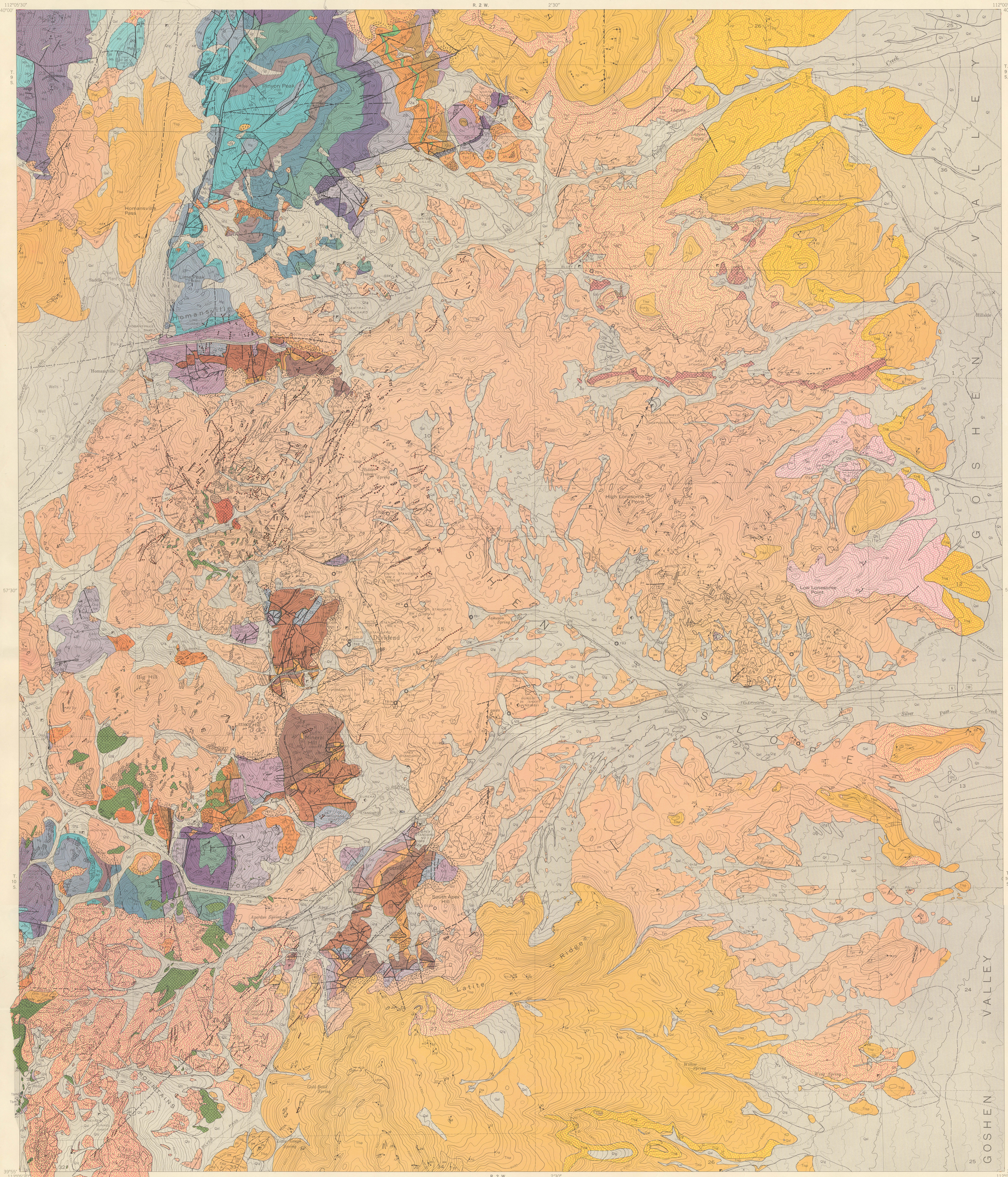


Base map from U. S. Geological Survey Eureka 7½' topographic quadrangle, Utah

Geology by T. S. Lovering, 1943–53; H. T. Morris, 1946–53; W. M. Stoll and H. V. Wagner, 1943–45; H. V. Wagner, A. H. Wadsworth, B. F. Stringham, and Lowell Hilpert, 1944–45; Alberto Terrones and J. Fred Smith, 1944; J. W. Odell and Edwards Mapes, 1946; Juan Rossi, 1948; John Lemish, 1949; Alan Basset, 1951; Allen Disbrow, 1952

EXPLANATION

QUATERNARY

Recent

Qal — 5–50 feet
Alluvium
Valley fill which includes minor colluvium; chiefly gravel, sand, and silt

Qt — 3–30 feet
Talus

Qlc — 5–50 ft
Landslide deposits and colluvium

Pleistocene and Recent

Qtg
Terrace gravels
Subangular to angular boulders and pebbles intermixed with sand and some silt

