DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

TO ACCOMPANY
WRIR REPORT 83-4119-D

MAP SHOWING OUTCROPS OF GRANITIC ROCKS, BASIN AND RANGE PROVINCE, NEVADA

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INTRODUCTION

This map report is one of a series of geologic and hydrologic maps covering all or parts of States within the Basin and Range province of the western United States. The map reports contain information on subjects that characterize the geohydrology of the province, including the ground-water hydrology, ground-water quality, surface distribution of selected rock types, tectonic conditions, areal geophysics, Pleistocene lakes and marshes, and mineral and energy resources. This work is a part of the U.S. Geological Survey's program for geologic and hydrologic evaluation of the Basin and Range province to identify potentially suitable regions for further study relative to isolation of high-level nuclear waste (Bedinger, Sargent, and Reed, 1984).

Data for this report were taken largely from Spengler and others (1979), supplemented by data from individual geologic maps and reports, following the project guidelines as defined in Sargent and Bedinger (1984). As used in this report, granitic rocks include granodiorite, quartz monzonite, and granite, and locally associated mafic rocks such as diorite and gabbro. In the Snake Range and Ruby Mountains, Stewart (1980) has recognized large areas as metamorphic core complexes, and in these complexes some plutonic masses may not extend to great depth because of lateral displacement along low-angle faults subsequent to intrusion.

The Description of Map Units includes the sources of data, the geologic, and if available, the radiometric age, lithologic character, type of intrusive body and relation to rock units, where known, for the granitic rocks within outlined and numbered areas in each county of the study area. The radiometric ages of the rock units are only those which are available and do not necessarily represent the entire age range of the geologic units.

DESCRIPTION OF MAP UNITS

[To convert feet (ft) to meters, multiply feet by 0.3048;
To convert miles (mi) to kilometers, multiply miles by 1.609]

County-area number	Map symbol	Geologic and radiometric age in millions of years (m.y.)	Lithology and comments	References for county area
		CHURCHILL COUNTY (CH)		
CH-1	Kg	Late Cretaceous 75.9±1.5	Medium-grained quartz monzonite and granodiorite(?) pluton intrudes Lower Jurassic calcareous siltstone and limestone. Low-grade metamorphism pervasive around the body.	Speed and Armstrong, 1971; Spengler and others, 1979; Willden and Speed, 1974
CH-2	Tg	Miocene to Oligocene 28±2 m.y.	IXL Canyon pluton: Composite, fine- to coarse-grained quartz-monzonite pluton intrudes and metamorphoses Tertiary volcanic rocks and Late Triassic sedimentary rocks.	Speed and Armstrong, 1971; Spengler and others, 1979; Willden and Speed, 1974
CH-3	Kg	Cretaceous 103±2 m.y.	Granodiorite and quartz monzonite pluton intrudes Upper Triassic siltstone and sandstone. Partly overlain by Tertiary volcanics. Locally bounded by high-angle faults.	Speed and Armstrong, 1971; Spengler and others, 1979; Willden and Speed, 1974
CH-4	Kg	Cretaceous 87.4±2 m.y.	Fine- to medium-grained granodiorite intrudes Upper Triassic clastic sedimentary rocks. Bounded by fault along southern margin.	Speed and Armstrong, 1971; Spengler and others, 1979; Willden and Speed, 1974
CH-5	TJg	Tertiary to Jurassic, Cretaceous(?)	Granodiorite pluton intrudes Triassic sedimentary rocks; contact metamorphosed to phyllite and slate.	Spengler and others, 1979
CH-6	TJg	Tertiary to Jurassic, Cretaceous(?)	Older, massive quartz porphyry and younger granodiorite pluton; both intrude Triassic(?) sedimentary rocks.	Spengler and others, 1979; Willden and Speed, 1974
CH-7	Kg	Cretaceous 79.6±2 m.y.	Composite granite, granodiorite, and quartz monzonite pluton cuts Upper Triassic to Middle Jurassic volcanic siltstone, mudstone, silty tuff, and limestone. Contact rocks metamorphosed to hornfels and schists. Aplite, pegmatite, andesite, and rhyolite dikes cut the pluton and adjacent metamorphic rocks. Pluton to the east (CH-10) may be part of this pluton (Willden and Speed, 1974).	Schilling, 1965; Spengler and others, 1979; Willden and Speed, 1974
CH-8	TJg	Tertiary to Jurassic	Quartz monzonite intrudes Triassic or Jurassic metavolcanic rocks. Deeply weathered and cut by aplite and pegmatite dikes.	Spengler and others, 1979; Willden and Speed, 1974

CH-9	Mzg	Cretaceous(?)	Granodiorite intrusive overlain by Tertiary volcanic rocks.	Spengler and others, 1979; Tocher, 1956
CH-10	TJg	Tertiary to Jurassic, Cretaceous(?)	Complex of porphyritic quartz monzonite and granodiorite cut by abundant aplite dikes; intrudes strongly foliated and metamorphosed Triassic and Jurassic volcanic clastics and carbonates. Pluton may be part of pluton in Sand Springs Range (Willden and Speed, 1974).	Spengler and others, 1979; Willden and Speed, 1974
CH-11	TJg	Tertiary to Jurassic, Cretaceous(?)	Granodiorite and (or) quartz monzonite. Overlain by volcanic rocks.	Spengler and others, 1979; Willden and Speed, 1974

CLARK COUNTY (CL)

CL-1	Yg	Precambrian Y 1,060 to 1,450±25 m.y.	Porphyritic granites and quartz monzonites intrude Precambrian gneisses, migmatites, older granites, pyroxenites, and hornblendites. Part of roof of a batholith with numerous cupolas, dikes, inclusions, and intrusion breccias.	Longwell and others, 1965; Spengler and others, 1979; Stewart, 1980; Volborth, 1962
CL-2	Ti	Tertiary	Wilson Ridge pluton: Composed of dike-like masses in ranging composition from rhyolite to basalt and from porphyritic granite to porphyritic diorite.	Anderson, 1973; Spengler and others, 1979
CL-3	Ti	Tertiary 13.8±0.6 m.y.	Railroad Pass pluton: Granite porphyry, rhyolite, and trachyandesite. Overlain by alluvium and Tertiary volcanics.	Anderson and others, 1972; Armstrong, 1970b; Longwell and others, 1965; Schilling, 1965; Spengler and others, 1979
	Tg	Tertiary 12.5±0.5 to 13.8±0.6 m.y.	Boulder City pluton: Granodiorite to granite pluton intrudes Tertiary Patsy Mine Volcanics. Highly faulted and brecciated.	
CL-4	Tg	Tertiary 14.0±0.5 m.y.	Fine- to medium-grained quartz monzonite containing augite and biotite. Near Searchlight.	Anderson and others, 1972; Armstrong, 1970b; Bingler and Bonham, 1973; Callaghan, 1939; Krueger and Schilling, 1971; Schilling, 1965; Spengler and others, 1979; Stewart, 1980; Volborth, 1973
		Tertiary 26(+4,-2) m.y.	Knob Hill pluton: granite. Comprises most of area.	
	Yg	Precambrian Y	Gneiss, schist, and granite. Locally overlain by klippen of megabreccia composed of Precambrian granite, and rhyolitic and andesitic blocks. Area has undergone at least three major orogenic events subsequent to Paleozoic (Volborth, 1973).	

