silver City area 25 miles southeast can be traced almost continuously into the Verdi Basin (Gianell,1936), where it is exposed chiefly in the Carson Range south of the Truckee River. Godwin(1958) correlated the basic pyroxene andesites and the coarsely porphyritic hornblende-biotite andesites found on the western side of Peavine Peak, with the Kate Peak Andesite. Erosion has stripped most of the Kate Peak Andesite from the southern slopes.

COAL VALLEY FORMATION

The sediments in the Truckee River Canyon near Verdi were first mapped by King as part of the Truckee Formation and have been consider as such by numerous other investigators. Axelrod (1958), after comparative studies of the Verdi sediments and late Tertiary floras, concluded that the sediments were equivalent to the type area, Coal Valley Formation (Axelrod,1956) of the Hawthorne Quadrangle. The section is 3325 feet thick and is typically fluvo-lacustrine, andesitic sandstones and conglomerates alternating with tuffaceous shale, diatomite, soft lake clays, and locally with lignitic beds. All of these beds are also present in the Verdi region. The beds are of little correlative value since they are only a few feet thich and usually pinchout laterally. In the mapped area, the Formation consist primarily of lake deposites that filled a structural basin south of Peavine Peak, which rest on an old soil that developed on volcanics or basement rocks.

Anderson (1910) reported on the sedimentsry aspects of the Truckee (Coal Valley) Formation during the earliest petroleum exploration in the Truckee Meadows. The unaltered sediments are over 2100 feet thick and make up apparently continuous, conformable sucession. The section may be divided into several zones characterized by a somewhat different grouping of various sediments, but should be regarded as one formation.

Axelrod (1958) has divided the Coal Valley Formation as follows:

> UPPER MEMBER. Light colored, ranging from gray to tan and brown or light blue, with local white diatomaceous lenses. Composed chiefly of cobble-pebble conglomerate, blue-gray sandstone and shale, predonderantly of andesitic composition. Diatomites in the section locally thick.
>
> AUGITE OLIVINE. BASALT Lower flow dense, black, and columnar jointed. Upper flows with platy jointing, dark gray to black, weathering red brown.
>
> LOWER MEMBER. Dark colored, ranging from dark brown to dark gray and blakish. Composed of cobble-boulder andesite conglomerates, local sedimentary breccias at margins of basin, coarse andesitic sandstone and shale, and thin diatomite lenses. Commonly rest on a dark regolith.

Booth (1960) in his heavy mineral study of the Coal Valley sediments, subdivided the formation into the following members:

> UPPER LACUSTRINE MEMBER. Nearly pure diatomite representing about 75 percent of the Formation. Thicker and more abundant beds of clay and bituminous rich layers (infrequently appearing as lignite) are prominent. The sandstones are more continuous, less lensing, better sorted and contain less apparent clay. Pebble conglomerates and coarse sandstones are rarely represented.
>
> LOWER FLUVIAL MEMBER. Consist largly of poorly consolidated or cemented pebble conglomerates and coarse sandstones interbedded with lesser amounts of fine clastics. The stream-laid sedimentary rocks have an almost pure andesitic composition. Thinner beds of stratified diatomite, clay and highly bituminous sedimentary rocks are found. Reeds, grass, and very few leaf impressions are found in the highly clayey and brown bituminous beds. Bits of charcoal and twigs are dispersed randomly through all types of sediments.

Axelrod's and Booth's upper and lower divisions are very similar with the exception that Axelrod places a