Pleistocene

Qb — 3–20 feet
Beach deposits of Lake Bonneville
Well rounded beach gravels, sand, and wave-built bars. Upper elevation 5155 feet

Qs — 3–20 feet
Silts of Lake Bonneville
May include some Alpine formation

Qf — 10–60 feet
Fan deposits
Fans approximately contemporaneous with Lake Bonneville

TERTIARY

Middle Eocene

Tlsg — 10–300+ feet
Latite gravels
Well stratified coarse boulder conglomerates, interstratified with agglomerate and tuff

Hornblende monzonite porphyry
Dikes and diatremes of medium grained greenish-gray to brown hornblende monzonite porphyry

Biotite monzonite
Dikes, stocks, and small intrusions and diatremes of coarse grained, greenish-gray to brown biotite and hornblende-biotite monzonite and monzonite porphyry

Quartz monzonite
Small irregular plugs of greenish-gray to brown coarsely porphyritic biotite quartz monzonite

Laguna Springs latite[4]

Tlsp — 20–2000 ft
Latite porphyry flows
Dark colored hypersthene, augite, hornblende, and biotite bearing latite and andesite flows

Tpd — 1½–6 ft
Pebble dikes
Prevent intrusive dike-like bodies of angular to well rounded boulders, pebbles, and small fragments of underlying rocks; pebbles chiefly quartzite, but shale, limestone, volcanic, and intrusive rocks present locally

Tlsb — 30–100 ft
Welded tuff and breccia
Intrusive where black pattern appears

Tlsf — 20–200 ft
Tuffs and agglomerates
Fine and coarse grained subaerial and subaqueous latitic tuffs and agglomerates

Packard quartz latite[3]

Tpr — 2500 feet
"Packard rhyolite" of Lindgren and Loughlin, 1919[1]
Purplish or bluish-gray quartz latite porphyry, agglomerate, vitrophyre and welded tuff

Tpri — 25–250 ft
"Rhyolite tuff" of Lindgren and Loughlin, 1919[1]
Subaerial and locally subaqueous, fine to medium grained vitric and lithic tuffs at the base of the Packard quartz latite

MISSISSIPPIAN

Upper Mississippian

Mgb — 2500 feet
Great Blue formation
Basal member only present in East Tintic district; gray-blue and thick bedded limestone, less than 900 feet thick

Mh — 650 feet
Humbug formation
Chiefly quartzitic sandstone and sandstreaked and pure limestone, but some minor dolomite and a few thin layers of shale

Md — 1000 feet
Deseret limestone
Blue-gray limestone, commonly cherty; lower half fine grained and sandy, upper half very fossiliferous and lacks sand; phosphatic shale at base

Lower Mississippian

Mg — 500 feet
Gardison limestone[2]
Lower member, blue-gray well bedded fossiliferous limestone; upper member less fossiliferous blue-gray well bedded cherty limestone

Mf — 300 feet
Fitchville formation[2]
Chiefly shaly limestone; thin sand-streaked limestone at base, coarse grained black dolomite marker bed 110 feet above base, thin fine-grained pink limestone capped by wavy bedded limestone at top

DEVONIAN

Upper Devonian

Mdpp — 75–85 feet
Pinyon Peak limestone[2]
Chiefly light blue argillaceous limestone mottled with pink

Dv — 280 feet
Victoria formation[2]
Calcitic quartzite and sandstone, sand-streaked dolomite, and thick irregular layers of sedimentary breccia

ORDOVICIAN AND SILURIAN(?) AND DEVONIAN

DSbb — 350–600 feet
Bluebell dolomite[2]
Alternating beds of light and dark bluish-gray dolomite. Thickens from Pinyon Peak to southwestern part of area

ORDOVICIAN

Upper Ordovician

Of — 300–350 feet
Fish Haven dolomite
Dark gray to black, mottled dolomite, locally cherty

Lower Ordovician

Oop — 300–850 feet
Opohonga limestone[1]
Thin bedded light blue-gray shaly limestone striped and mottled by pinkish red and yellow argillaceous carbonate. Flat-pebble conglomerate common. Section thickens from Pinyon Peak to vicinity of Iron King mine

CAMBRIAN

Upper Cambrian

Caja / Caj — 500–650 feet
Ajax dolomite[1]
Dark bluish-gray massive bedded cherty dolomite. Emerald member, Caje, creamy white dolomite, 25 feet thick, 130 feet above base

Cop — 250 feet
Opex formation[2]
Limestone, shales, sandstone, and sand-streaked dolomite and limestone; conglomeratic limestone common

Middle Cambrian

Ccc — 850 feet
Cole Canyon dolomite[2]
Alternating light-gray and dusky blue-gray dolomite; some laminated dolomite, but in beds less than 40 feet thick

Cb — 180–200 feet
Bluebird dolomite[1]
Coarse-grained dusky blue-gray dolomite peppered with gray to white twiggy dolomite bodies a quarter to a half inch long