CL-5	Yg	Precambrian Y 1,450±25 m.y.	Gray, foliated gneissic granite intruded by pegmatitic dikes; contains subangular fragments of dark schist. Granite about 75 percent orthoclase crystals. Locally overlain by Tertiary rocks.	Bingler and Bonham, 1973; Hewett, 1956; Longwell and others, 1965; Spengler and others, 1979; Stewart, 1980
CL-6	Kg	Cretaceous(?)	Quartz monzonite intrudes Precambrian X medium- to fine-grained quartz-feldspathic gneiss. Stock pervasively silicified and sericitized. Bingler and Bonham (1973) mapped as Cretaceous, but Schilling (1965) reported lead-alpha age of 927±90 m.y.	Bingler and Bonham, 1973; Schilling, 1965; Spengler and others, 1979
CL-7	Tg	Tertiary 8.1±2.7 to 16.8±0.6 m.y.	Spirit Mountain pluton: Microgranite, rapakivi granite, and muscovite granite cut by numerous rhyolite and diabase dikes.	Anderson and others, 1972; Mathis, 1982; Spengler and others, 1979; Stewart, 1980; Volborth, 1973
	Yg	Precambrian Y 1,450±25 m.y.	Granite and metamorphic rocks surrounding Tertiary granite. Cut by numerous dikes of rhyolite, diabase, pegmatite and aplite. Westernmost outcrop lithologically similar to granite in area CL-5.	
			DOUGLAS COUNTY (D)	
D-1	Kg	Cretaceous	Non-porphyritic quartz monzonite, granodiorite, and hybrid mafic rocks.	Bingler, 1977; Hudson and Oriel, 1979; Krueger and Schilling, 1971; Spengler and others, 1979
	KJd	Cretaceous and Jurassic	Diorite(?)	
	Jg	Jurassic 146±8 m.y.	Porphyritic quartz monzonite, hornblende-dacite porphyry, and granite porphyry.	
	Mzg	Mesozoic	Medium- to coarse-grained granodiorite, locally foliated and lineated. Fine-grained diorite locally.	
D-2	Mzg	Mesozoic	Granodiorite, quartz monz-quartz diorite. Plutons cut Triassic and Jurassic meta-sedimentary and metavolcanic rocks. Cut by normal faults.	Spengler and Stewart and others, 1982
			ELKO COUNTY (EL)	
EL-1	Kg	Cretaceous	Quartz monzonite and grano-diorite intrudes Permian sedimentary rocks. Cut by normal faults.	Spengler and others, 1979
EL-2	TJg	Tertiary to Jurassic	Granitic stock intrudes Permian sedimentary rocks. Cut by normal faults.	Spengler and others, 1979

EL-3	Tg	Tertiary 38.4±1.5 m.y.	Mount Neva pluton: Granodiorite stock intrudes Ordovician volcanic and siliceous rocks. Partly overlain by Tertiary tuffs.	Coats and McKee, 1972; McKee and Marvin, 1976; Spengler and others, 1979
EL-4	Tg	Tertiary 12 m.y.	Nannie's Peak intrusive and Lone Mountain pluton: Quartz monzonite porphyry intrudes Devonian(?) limestone.	Coats and McKee, 1972; Lovejoy, 1959; Spengler and others, 1979
EL-5	TJg	Tertiary to Jurassic 150 m.y.	Granodiorite pluton intrudes Cambrian and Ordovician sedimentary rocks. Partly overlain by rhyolite flows.	Coats and others, 1965; Spengler and others, 1979
EL-6	TJg	Tertiary to Jurassic	Granitic stocks; northern exposure intrudes Mississippian and Pennsylvanian sedimentary rocks. Southern exposure surrounded by alluvium.	Spengler and others, 1979
EL-7	Tg	Tertiary 38.3±1.3 m.y.	Quartz monzonite and diorite stock intrude Ordovician, Devonian, and Silurian sedimentary rocks and Tertiary quartz porphyry. Numerous dikes of quartz-monzonite porphyry and biotite-granodiorite porphyry. Date is on quartz monzonite.	Evans and Ketner, 1971; Spengler and others, 1979
EL-8	TJg	Tertiary to Jurassic	Granodiorite and quartz porphyry stock intrudes upper Paleozoic sedimentary rocks.	Ketner, 1973; Spengler and others, 1979
EL-9	TJg	Tertiary to Jurassic, Tertiary(?)	Quartz monzonite(?) intrudes Permian and Lower Triassic sedimentary rocks.	Spengler and others, 1979
	KJd	Cretaceous and Jurassic	Diorite intrudes Permian and Lower Triassic sedimentary rocks.	
EL-10	Tg	Tertiary 33(+5,-2) m.y.	Quartz monzonite stock intrudes and metamorphoses Paleozoic sedimentary rocks.	Schilling, 1965; Smith and Ketner, 1978; Spengler and others, 1979
EL-11	Tg	Tertiary 26 to 40 m.y.	Harrison Pass pluton: Coarse-grained, porphyritic biotite granite; cuts sediments and quartzite of Devonian age.	Coats and others, 1965; Schilling, 1965; Sharp, 1942; Snoke, 1980; Spengler and others, 1979; Stewart, 1980; Willden and Kistler, 1969; Willden and others, 1967
	Kg, Jg	Cretaceous and Jurassic	Granite intrudes older Mesozoic sedimentary rock and pegmatitic granite mixture. Ruby Mountains described as part of metamorphic core complex (Snoke, 1980; Stewart, 1980)	
EL-12	TJg, Jg	Tertiary to Jurassic and Jurassic	Granodiorite and quartz monzonite intrude Permian sedimentary rocks.	Spengler and others, 1979
EL-13	TJg	Tertiary to Jurassic	Granodiorite(?) stock in area of Tertiary rhyolite flows.	Spengler and others, 1979

EL-14	TJg	Tertiary to Jurassic	Monzonite and syenite stocks.	Granger and others, 1957; Schilling, 1965; Spengler and others, 1979
	Kg	Cretaceous 125(+19,-6) m.y.	Monzonite and syenite stocks, margins are finer grained and more mafic. Intrudes Permian limestone and shale.	
EL-15	TJg	Tertiary to Jurassic	Discontinuous exposures of granite, monzonite, and granodiorite; intrude Permian sedimentary rocks.	Granger and others, 1957; Spengler others, 1979
EL-16	TJg	Tertiary to Jurassic	Quartz monzonite stock intrudes Mississippian and Pennsylvanian sedimentary rocks. Overlain by andesite flows.	Schilling, 1965; Spengler and others, 1979
	Jg	Jurassic 140(+20, -7) m.y.	Quartz monzonite stock intrudes Devonian sedimentary rocks.	
EL-17	Tg	Tertiary 33.4±0.7 m.y.	Locally coarse-grained and porphyritic quartz monzonite stock, intrudes Cambrian limestone, and is cut by aplitic and mafic dikes. Uniform texture.	Granger and others, 1957; Hose and others, 1976; McKee and Marvin, 1976; Schilling, 1965; Spengler and others, 1979

ESMERALDA COUNTY (ES)

ES-1	Tkg, Mzg	Triassic(?) and Mesozoic	Granite and quartz monzonite plutons intrude Middle Triassic(?) Excelsior Formation of greenstone, breccia, and tuffaceous sandstone. Overlain by Tertiary tuffs and displaced by high-angle normal faults.	Spengler and others, 1979
ES-2	Kg, Mzg	Cretaceous(?) 89.8±2.0 to 91.7±2.4 m.y. and Mesozoic	Quartz monzonite plutons intrude sedimentary rocks of Ordovician to Precambrian ages. Northern outcrops within Walker Lane fault zone. Southernmost outcrop overlain by Tertiary tuffs.	Ferguson and others, 1954; Speed and Kistler, 1980; Spengler and others, 1979; Stewart, 1979
ES-3	Tkg	Triassic (?)	Quartz monzonite pluton intrudes Ordovician sedimentary rocks. Located within Walker Lane fault zone.	Spengler and others, 1979
ES-4	Kg	Cretaceous 63.7 to 71±1.4 m.y.	Lone Mountain pluton: Coarse- to medium-grained granite to quartz monzonite, intrudes Precambrian and Cambrian sedimentary rocks. Pluton roughly concordant with and occupies core of gently plunging anticline. Cut by diabase dikes.	Albers and Stewart, 1972; Bonham and Garside, 1979; Edwards and McLaughlin, 1972; Silberman and others, 1975; Spengler and others, 1979