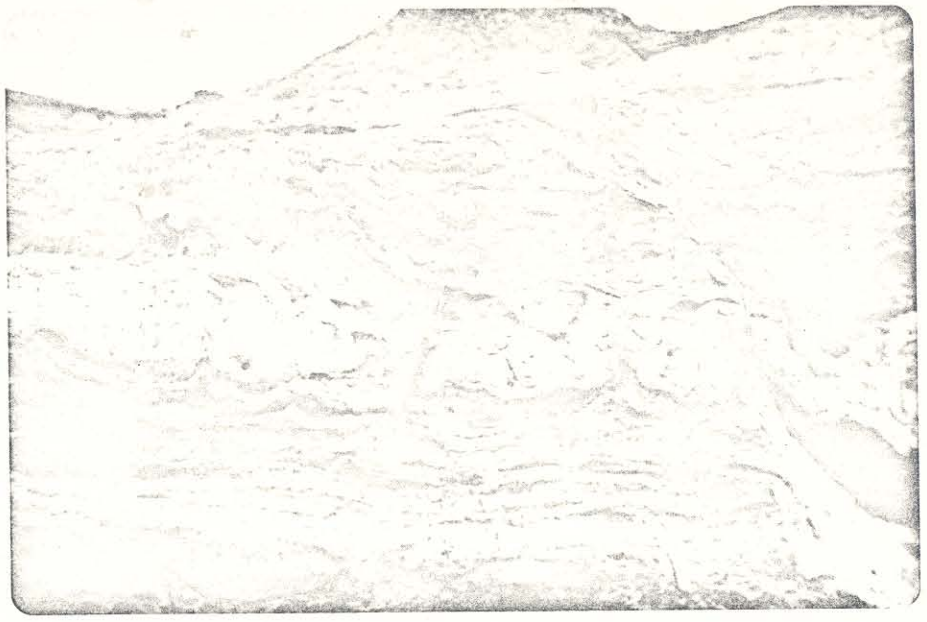

Figure 5. Contorted bedding due to differential compaction in the clastic beds of the Lower Coal Valley Formation.

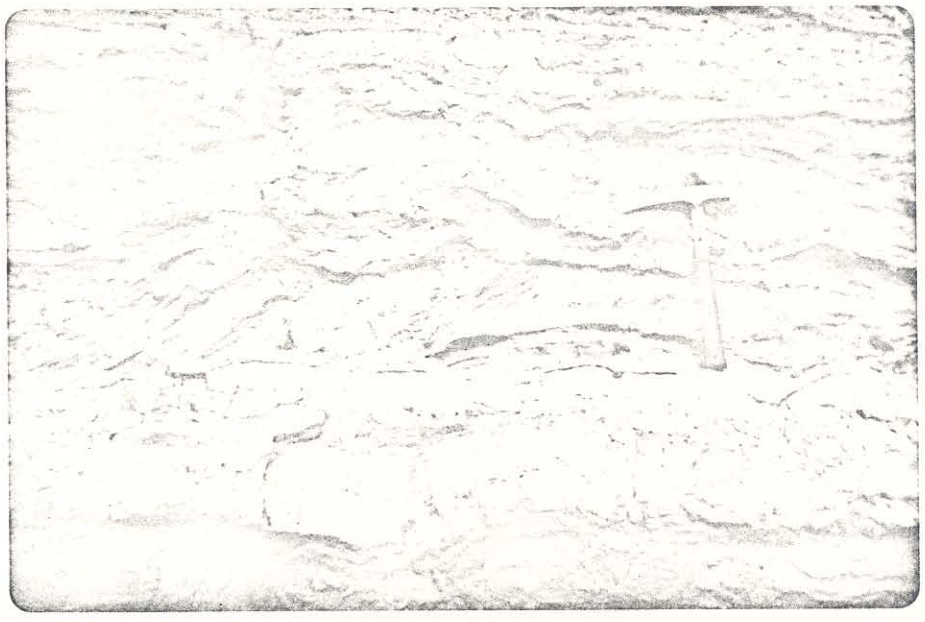

Figure 6. Crossbedding and cut-and-fill structures in the Lower Coal Valley Formation.

basaltflow between his uppper and lower members. The writer found no relationship in which the basalt flows in the area were overlain by a sedimentary facies. In section 11, T.19N. R.18E., basalt with columnar jointing (Fig.9) was observed. The joints are horizontal and may be due to cooling at a dike-sediment contact. This dike may have been a feeder for the late Tertiary basalt flows which overlie the Coal Valley Formation.