	KJd	Cretaceous and Jurassic	Aphanitic to medium-grained diorite to andesite.	
	Mzg	Mesozoic	Weepah pluton: Quartz monzonite intrudes Precambrian and Cambrian sedimentary rocks. In southwestern part of area within Walker Lane fault zone. Other outcrops undescribed.	
ES-5	Kg	Cretaceous 70.7 and 74.5 m.y.	Quartz monzonite of Marble Creek: Medium-grained, porphyritic quartz monzonite; in southern one-third of area.	Anderson, 1937; Crowder and others, 1972; Evernden and Kistler, 1970; Krauskopf, 1971; McKee, 1982; McKee and others, 1982; Robinson and Crowder, 1973; Spengler and others, 1979
		Cretaceous 80 to 90 m.y.	Adamellite of Boundary Peak: Massive, medium-grained, leucocratic adamellite. Foliated near western contact; in northern two-thirds of area.	
	Jg	Jurassic 157 m.y.	Adamellite and granite of Pellisier Flats: Medium- to coarse-grained, locally porphyritic adamellite and granite, containing diorite inclusions; local leucocractic phase is cut by felsic and aplitic dikes. In White Mountains fault zone, on northwestern end of area, flaser and augen gneisses and mylonite formed by shearing. Anderson (1937) describes albitization of unit.	
	Trd	Triassic	Hornblende diorite of Queen Canyon: Fine- to medium-grained hornblende diorite. Cut by dikes of adamellite and granite of Pellisier Flats and dikes of hornblende granodiorite.	
ES-6	Jg	Jurassic 170 m.y.	Adamellite of Beer Creek and Dyer pluton: Porphyritic, medium- to coarse-grained hornblende-biotite adamellite intrudes Lower Cambrian metamorphosed siltstone and quartzite.	Krauskopf, 1971; McKee and Nash, 1967; Robinson and Crowder, 1973; Robinson and others, 1976; Spengler and others, 1979; Stewart and others, 1974
ES-7	Tg	Tertiary 42±2 and 51±2 m.y.	Mineral Ridge pluton: Quartz monzonite and granitic pegmatite intrude Precambrian siltstone and limestone of Wyman Formation. Unit concordant with surrounding country rock, and occupies core of gently plunging anticline.	Albers and Stewart, 1972; Spengler and others, 1979
	Mzg	Mesozoic	Rock compositionally similar to Mineral Ridge pluton.	

ES-8	KJd, Jg, Mzg	Cretaceous to Jurassic, Jurassic, and Mesozoic	Quartz monzonite and diorite(?) plutons locally intrude Lower Cambrian and Ordovician sedimentary rocks. Locally overlain by Tertiary volcanic rocks. In Walker Lane fault zone.	Spengler and others, 1979; Stewart and Carlson, 1978
ES-9	Mzg	Mesozoic	Clayton Ridge pluton: Quartz monzonite pluton intrudes Precambrian and Cambrian metamorphosed siltstone and quartzite, Probably connected with Sylvania pluton (see ES-11) in subsurface. In southern half of area.	Albers and Stewart, 1972; Spengler and others, 1979
	Mzg	Mesozoic	Northern outcrop is quartz monzonite pluton which intrudes Precambrian and Cambrian siltstone, quartzite, and carbonates; in Walker Lane fault zone.	
ES-10	Kg	Cretaceous	Fine-grained leucocratic granite; southeastern-most tip composed of numerous dikes and masses that cut Palmetto pluton.	Albers and Stewart, 1972; McKee and Nelson, 1967; Spengler and others, 1979; Stewart and others, 1974
	KJd	Cretaceous and Jurassic	Aphanitic to medium-grained diorite to andesite.	
	Jg	Jurassic 147.0±5 to 170 m.y.	Palmetto pluton: Medium- to coarse-grained, locally porphyritic, locally melanocratic adamellite. Locally, small inclusions of diorite.	
ES-11	KJd	Cretaceous to Jurassic	Aphanitic to medium-grained, dioritie to andesitie.	Albers and Stewart, 1972; Evernden and Kistler, 1970; McKee, 1968a; McKee and Nelson, 1967; Spengler and others, 1979
	Jg	Jurassic 149±6 to 155±6 m.y.	Sylvania pluton: Medium- to coarse-grained porphyritic adamellite; intrudes Precambrian Wyman Formation of siltstone and limestone. Partly overlain by Tertiary tuff. Concentric to and probably part of Silver Peak-Palmetto-Montezuma orocline. Cut by high-angle normal faults.	
	Mzg	Mesozoic	Coarse-grained monzonite(?) to granodiorite(?).	
ES-12	Ti	Tertiary	Monzonite and diorite pluton probably intrudes sedimentary rocks of Cambrian, Ordovician, and Mississippian age. Partly overlain by Tertiary volcanics; cut by high-angle normal fault.	Spengler and others, 1979
			EUREKA COUNTY (EU)	
EU-1	Tg	Oligocene or Eocene 37±0.8 m.y.	Granodiorite, some epidote and sericite alteration.	Evans, 1974a, 1974b; Roberts and others, 1967; Spengler and others, 1979

	TJg	Tertiary to Jurassic	Granitic pluton intrudes Ordovician sedimentary rocks.	
	Kg	Cretaceous 106±2 m.y.	Granite stock intrudes Cambrian and Ordovician dolomite and quartzite. Stock cuts Roberts Mountain thrust.	
	KJd	Cretaceous and Jurassic 121±5 m.y.	Granodiorite, granite, diorite, and some gabbro; intrude Ordovician chert and shale. Hydrothermally altered locally. Cuts Roberts Mountain thrust.	
EU-2	TJg	Tertiary to Jurassic	Quartz monzonite pluton intrudes older Mesozoic volcanic rocks. Partly overlain by Tertiary volcanic rocks.	Spengler and others, 1979
EU-3	Jg	Jurassic	Granodiorite and fine-grained monzodiorite pluton intrudes Pennsylvanian or Permian sandstones and Permian(?) quartz-latite porphyry. Local chloritization.	Muffler, 1964; Spengler and others, 1979
EU-4	KJg	Cretaceous and Jurassic 125 to 150 m.y.	Granodiorite and quartz monzonite and lesser amounts of diorite, tonalite, alaskite, quartz albitite, and adamellite; intrudes sedimentary rocks of Pennsylvanian or Permian age and some Jurassic or Cretaceous volcanic rocks. Plutons cut by numerous dikes and irregular bodies of altered dacite and rhyodacite porphyry. Pervasive deuteric alteration.	Gilluly and Masursky, 1965; Muffler, 1964; Schilling, 1965; Spengler and others, 1979; Stewart and McKee, 1977; Stewart and others, 1975; Wells and others, 1971;
	Jg	Jurassic 150 m.y.	Mill Canyon stock: Quartz monzonite with granodiorite border; intrudes carbonate rocks and cuts Roberts Mountain thrust.	
EU-5	Tg	Tertiary 33 m.y.	Porphyritic granodiorite stock exposed in Keystone window of Roberts Mountain thrust. Rocks in eastern exposure intrude Ordovician sedimentary rocks in upper thrust plate of Roberts Mountain thrust.	Silberman and McKee, 1971; Spengler and others, 1979; Stewart and others, 1975
EU-6	Jg	Jurassic 165(+25, -8) m.y.	Muscovite alaskite pluton intrudes Paleozoic shales and carbonates.	Merriam and Anderson, 1942; Schilling, 1965; Spengler and others, 1979
EU-7	Tg	Tertiary	Granodiorite porphyry pluton intrudes Ordovician carbonate and quartzite.	Spengler and others, 1979
EU-8	Ti	Tertiary	Diorite to granite stock intrudes Ordovician carbonate rocks.	Spengler and others, 1979

HUMBOLDT COUNTY (H)