Throughout the Reno region, the Coal Valley Formation is traversed by an inticate system of small faults with throws of only a few inches or feet. The faulting is almost invariably of the normal type (Fig.8). The dip of the beds varies locally from 5° to 35°.

All fossils recovered in the Verdi Basin occur in the upper member. The Verdi flora (Axelrod, 1958), now known to include 19 species was collected a mile east of Verdi in section 9, just south of the Truckee River where the Old Verdi Road crosses the first railroad overpass. The plants occur in a blue gray sandstone. Petrified wood fragments, paper-bedded diatomaceous beds and brown lignitic beds are typical in the mapped area.

Identifiable mammalian remains have been found at four localities in the Verdi Basin. A mastodont tooth described by Buwalda (1914) come from a locality about three-fourths of a mile southeast of Verdi. A second mastodont tooth was discovered in exposures close to Mogul. A fragmentary

Figure 7. Paper-bedded diatomaceous, clay and brown lignitic beds typical of the Upper Member of the Coal Valley Formation.

Figure 8. Series of normal step-faults of small displacement in the Upper Member of the Coal Valley Formation.

specimen of a Hipparion tooth was collected by Ira LaRivers at a locality 1 mile north of Mogul. Two nearly complete skeletal assemblages of Stegomastodon (Lintz and Savage,1966) were discovered on the south flank of Peavine Peak, 3 miles northwest of Reno.

TERTIARY OLIVINE BASALT

The Tertiary Basalt in the area is a series of olivine basalts which lies unconformabaly on all of the previously described rocks and the Coal Valley sediments. The flows are restricted to the Truckee River area, where they attain a thickness of approximately 400 feet. One mile west of the mapped area, the thickness and litholcgic sequences are well-defined. Godwin (1958) noted coarse-grained basalt with columnar jointing, overlain by cream colored uncosolidated water lain tuffaceous sediments deposited on an erosioal surface. The tuffs are discontinuous to the norhtwest. Overlying these unconsolidated sediments are sucessive flows of fine-grained olivine basalt.

The average rock is a dark-gray coarse-grained, olivine-basalt containing phenocryst of olivine altering to iddingsite, augite, and plagioclase in an intergranular matrix. The surface of the rock weathers to a red-brown pitted surface. The pits represent olivine crystals, which are unstable and weather out readily.

The Tertiary Basalts in the area have been correlated with the Lousetown Formation (Birkland,1963). Potassium-argon dating of flows near the base of the type Lousetown Formation in the Virginia Range gave an age of 6.9±).19 million years. The flows in the Truckee area, however, range in age from 1.2 to 2.3 million years (Whitebread and Hoover,1968).

Figure 9. Horizontal columnar jointing in Tertiary basalt dike(?) which cuts the Coal Valley Formation

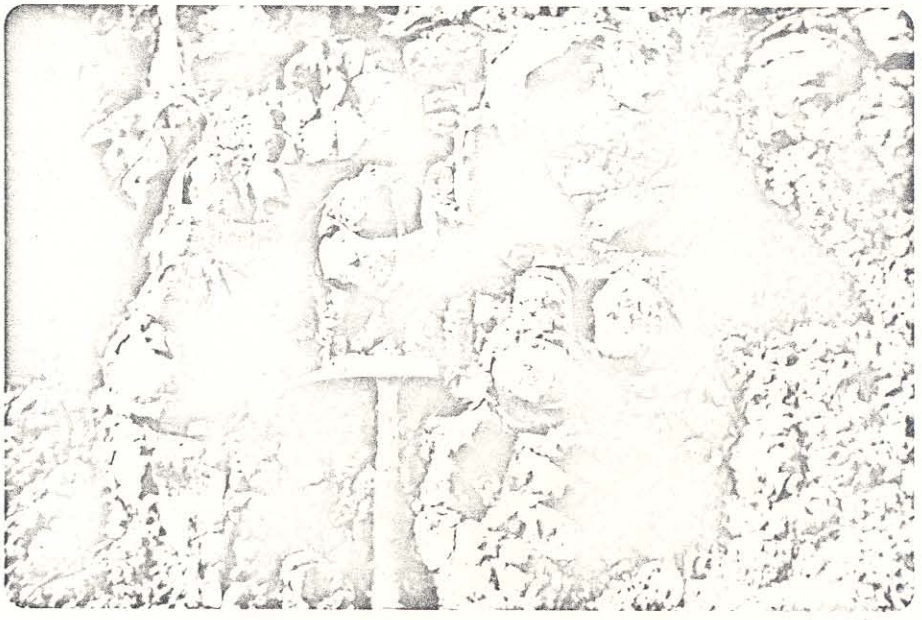

Figure 10. Spheroidal weathering in Tertiary basalts near a fault zone.

PLEISTOCENE GLACIAL GRAVELS

Resting on the tilted and eroded Coal Valley Formation are poorly sorted granitic and volcanic boulders that were derived from the Sierra Nevada to the west. The largest boulders are at Verdi and Mustang, in places where the valley first widens below a constricted section. Ten foot boulders are common in the outwash deposits, and the largest stands 40 feet above ground surface. The above features suggest catastropic floods far greater in depth and transporting power than expected under present day condition. The most likely source for large quantities of water that could be quickly released is that which was dammed behind Tahoe-age glaciers that advanced into the Truckee River Canyon immediately below the outlet of Lake Tahoe (Birkeland, 1968). The ice dam perhaps caused the lake to rise as much as 90 feet. Such a ice dammed lake, if drained rapidly, would cause a cause a catastrophic flood.

ALLUVIUM

The foothills, river terraces, and the valley floor in the Reno region are covered almost everywhere with a mantle of gravel that has been deposited since the tilting and partial removal by erosion of the Coal Valley Formation. These gravels are nearly horizontal and were deposited by streams. They are poorly sorted, subrounded gravels, interbedded with sands and silts. Mapping of the gravels was restricted to the Truckee River region where stratified gravel deposits hava a thickness of up to 50 feet or more.

ALTERED ROCKS

Alteration to some extent has affected the rocks over most of the northern portion of the mapped area. A wide band of intense alteration extends from the mapped area eastward toward the Widekind Mining District.

Alteration of this type has been described as being attribute to near-surface alteration by acid. The rocks most drastically affected are andesites and granodiorites. Sulfuric acid derived from the oxidation of pyrite near the ground surface has attacked the silicate minerals producing bleached areas inwhich the original rock is difficult to identify. Relict tectures may be identified in some specimens.

Propylitization may be present at depth, as in the Virginia Quadrangle (Tompson and White, 1964).

GEOLOGIC HISTORY - STRUCTURE

'Before the implacemrnt of the intrusive, the Jurassic sediments and volcanics were regionally metamorphosed and folded into broad gentle folds by dynamic forces. During early Cretaceous time, the granitic rock was implaced that is the core of the Great Sierra Nevada, of which the Carson Range and Peavine Peak are apart. Peavine Peak, a uplifted fault block was then stripped by erosion until the granite was exposed. Then in early Tertiary times, great quantities of volcanic were extruded over this deeply weathered erosional surface of low relief. The extrusive period was followed by another period of normal faulting and uplift. These sediments which were eroding from the andesites, granites and metamorphic rocks, found their way into the canyon which was becoming a stable lauctrine environment. This canyon was formed by the depression between the north end of the Carson Range block and the Peavine Peak block. The deression forms a syncline with the axis east-west and the Truckee River Valley lying along the axis. Near the base of the southern slope, a major fault not shown by topography is marked by the change in dip and strike between the Tertiary andesites and the Coal Valley Formation. Pleistocene and Recent alluvium cover the fault so that it is no where visible. On air photographs, a distinctive northwest trending liniment occurs in the northwest section of the mapped area. Field evidence indicating a fault was lacking due to extensive alteration and poor exposures.