H-1	Kd	Cretaceous 92.4±1.3 and 93.7±1.3 m.y.	Pueblo Mountains pluton: Quartz diorite intrudes Permian-Triassic schist, hornfels, and marble. Pueblo Mountains are an uplifted block; pluton cut by high-angle normal faults.	Fiebelkorn and others, 1982; Harrold, 1972; Spengler and others, 1979
H-2	Kg	Cretaceous 90.6±3.2 to 120±15 m.y.	Bilk Creek Mountains pluton: Granodiorite partly overlain by Tertiary volcanics.	Greene, 1976; Spengler and others, 1979; Willden, 1964
H-3	Kg	Cretaceous	Granodiorite plutons locally intruded by alaskite and partially overlain by Tertiary volcanics. Larger pluton bounded and cut by high-angle normal faults along western edge.	Spengler and others, 1979; Willden, 1964
H-4			Four plutons intrude Permian and older volcanics and Triassic-Jurassic limestone, phyllite, slate, and quartzite. Partially overlain by Tertiary volcanics.	Harrold, 1972; Smith, 1973; Spengler and others, 1979
	Kg	Cretaceous 96.2±3.5 m.y.	Duffer Peak Granodiorite, massive.	
	Kg	Cretaceous 100 m.y.	Rattlesnake Spring Granodiorite, coarse-grained, massive; in northeast part of area.	
	Kg	Cretaceous	New York Peak Quartz Monzonite, medium- to coarse-grained; border facies of Duffer Peak and Rattlesnake Spring Granodiorites.	
	Jd	Jurassic 147 m.y.	Theodore Quartz Diorite, medium-grained, massive, weakly foliated.	
H-5	Kg	Cretaceous 97.8±3 and 99.5±5 m.y.	Santa Rosa Peak pluton: Granodiorite, intrudes Triassic metamorphic rocks; cut by high-angle normal faults. The metamorphic aureole is as much as one mi wide and contains schist and hornfels. Locally overlain by Tertiary volcanic rocks and cut by high-angle normal faults.	Silberman and McKee, 1971; Spengler and others, 1979; Willden, 1964
H-6	Kg, Mzg	Cretaceous and Mesozoic	Granodiorite. Main mass intrudes metasediments, cut by high-angle normal faults, faulted against metavolcanics, and partially overlain by Tertiary volcanics.	Spengler and others, 1979; Stewart and Carlson, 1978; Willden, 1964
H-7	Ti	Tertiary	Dacite porphyry and microdacite plugs and small stocks. Larger feldspar crystals in porphyry altered to clay. Unit intrudes Pansy Lee Conglomerate (Cenozoic) and is overlain by dacite flows.	Spengler and others, 1979; Willden, 1963

	KJd	Cretaceous and Jurassic	Diorite intrusives; plagioclase altered to clay.	
	Mzg	Cretaceous(?)	Granodiorite, partly chloritized; intrudes Happy Creek Volcanics (Permian or older).	
H-8	Mzg	Cretaceous(?)	Granodiorite, partially overlain by Tertiary sediments and volcanics; bounded by high-angle normal fault on southwest.	Spengler and others, 1979; Willden, 1964
H-9	Mzg	Cretaceous(?)	Granodiorite, intrudes Triassic-Jurassic phyllite, slate, and quartzite; partially overlain by Tertiary andesite and basalt.	Spengler and others, 1979; Willden, 1964
H-10	Kg	Cretaceous	Granodiorite, intrudes phyllite, limestone lenses, and quartzitic sandstone of Singas Formation. Country rock metamorphosed to schist and hornfels. Large diabase dikes and some of andesite, dacite, and rhyolite cut pluton and Singas Formation.	Spengler and others, 1979; Willden, 1964
H-11	Kg	Cretaceous 88.3±1.8 to 92.2±1.8 m.y.	Osgood Mountains stock: Granodiorite intruded and metamorphosed Cambrian Preble Formation to phyllite hornfels, schist, marble, and tactite. Stock well jointed and unaltered. Area complexly faulted by thrust and high-angle normal faults.	Hotz and Willden, 1961, 1964; Silberman and McKee, 1971; Spengler and others, 1979
H-12	Mzg	Cretaceous(?)	Donnelly Peak pluton: Granodiorite intrudes Triassic-Jurassic phyllite, slate and quartzite. Partly overlain by Tertiary volcanics; bounded by high-angle normal fault on western edge.	Spengler and others, 1979; Willden, 1964
H-13	Kg	Cretaceous(?) 135±15 m.y.	Granodiorite, diorite, and syenite plutons; intrudes Permian or older Happy Creek Volcanics. Partly overlain by Tertiary andesite and basalt.	Spengler and others, 1979; Willden, 1964
H-14	KJd, Mzg	Cretaceous and Jurassic and Mesozoic	Diorite and granodiorite intrude Permian-Triassic and older volcanic and sedimentary rocks.	Spengler and others, 1979; Willden, 1964
H-15	KJd	Cretaceous and Jurassic	Diorite intrudes phyllite, slate, and quartzite of Triassic-Jurassic age.	Spengler and others, 1979
H-16	KJd	Cretaceous and Jurassic	Diorite, intrudes Triassic shale, sandstone, limestone, and quartzite.	Ferguson and others, 1951; Spengler and others, 1979

H-17	Kg	Cretaceous 99±5 to 101±3 m.y.	Granodiorite intrudes Paleozoic metasedimentary and sedimentary rocks. Locally altered by silica.	Erickson and Marsh, 1974a, 1974b; Ferguson and others, 1952; Spengler and others, 1979
H-18	TJg, Kg	Tertiary to Jurassic and Cretaceous 104±2 and 105±0.5 m.y.	Granodiorite plutons, intrude Paleozoic meta-sedimentary and sedimentary rocks.	Gilluly, 1967; Silberman and McKee,1971; Spengler and others, 1979
H-19	Jg	Jurassic 145±3 to 160±3 m.y.	Granodiorite intrudes Paleozic metasedimentary and sedimentary rocks.	Ferguson and others, 1952; Silberman and McKee, 1971; Spengler and others, 1979

LANDER COUNTY (LA)

LA-1	Tg, TJg	Tertiary 38.0 to 38.5±0.8 m.y. Tertiary to Jurassic	Copper Canyon stock: Granodiorite and quartz monzonite intrude Cambrian and Pennsylvanian-Permian sedimentary and volcanic rocks.	Ferguson and others, 1952; Roberts, 1951, 1964; Silberman and Mckee, 1971; Spengler and others, 1979;
	Kg	Cretaceous 87.0±1 and 87.2 m.y.	Trenton Canyon stock: Granodiorite intrudes Pennsylvanian-Permian sedimentary rocks. Feldspar moderately sericitized and chloritized.	Stewart and others, 1975, 1977; Theodore and others, 1973
LA-2	Tg	Tertiary 36.7±0.7 to 38.0±0.8 m.y.	Granite Mountain stock: Granodiorite and minor quartz monzonite; intrudes Ordovician, Silurian, Devonian, and Triassic volcanic and sedimentary rocks. Much of stock hydrothermally altered and well jointed locally.	Gilluly and Gates, 1965; Silberman and and McKee, 1971; Silberman and others, 1969; Spengler and others, 1979; Stewart and others, 1977; Wrucke, 1974
LA-3	Jg	Jurassic 151 and 153±3 m.y.	McCoy stock: Granodiorite and quartz monzonite and minor granite, alaskite, and diorite. Intrudes Triassic sedimentary rocks. Locally overlain by Tertiary volcanic rocks.	Miller and Silberman, 1977; Silberman and McKee, 1971; Spengler and others, 1979; Stewart and others, 1977
LA-4	Jg	Jurassic 155±3 m.y.	Cain Creek stock: Granodiorite overlain by Quaternary alluvium and Tertiary volcanics.	Silberman and McKee, 1971; Spengler and others, 1979; Stewart and others, 1977