Minor brecciation was noted in the metamophics near the vicinity of the liniment trace. The canyon floor remanied exceptioally stable for a long duration as evidenced by the hugh accumulation of diatomaceous deposits. Then in late Pliocene and perhaps early Pleistocene much of the canyon was covered by a thin veneer of basalt flows. The latter flowed over the surface, filling the deeper revines and capping the low hills. Within the Pleistocene faulting was widespread through out the canyon and the canyon walls rose above the floor many hundreds of feet, producing a fault block with a scarp on its north-east side and tilted gently to the southwest. This upward movement caused the gradient of the tributary streams to be increased and the area to be deeply dissected, especially the Coal Valley Formation. The Truckee River cut stream terraces as it eroded toward base level and Pleistocene glacial outwash debris was deposited along the Truckee River floodplain. Regional equilibrium has not yet been established, as recent seismic activity has occured in the Verdi and Truckee area. Also hot springs which are common in volcanically active areas are common to th Truckee River region. Two sets of hot springs, which are probably genetically connected to acute post-Tertiary deformation are found on the flanks of the Carson Range, Steamboat Springs and Lawton Hot Springs.

ECONOMIC HISTORY

The Peavine district covers an area about 16 miles from east to west and 8 miles from north to south, lying in the hills immediately north of the Truckee River, at the extreme western side of Nevada. The earliest report of mining operations in this district was by Browne in 1867. He stated that gold and silver occurs in quartz veins associated copper carbonate ore (Hill,1915).

Mineralization in the eastern portion of Peavine Peak is confined to altered areas, and Hill (1915) states the greater amount of values are associated with propylitic alteration, in which silver sulphide occurs with minor amounts of gelena and sphalerite in a gangue of sericite, calcite and quartz.

Mineralization in the west portion of Peavine is of two distinct types and of different ages. The earlier copper-gold deposition occurs in the stratified rocks and adjacent intrusives as quartz veins and chalcopyrite. The later deposits are replacement zones in the quartz monzonite and the altered areas of andesite (Overton,1947).

Although numerous small properties are located on Peavine Peak, none were properous enough to operate for prolong periods of time and no important properties are located within the mapping area. The largest properties consist of the Poeville area on the northeast slopes of Peavine Peak, which was mined for gold, silver, and copper,and the Copperfield area where copper and gold were mined.

The only record of Placer mining in the District was in the 1880's and 90's on the northeast slope of Peavine Peak. The placer occured in the vincinity of several springs which furnished water for sluicing and when this supply failed, dry washing was employed. A number of rich boulders of ore were found while placer mining was being done (Vanderburg, 1936).

Outcrops of several small iron deposits have been found on the southeast slope and near the top of Peavine Peak. Of these claims, no commercial ore bodies have been found. Exposures are small lenses and pods of magnetite which occur along fault zones in the metamorphics (Shaw,et al.,1962). Near the summit of Peavine Peak, a claim has been staked on magnetite ore, but no production from the area has occured.

Diatomaceous earth of high quality is mined from the Coal Valley Formation 20 miles east of Reno at Clark Station. Similar large exposures of diatomaceous earth are located within the mapped area and may some day be of economic significance.

In 1907, the Washoe Oil and Development Company started drilling for oil at a location several miles south of the mapped area. The well was located in the Coal Valley Formation and only showed a trace of oil in a blue shale.

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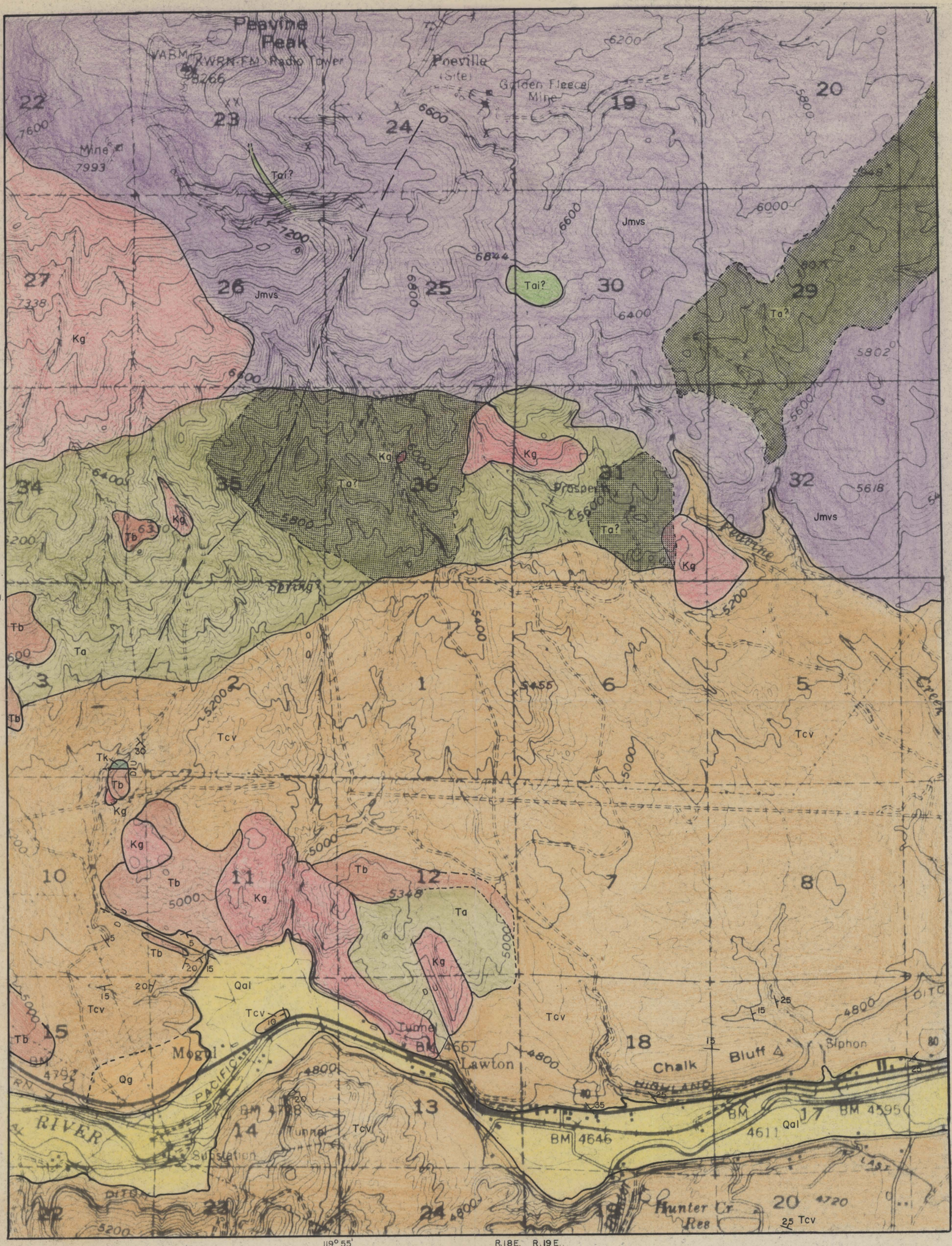

Explanation

Quaternary	Qal	Alluvium
	Qg	Glacial Gravels
Tertiary	Tb	Olivine Basalt
	Tcv	Coal Valley Formation
	Tk	Kate Peak Andesite
	Ta | Tai	Alta Andesite and Intrusives?
Cretaceous	Kg	Granodiorite
Jurassic	Jmvs	Metavolcanics and Metasediments

Highly Altered Area

Contact

Fault

Dip of Beds

Scale 1:24000

1 Mile 0 ½ 1

Contour Interval 40 Feet

Geology 1968-1969

by

Patricia A. Garside

PLATE I

GEOLOGIC MAP OF THE SOUTH SLOPE OF PEAVINE PEAK

WASHOE COUNTY NEVADA