LA-5	TJg	Tertiary to Jurassic	Granodiorite and quartz monzonite; intrudes Ordovician chert, quartzite, greenstone, and pillow lavas. Overlain by Tertiary volcanic rocks.	Silberman and McKee, 1971; Spengler and others, 1979; Stewart and others, 1977
	Kg	Cretaceous 67.9±2.7 m.y.	Iowa Creek stock: Granite and quartz monzonite intrude Ordovician rocks. Located in east part of area.	
		Cretaceous 71.4±3 m.y.	Ravenswood stock: Granite and quartz monzonite intrude Cambrian quartzite and shale.	
LA-6	Ti	Oligocene	Vesicular biotite dacite.	McKee, 1968b; Spengler and others, 1979; Stewart and McKee, 1977
	Jg	Jurassic 168 m.y.	Granite intrudes Silurian to Devonian limestone and siltstone.	
LA-7	Kg	Cretaceous about 75 m.y.	Birch Creek pluton: Medium- to coarse-grained granite, strongly sheeted.	Krueger and Schilling, 1971; McKee, 1968c, 1976b; Spengler and others, 1979; Stewart and McKee, 1968; Stewart and others, 1977
	Jg	Jurassic 160.2±5 and 160.7±5 m.y.	Linka mine stock: Biotite-hornblende quartz monzonite. In southeast part of area.	
		Jurassic 157±6 and 168 m.y.	Austin pluton: Quartz monzonite and granodiorite and minor granitic rocks ranging from diorite to alaskite. Intrudes lower Paleozoic sedimentary and volcanic rocks. Locally highly altered and silicified.	
LA-8	TKJi	Tertiary, Cretaceous, or Jurassic	Fine- to coarse-grained, locally brecciated hornblende diorite intrusive, pervasively altered.	McKee, 1976b

LINCOLN COUNTY (LI)

LI-1	Tg	Tertiary	Coarse-grained granite.	Tschanz and Pampeyan, 1970
LI-2	TJg	Tertiary to Jurassic	Silver King stock: Altered granodiorite porphyry intrudes Pennsylvanian-Devonian sedimentary rocks.	Tschanz and Pampeyan, 1970
LI-3	Tg	Tertiary 27.7±0.9 m.y.	Bristol Range pluton: Quartz monzonite intrudes Precambrian, Cambrian, and Devonian carbonate and quartzite.	Armstrong, 1970a; Spengler and others, 1979; Tschanz and Pampeyan, 1970
		Tertiary	Blind Mountain stock: Granite to quartz monzonite or granodiorite. Located west of Stampede Gap.	
		Tertiary	Coarse-grained granite at north end of area.	

LI-4	TJg	Tertiary to Jurassic	Worthington Peak pluton: Leucocratic, porphyritic granite, intrudes Ordovician and Devonian carbonates rocks and quartzite. Western exposure more mafic.	Spengler and others, 1979; Tschanz and Pampeyan, 1970
LI-5	TKg	Tertiary and Cretaceous(?)	Granite intrudes Precambrian quartzite and Cambrian shale.	Krueger and Schilling, 1971; Spengler and others, 1979
	Kg	Cretaceous 88.1±2.7 to 95.5±3.0 m.y.	Lincoln stock: Granite, intrudes Devonian, Mississippian, and Pennsylvanian carbonate rocks and quartzite. Tungsten in contact rocks around southern exposure.	
LI-6	Tg	Tertiary	Granodiorite and granite intrude Tertiary volcanic rocks at the east outcrop and Precambrian and Cambrian carbonate rocks, quartzites, and shales at the west. May be in ring fracture zone of Caliente volcanic center.	Ekren and others, 1977; Spengler and others, 1979
	Ti	Tertiary	Fine- to medium-grained diorite plugs and stocks. Locally in Cedar Range, unit grades to quartz monzonite.	
LI-7	Tri	Tertiary	Altered granite porphyry, rhyolitic(?).	Ekren and others, 1977
LI-8	Xm	Precambrian X	Amphibole gneiss and strongly metamorphosed granite and pegmatite.	Tschanz and Pampeyan, 1970

LYON COUNTY (L)

L-1	Mzg	Cretaceous(?)	Quartz monzonite and granodiorite intrude Triassic-Jurassic metasedimentary rocks. Partly overlain by Tertiary volcanic rocks.	Moore, 1969; Spengler and others, 1979
L-2	Mzg	Cretaceous(?)	Quartz monzonite and granodiorite intrude Triassic-Jurassic metavolcanic rocks. In Walker Lane fault zone.	Moore, 1969; Spengler and others, 1979
L-3	Kg	Cretaceous 87.0±2.7 and 90.0±2.7 m.y.	Porphyritic quartz monzonite, quartz monzonite, and granodiorite plutons intrude Triassic-Jurassic metasedimentary and metavolcanic rocks. Locally hydrothermally altered.	Bingler, 1978; Gilbert and Reynolds, 1973; Knopf, 1918 Krueger and Schilling, 1971; Moore, 1969; Spengler and
	Jg	Jurassic 140±4 and 154±5 m.y.	Quartz monzonite and granodiorite intrude Triassic-Jurassic metavolcanic rocks; volcanic rocks; locally hydrothermally altered.	others, 1979; Stewart and others, 1981
	Mzg	Mesozoic	Quartz monzonite and granodiorite plutons intrude Triassic to Jurassic metavolcanic and metasedimentary rocks. Locally overlain by sedimentary rocks and alluvium. Hydrothermally altered and cut by high-angle normal faults.	

L-4	Mzg	Cretaceous(?)	Quartz monzonite and granodiorite partly overlain by Tertiary volcanic rocks; In Walker Lane fault zone.	Moore, 1969; Spengler and others, 1979

MINERAL COUNTY (M)

M-1	Kg, Mzg	Cretaceous 75 and 80±3.0 m.y. and Mesozoic	Medium- to coarse-grained quartz monzonite, granodiorite, and granite plutons; contain large, irregular-shaped roof pendants of Middle Triassic(?) Excelsior Formation metavolcanic rocks. Locally chloritized and sericitized.	Bingler, 1978; Evernden and Kistler, 1970; Gilbert and Reynolds, 1973; Spengler and others, 1979; Stewart and Johannesen, 1981;
	KJd, Jg	Cretaceous and Jurassic and Jurassic 139 m.y.	Fine- to coarse-grained, locally porphyritic, quartz monzonite to granodiorite, granodiorite, and quartz diorite. Locally bleached, hydrothermally altered, and slightly foliated.	Stewart and others, 198i
M-2	TJg, Kg, Mzg	Tertiary to Jurassic, Cretaceous, and Mesozoic 155±7 and 158±4 m.y.	Granitic plutons intrude intermediate and felsic volcanic rocks of Middle Triassic(?) Excelsior Formation. Sericitized, saussuritized, and bleached locally.	Ekren and Byers, 1978a, 1978c; Ross, 1961; Spengler and others, 1979
M-3	Mzg	Cretaceous(?)	Granitic pluton intrudes metasedimentary and sedimentary rocks of Middle Triassic(?) Excelsior Formation.	Ross, 1961; Spengler and others, 1979
M-4	Kg, Mzg	Cretaceous 84.3 to 93.8 m.y. and Mesozoic	Quartz monzonite pluton containing some granite and granodiorite. Intrudes Triassic sedimentary rocks and Triassic(?) metavolcanic rocks. Unit offset by strike-slip faults of Walker Lane fault zone in south part of area.	Ekren and Byers, 1978b, 1978d; Evernden and Kistler, 1970 Ferguson and Muller, 1949; Spengler and others, 1979
	KJd	Cretaceous and Jurassic	Diorite intruded by quartz monzonite(?).	
M-5	Kg, Mzg	Cretaceous(?) and Mesozoic	Quartz monzonite, albite granite, granodiorite, and some diorite plutons; intrude Triassic sedimentary rocks and Jurassic sandstone and volcanic rocks. Strike-slip faults in Walker Lane fault zone border many outcrops.	Ekren and Byers, 1978b; Ross, 1961; Spengler and others, 1979
M-6	Tg, Mzg	Tertiary 40±10 m.y. and Mesozoic	Granodiorite and quartz monzonite plutons intrude Triassic Luning Formation. Numerous felsic and mafic dikes in and around margins. Area tectonically active.	Ferguson and Muller, 1949; Gianella and Callaghan, 1934; Knopf, 1921; Schilling, 1965; Spengler and others, 1979

M-7	Kg, Mzg	Cretaceous 75 to 94.5±2.5 m.y. and Mesozoic	Quartz monzonite, granodiorite, granite, and diorite plutons probably intruded along zones of weakness associated with earlier episodes of thrusting (Ferguson and Muller, 1949); hydrothermally altered and faulted. Overlain by Quaternary and Tertiary volcanic rocks.	Ekren and Byers, 1978d; Evernden and Kistler, 1970; Ferguson and Muller, 1949; Ferguson and others, 1954; Speed and Kistler, 1980; Spengler and others, 1979; Stewart and Johannesen, 1981
M-8	Kg, Mzg	Cretaceous 68.7±1.8 m.y. and Mesozoic	Granodiorite and quartz monzonite plutons intrude Triassic sedimentary and volcanic rocks. Pilot Mountains bounded on east and west sides by fault scarps.	Ferguson and Muller, 1949; Phoenix and Cathcart, 1952; Schilling, 1965; Speed, 1981; Spengler and others, 1979
M-9	Mzg	Cretaceous(?)	Granite pluton intrudes Middle Triassic(?) Excelsior Formation volcanic rocks. Overlain by Tertiary and Quaternary volcanic rocks.	Ross, 1961; Spengler and others, 1979
M-10	Kg	Cretaceous 86 to 101 m.y.	Quartz monzonite and granodiorite pluton, locally sericitized and chloritized. Overlain by Tertiary and Quaternary volcanic rocks.	Evernden and Kistler, 1970; Ross, 1961; Spengler and others, 1979; Stewart and Johannesen, 1981
M-11	Kg, Mzg	Cretaceous 70.3±2.1 to 92.8±2.8 m.y. and Mesozoic	Quartz monzonite, granodiorite, granite, and granite porphyry intrude volcanic and sedimentary rocks. Middle Triassic(?) Excelsior and Jurassic Dunlap Formations.	Callaghan and Gianella, 1935; Ferguson and others, 1954; Garside, 1979; Spengler and others, 1979
	KJd	Cretaceous and Jurassic 91.5±4.6 to 101±4 m.y.	Diorite intrudes Excelsior Formation.	

NYE COUNTY, NORTHERN HALF (NN)

NN-1	Tg, TJg	Tertiary 53.9±1.5 m.y. and Tertiary to Jurassic	Ophir and other plutons; granodiorite and granite. In the north plutons intrude Cambrian quartzite, shale, and limestone which is locally metamorphosed to slate and marble. In the south plutons mostly intrude Lower Triassic volcanic rocks. Date is from Ophir pluton near Toiyabe Range Peak may not be actual crystallization age (Speed and McKee, 1976).	Speed and McKee, 1976; Spengler and others, 1979; Stewart and McKee, 1977

NN-2	Jg	Jurassic 151±3 m.y.	Clipper Gap pluton: Locally porphyritic quartz monzonite and subordinate granodiorite and granite, cut by alaskite dikes. Intrudes Ordovician sedimentary and volcanic rocks. Contact metamorphism and dikes of aplite and diorite border pluton which has two sets of joints. Locally overlain by Tertiary tuff and alluvium.	McKee, 1972, 1976a; Silberman and McKee, 1971; Spengler and others, 1979; Stewart and McKee, 1977
NN-3	TJg	Tertiary to Jurassic	Granodiorite and some quartz monzonite intrude altered volcanic rocks of Middle Triassic(?) Excelsior Formation. Granodiorite is sericitized, saussuritized, and bleached. Cut by normal faults.	Ekren and Byers, 1978a; Spengler and others, 1979
NN-4	Tg, TJg, KJd	Tertiary, Tertiary to Jurassic, and Cretaceous and Jurassic	Lodi Hills and other plutons; Porphyritic, fine-grained granite, granodiorite, and minor diorite intrude Upper Triassic sedimentary rocks and metamorphosed Lower Triassic volcanic rocks. Cut by numerous granophyric dikes and sills. Lodi Hills pluton is easternmost pluton in area. Plutons locally overlain by Tertiary volcanic rocks.	Krueger and Schilling, 1971; Spengler and others, 1979; Vitaliano and Callaghan, 1963; Vitaliano and others, 1957
NN-5	KJd	Cretaceous and Jurassic, probably Cretaceous	Quartz diorite and lesser amounts of diorite and granodiorite. Intrudes Triassic volcanic and clastic volcanic and clastic rocks, and southern border is faulted against Triassic volcanic and sedimentary rocks.	Silberling, 1959; Spengler and others, 1979; Vitaliano, 1963
NN-6	Jg	Jurassic 154±3 m.y.	Northumberland pluton: Medium-grained granodiorite stock intrudes Ordovician sedimentary rocks.	Silberman and McKee, 1971; Spengler and others, 1979
NN-7	Tg	Tertiary 27(+4,-2) and 31(+5,-2) m.y.	Railroad and Silver Springs stocks: Quartz monzonite intrudes Cambrian shales and limestones which are locally metamorphosed. Large dikes radiate outward from stocks to the north and northeast. Along northwest and southern boundaries stocks may have intruded along thrust faults. Railroad stock, the larger stock , is highly fractured.	Lumsden, 1964; Moores and others, 1968; Schilling, 1965; Spengler and others, 1979

NN-8	TJg	Tertiary to Jurassic 11.3±1.2 m.y.	Gabbs pluton: Mostly granodiorite but on east flank of Paradise Range includes porphyritic granite; intrudes Triassic sedimentary rocks. Extensive hydrothermal alteration and silicification along margins of two westernmost exposures and along Paradise thrust fault. Numerous dikes and sills of granophyric composition. Date is from igneous body east of Gabbs and may be date of reheating by dikes and sills (Krueger and Schilling, 1971).	Krueger and Schilling, 1971; Spengler and others, 1979; Vitaliano, 1963; Vitaliano and Callahan, 1963; Vitaliano and others, 1957
NN-9	TJg	Tertiary to Jurassic	Quartz monzonite porphyry intrudes Lower Jurassic sedimentary rocks. Locally overlain by Tertiary volcanic rocks.	Silberling, 1959; Spengler and others, 1979; Vitaliano, 1963
NN-10	Tg	Tertiary 29.4 m.y.	Broad Creek pluton: Quartz monzonite intrudes Ordovician sedimentary rocks, Lower Triassic volcanic and sedimentary rocks, and middle Tertiary Darrough Felsite. Intrusive also included in Jett Canyon dike system. Eastern border faulted.	Speed and McKee, 1976; Spengler and others, 1979
NN-11	Kg	Cretaceous 76.4±2.8 and 79.6±2.0 m.y.	Belmont pluton: Granite, granite porphyry, and porphyritic quartz monzonite intrude Cambrian and Ordovician sedimentary rocks.	Ferguson, 1924; Ferguson and Cathcart, 1954; Krueger and Schilling, 1971; Spengler and others, 1979
		Cretaceous	Manhattan pluton: Granitic pluton intrudes Ordovician sedimentary rocks, generally massive. Locally overlain by alluvium. Southernmost outcrop.	
NN-12	TJg	Tertiary to Jurassic	Granitic rock.	Spengler and others, 1979
	KJd	Cretaceous and Jurassic	Diorite intrudes Upper Triassic Luning Formation of limestone, dolomite, conglomerate, and shale. Locally overlain by Tertiary volcanic rocks.	
NN-13	Kg	Cretaceous	Troy Peak pluton: Quartz monzonite and minor granodiorite intrude Precambrian, Cambrian, and Ordovician sedimentary rocks. Pluton dated at Tertiary age of 23(+4,-2) m.y., but field relationships suggest radiometric resetting.	Schilling, 1965; Spengler and others, 1979
NN-14	Kg	Cretaceous 69 and 77.4±2.3 m.y.	Hall pluton: Quartz monzonite porphyry intrudes Permian(?) tuffaceous sediments. Stock is 2,400 ft in diameter and mineralized with molybdenite.	Bonham and Garside, 1979; Silberman and others, 1975; Wright, 1976

NN-15	TJg	Tertiary to Jurassic 59.3±7.4 and 67.9±8.4 m.y.	Fraziers Well and Black Mountain plutons: Quartz monzodiorite or granodiorite intrudes Ordovician sedimentary rocks; locally metamorphosed to phyllite, hornfels, and marble. Dikes of rhyolitic to dioritic composition cut pluton. Overlain by Tertiary volcanic rocks.	Bonham and Garside, 1979; Spengler and others, 1979
NN-16	TJg	Tertiary to Jurassic	Granodiorite pluton partly overlain by Tertiary volcanic rocks and bounded on east by normal fault.	Spengler and others, 1979
		NYE COUNTY, SOUTHERN HALF (SN)		
SN-1	Tg	Tertiary	Cactus Range pluton: Melanodiorite and granodiorite intrude Cambrian, Devonian and Mississippian sedimentary rocks. Extensively propylitized and highly altered. Located within Walker Lane fault zone.	Ekren and others, 1971; Spengler and others, 1979
	Xm	Precambrian X	Gneiss and schist intruded by rhyolite porphyry dikes. May be underlain by pluton.	
SN-2	Mzg	Mesozoic	Gold Reed pluton: Leucogranite intrudes and metamorphoses Precambrian Stirling Quartzite. Partly covered by alluvium.	Ekren and others, 1971; Spengler and others, 1979
SN-3	Tg	Miocene >7.5 m.y.	Black Mountain syenite: Porphyritic and strongly jointed syenite which grades to trachyte; within collapse zone of Black Mountain caldera; older than Thirsty Canyon Tuff (6.5 to 7.5 m.y.).	Christiansen and Noble, 1965; Ekren and others, 1971; Noble and others, 1965; Spengler and others, 1979
SN-4	Kg	Cretaceous 93 m.y.	Climax stock: Composite quartz monzonite and granodiorite stocks and granodiorite sills intrude Ordovician sediments. Pervasive hydrothermal pyrite mineralization, argillization, and (or) chloritization of stock.	Barnes and others, 1963; Cornwall, 1972; Gibbons and others, 1963; Houser and Poole, 1960, 1961; Marvin and others, 1970; Sargent and Orkild, 1973; Spengler and others, 1979
		Cretaceous 91.8±2.8 m.y.	Gold Meadows Stock: Quartz monzonite intrudes Cambrian and Precambrian Wood Canyon Formation clastics and Stirling Quartzite; sericitic alteration along joints; partially overlain by Tertiary tuffs. West outcrop.	

SN-5	Tg	Miocene 9 to 11 m.y.	Microgranite of Timber Mountain: Microgranite (granite prophyry of Carr and Quinlivan, 1966); probably a hypabyssal ring dike that intrudes Timber Mountain Tuff.	Byers and others, 1976; Carr and Quinlivan, 1966; Spengler and others, 1979
SN-6	Tg	Miocene	Granite of Wahmonie Formation: Granodiorite plugs intrude Miocene volcanic rocks.	Ekren and Sargent, 1965; Spengler and others, 1979
		PERSHING COUNTY (P)		
P-1	Kg	Cretaceous 92.0±3.9 and 95.2±6.3 m.y.	Haystack Butte pluton: Granodiorite intrudes Triassic-Jurassic sedimentary rocks.	Johnson, 1977 Smith and others, 1971; Spengler and others, 1979
	Mzg	Mesozoic	Granodiorite intrudes Triassic-Jurassic sedimentary rocks.	
P-2	Kg	Cretaceous 66.5 to 90.0±2.7 m.y.	Grandiorite and quartz monzonite plutons intrude Triassic-Jurassic sedimentary rocks.	Krueger and Schilling, 1971; Silberling and Wallace, 1967; Spengler and others, 1979; Tingley, 1975
P-3	Mzg	Cretaceous(?)	Granite pluton intrudes Triassic-Jurassic sedimentary rocks.	Ferguson and others, 1951; Spengler and others, 1979
P-4	Kg	Cretaceous 91.3±3.8 and 93.9±6.0 m.y.	Selenite Range pluton: Granodiorite intrudes Permian(?) volcanic and sedimentary rocks, and Triassic-Jurassic sedimentary rocks. Overlain by Tertiary sedimentary rocks and basalt flows; partly bounded by high-angle normal faults.	Johnson, 1977; Smith and others, 1971; Spengler and others, 1979
	Mzg	Cretaceous(?)	Heineke pluton: Lithology and geologic setting similar to Selenite Range pluton.	
P-5	Mzg	Cretaceous(?)	Seven Troughs pluton: Granodiorite and some leucogranite; intrudes Triassic-Jurassic sedimentary rocks. Partly overlain by Tertiary volcanic and sedimentary rocks and cut by high-angle normal faults.	Johnson, 1977; Spengler and others, 1979
P-6	Kg, Mzg	Cretaceous 85.1±3.6 to 103±4 m.y. and Mesozoic	Granodiorite plutons intrude and have roof pendants of Traissic-Jurassic sedimentary rocks. Partly overlain by Tertiary volcanic rocks.	Johnson, 1977; Smith and others, 1971; Spengler and others, 1979

P-7	Kg	Cretaceous 71.4±3 m.y.	Rocky Canyon stock: Granodiorite intrudes Triassic volcanic and sedimentary rocks. Lamprophyre, diabase, and quartz diorite dikes and sills cut stock.	Johnson, 1977; Speed and Armstrong, 1971; Spengler and others, 1979; Tatlock and others, 1960; Wallace, Silberling, and others, 1969; Wallace, Tatlock, and others, 1969
	Trg	Triassic	Intensely altered leucogranite plutons; intrude volcanic rocks of Koipato Group and Triassic sedimentary rocks.	
P-8	TJg	Tertiary to Jurassic 131±3 and 149±3 m.y.	Lee Peak pluton: Quartz monzonite intrudes Paleozoic and Mesozoic sedimentary, metamorphic, and volcanic rocks.	Ferguson and others, 1951; Johnson, 1977; Silberman and McKee, 1971;
	Trg	Triassic	Leucogranite pluton intrudes Pennsylvanian to Permian sedimentary and metamorphic rocks. Partly overlain by Tertiary volcanic rocks.	Spengler and others, 1979
P-9	TJg	Tertiary to Jurassic	Clear Creek pluton: Granite	Johnson, 1977; Spengler and others, 1979
	Jg	Jurassic	Grand Trunk Canyon pluton: Granite intrudes Pennsylvanian to Permian sedimentary and metamorphic rocks.	
P-10	TJg	Tertiary to Jurassic	Granodiorite.	Johnson, 1977; Silberman and McKee, 1971; Spengler and others, 1979
	Jg	Jurassic 153±3 m.y.	Tobin pluton: Granite intrudes Pennsylvanian and Permian sedimentary and metamorphic rocks.	
P-11	Kg	Cretaceous 87.2±3.7 and 90.2±6.1 m.y.	Nightingale-Shawave pluton: Granodiorite intrudes Triassic-Jurassic sediments. Pluton cut by mafic and felsite dikes and partly overlain by by Tertiary sedimentary and volcanic rocks.	Johnson, 1977; Smith and others, 1971; Spengler and others, 1979; Tatlock, 1969
P-12	TJg	Tertiary to Jurassic, possibly Cretaceous(?)	Slightly micaceous granite pluton intruded by numerous granite porphyry and diorite porphyry dikes. Intrudes Upper Triassic sedimentary rocks.	Johnson, 1977; Smith and others, 1971; Speed, 1976; Speed and Armstrong, 1971; Speed and Jones, 1969; Spengler and others, 1969; Wallace, Silberling, and others, 1969; Willden and Speed, 1974
	Kg	Cretaceous 69±3 and 69.1±1.4 m.y.	New York Canyon stock: Quartz monzonite intrudes Triassic-Jurassic sedimentary rocks; cut by dikes and sills. North of Cornish Peak.	
	Kg	Cretaceous 104±4 m.y.	West Humboldt Range pluton: Granodiorite intrudes Triassic-Jurassic sedimentary rocks.	
	Jgb	Jurassic 145 to 165 m.y.	Humboldt lopolith: Coarse-grained gabbro, moderately altered. Buena Vista Hills pluton: Highly scapolitized gabbro and leucogabbro.	

	Trg	Triassic	Stillwater pluton: Leucogranite intrudes Triassic volcanic rocks. High-angle normal fault on east margin.	
P-13	Tg	Tertiary	Granite Mountain stock: Quartz monzonite intrudes older leucogranite, Pennsylvanian and Permian sedimentary rocks and greenstone, and Triassic volcanic and clastic rocks.	Johnson, 1977; Spengler and others, 1979
	Trg	Triassic	Granite Mountain pluton: Leucogranite intrudes Pennsylvanian and Permian sedimentary rocks and Triassic volcanic and sedimentary rocks. Partly overlain by Tertiary volcanic rocks.	
			STOREY COUNTY (S)	
S-1	Tg	Tertiary	Davidson granodiorite stock: Weakly to moderately altered granodiorite intrudes Tertiary Alta Formation volcanics. Closely associated with Comstock Lode.	Rose, 1969; Spengler and others, 1979; Thompson, 1956
	Mzg	Mesozoic	Granodiorite plutons intrude metasedimentary rocks. Locally overlain by Tertiary volcanic rocks.	
			WASHOE COUNTY (WS)	
WS-1	Kg	Cretaceous 88.8±2.6 m.y.	Biotite-hornblende granodiorite batholith with local phases of fine-grained quartz diorite. In southern part of area rock is foliated. Western and eastern margins bounded by high-angle normal faults and central part cut by normal faults.	Bonham, 1969; Krueger and Schilling, 1971; Spengler and others, 1979
WS-2	Mzg	Mesozoic	Granodiorite plutons intrude Triassic and Jurassic metamorphic rocks. Plutons contain large gabbro pendants. In northern outcrops rocks generally foliated and contains 20 percent mafic minerals; in southern outcrops contains less than 10 percent mafic minerals. Plutons locally overlain by volcanics.	Bonham, 1969; Spengler and others, 1979
WS-3	Mzg	Mesozoic	Granodiorite plutons partly overlain by Tertiary volcanics. In Walker Lane fault zone.	Bonham, 1969; Spengler and others, 1979
WS-4	Mzg	Mesozoic	Granodiorite intrudes metamorphosed Triassic and Jurassic sedimentary rocks. Locally overlain by Tertiary volcanics.	Bonham, 1969; Spengler and others, 1979

WS-5	Mzg	Mesozoic	Granodiorite intrudes Mesozoic hornfels and schists, and locally overlain by Tertiary volcanics and sedimentary rocks.	Bonham, 1969; Spengler and others, 1979
WS-6	Tg	Pliocene or Miocene	Medium-grained quartz monzonite grading to quartz monzonite porphyry at margins of stock; hydrothermally altered.	Bonham, 1969; Spengler and others, 1979
	Mzg	Mesozoic	Granodiorite intruded and thermally metamorphosed volcanic rocks; Pah Rah Range is in Walker Lane fault zone.	
WS-7	Tg	Tertiary	Granodiorite porphyry intrudes Tertiary tuff. Hydrothermal alteration common. Plutons align along strike-slip fault.	Bonham, 1969; Spengler and others, 1979
WS-8	Tg	Tertiary	Granodiorite cuts Tertiary volcanics and older granodiorite.	Spengler and others, 1979
	Mzg	Mesozoic	Granodiorite plutons intrude Triassic and Jurassic metavolcanic and metasedimentary rocks. Locally overlain by Tertiary sedimentary and volcanic rocks.	
WS-9	Mzg	Mesozoic	Granodiorite and quartz monzonite batholith intrudes Triassic(?) metasedimentary and metavolcanic rocks. Intrusive contacts are sharp. Locally lineated and foliated. Outcrops in northern part extensively altered and weathered. Locally overlain by Tertiary volcanic rocks. Carson Range bounded along east flank by recent fault scarp more than 40 ft high.	Bingler, 1977; Spengler and others, 1979; Thompson, 1956; Thompson and White, 1964; White and others, 1964

WHITE PINE COUNTY (WP)

WP-1	Tg	Tertiary	Quartz monzonite pluton intrudes Permian carbonate rocks.	Spengler and others, 1979
WP-2	Tg	Tertiary 30±10 and 45±10 m.y.	Quartz monzonite pluton intrudes Pennsylvanian limestone.	Hose and others, 1976; Roberts and others, 1967; Spengler and others, 1979
WP-3	Tg	Tertiary	Granite and quartz monzonite bodies intrude Cambrian to Devonian sedimentary rocks; southern outcrop is quartz monzonite.	Rigby, 1960; Spengler and others, 1979
WP-4	Tg	Tertiary 32.1±0.6 and 40.3±4 m.y.	Quartz monzonite pluton intrudes Precambrian metasedimentary rocks and Cambrian to Mississippian sedimentary rocks. East side bounded by normal fault.	Hose and others, 1976; Spengler and others, 1979

WP-5	Tg	Tertiary	Quartz monzonite pluton intrudes Ordovician through Permian sedimentary rocks.	Hose and others, 1976; Spengler and others, 1979
WP-6	Tg	Tertiary	Quartz monzonite pluton intrudes Ordovician through Permian sedimentary rocks.	Hose and others, 1976; Spengler and others, 1979
WP-7	TKg	Tertiary and Cretaceous 23.3±0.6 to 72±7 m.y.	Mainly granodiorite but some quartz monzonite and granite. Intrudes middle Paleozoic sedimentary rocks. Cut by north-south fractures.	Hose and others, 1976; Spengler and others, 1979; Steele, 1960
WP-8	Tg	Tertiary 36.2±0.7 m.y.	Granite porphyry and quartz monzonite pluton intrudes Precambrian metasedimentary and Cambrian to Permian sedimentary rocks. Normal fault along east side of largest outcrop.	Armstrong, 1970a; Fritz, 1968; Hose and others, 1976; Spengler and others, 1979
WP-9	Tg	Tertiary 33.6±0.7 m.y.	Quartz monzonite pluton intrudes Precambrian metasedimentary rocks. East margin is normal fault.	Armstrong, 1970a; Brokaw, 1967; Fritz, 1968; Hose and others, 1976; Spengler and others, 1979
	Kg	Cretaceous 109±1.5 and 115±3 m.y.	Monzonite porphyry and quartz monzonite porphyry pluton intrudes Devonian to Permian sedimentary rocks. Partly overlain by Tertiary volcanic rocks.	
WP-10	TKg	Tertiary and Cretaceous 25.5±1.3 and 31±1.7 m.y.	Quartz monzonite and granodiorite intrude Paleozoic sedimentary rocks. Locally, pluton metamorphosed to gneiss. May be part of metamorphic core complex (Stewart, 1980).	Hose, 1981; Lee and others, 1970; Spengler and others, 1979; Stewart, 1980
WP-11	Tg	Tertiary	Quartz monzonite pluton intrudes Precambrian metasedimentary rocks. May be part of metamorphic core complex (Stewart, 1980).	Hose and others, 1976; Misch and Hazzard, 1962; Spengler and others, 1979; Stewart, 1980
WP-12	Kg	Cretaceous 108±3 m.y.	Granodiorite pluton intrudes Devonian and Mississippian sedimentary rocks.	Hose and others, 1976; Nolan and others, 1974; Spengler and others, 1979
WP-13	Kg	Cretaceous 90.4±2 m.y.	Quartz monzonite pluton intrudes Cambrian limestone and shale.	Armstrong, 1970b; Hose and others, 1976; Spengler and others, 1979
WP-14	Tg	Tertiary	Quartz monzonite pluton surrounded by alluvium.	Brokaw and others, 1973; Spengler and others, 1979
WP-15	Tg	Tertiary 35.1±1.3 m.y.	Quartz monzonite pluton intrudes Pennsylvanian and Permian sedimentary rocks.	McKee and Marvin, 1976; Spengler and others, 1979

WP-16	Ti	Oligocene(?)	Moderately altered quartz dacite neck, intrudes Permian sedimentary rocks.	Drewes, 1967
WP-17	Kg	Cretaceous	Granitic rock.	Hose and others, 1976; Lee and others, 1970; Misch and Hazzard, 1962; Spengler and others, 1979; Stewart, 1980; Whitebread, 1969, 1982
	Jg	Jurassic 156 to 160 m.y.	Quartz monzonite and granodiorite intrude Precambrian metasedimentary and Cambrian sedimentary rocks. Many conflicting radiometric dates from 17 to 240 m.y., but probably Jurassic in age. Area may be part of metamorphic core complex (Stewart, 1980).	

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