Ch — 350–430 feet
Herkimer limestone[1]
Blue-gray limestone streaked with thin seams of argillaceous limestone; contains some oolitic limestone and flat-pebble conglomerate, shale unit 10 to 20 feet thick 200 feet above the base

Cd — 70–90 feet
Dagmar dolomite[1]
Creamy-white, laminated, locally limy dolomite

Cte — 400–425 feet
Teutonic limestone[1]
Massive and thin bedded blue-gray limestone streaked with thin limy mudstone partings and layers, pisolitic beds common in lower part. Girvanella-like algal structures common

Ophir formation

Cou — 70–90 feet
Upper shale member
Light greenish-gray fissile shale containing thin short lenses of calcareous sandstone and arenaceous shale

Com — 145–160 feet
Middle limestone member
Interstratified limestone and dark olive-colored shale. Limestone chiefly dark bluish-gray but uppermost limestone is light gray and locally white

Col — 175 feet
Lower shale member
Olive-green shale, sandy shale, quartzitic sandstone, and a 10-foot dolomitic marker bed (lower carbonate marker bed) about 80 feet above the base

Lower Cambrian

Ct — 3000 feet
Tintic quartzite[1]
Well bedded to massive light-colored quartzite; contains thin beds of sandy micaceous shale in upper part; conglomeratic quartzite common in lower 650 feet of formation. Lies unconformably on the concealed Precambrian Big Cottonwood formation, which consists of several thousand feet of phyllitic shale, argillite, quartzite, and quartzite conglomerate

HYDROTHERMAL ALTERATION

si
Intense silicic alteration
Includes opalized rocks (chiefly tuffs) fine to medium grained jasperoid consisting of chalcedony and quartz

sm
Moderate silicic alteration
Includes spotty alteration to jasperoid and opal, and moderately pervasive, pulverulent, fine-grained quartz in partially silicified shaly limestones.

ps
Strong pyritic alteration
Chiefly pyritized rocks of the Packard quartz latite characterized by very fine grained disseminated pyrite. Weathers characteristic yellow browns

pw
Weak pyritic alteration
Spotty pyritic alteration, chiefly in Packard quartz latite

c
Calcitic alteration
Includes hydrothermal calcite in the Packard quartz latite, occurs as replacement of plagioclase phenocrysts; also includes the hydrothermal alteration of dolomite to porous calcitic rocks

ai
Intense argillic alteration
Chiefly sericitized and argillized tuffs and flows of the Packard quartz latite and the lower part of the Laguna Springs latite, found locally in monzonite and sedimentary rocks. Sericite, kaolinite, montmorillonite, and other clay minerals common

am
Moderate argillic alteration
Plagioclase phenocrysts completely argillized in igneous rocks; biotite slightly affected

aw
Weak argillic alteration
Plagioclase partly argillized in igneous rock; biotite unaffected

ld
Leached dolomite
Surface of dolomite grains partly dissolved, resulting in loose granular texture, feels sandy to the touch. Commonly called "sanded dolomite"

chm
Moderate chloritic alteration
Pervasive and localized green chloritic alteration of volcanic rocks

chw
Weak chloritic alteration
Fringe zone of chloritic alteration, marked by veinlets of quartz, chlorite, and zeolites; common above areas of moderate chloritic alteration

do
Dolomitic alteration
Hydrothermal dolomite formed by alteration of limestone

ep
Epidotic alteration
Introduction of epidote in veins and as moderately pervasive alteration of ferromagnesian minerals in tuffs and lavas. Most common near intrusions of monzonite

hem
Hematitic alteration
Pervasive reddening of lava near some monzonite and latite porphyry intrusions; also areas where hematite occurs in veins or along joint surfaces

Oop(p)
Pyrometasomatic alteration (of Opohonga limestone)
High temperature mineral assemblages characteristic of "contact metamorphism" (cordierite, pyroxenes, zoisite, spinel, garnets, wollastonite, ankdarite). Common in argillaceous limestone and dolomite near some of the monzonite intrusions

Contact
Dashed where approximately located

Contact between extrusive rock (patterned side) and Paleozoic sedimentary rocks

Normal or steep reverse fault showing dip, and relative displacement and movement

Fault, location uncertain

Probable fault concealed by Quaternary deposits

Probable position of faults in Paleozoic rocks beneath Tertiary volcanic rocks

Fault, location known but concealed by Quaternary deposits

Thrust fault
Saw-teeth indicate upper plate

Crackled zone or breccia

Anticline, showing direction of plunge and axial plane

Syncline, showing direction of plunge and axial plane

Plunge of minor anticline

Plunge of minor syncline

Strike and dip of beds

Strike and dip of overturned beds

Strike of vertical beds

Strike and dip of platy structure in igneous rocks

Strike and dip of platy structure in igneous rocks with direction of lineation indicated
Amount of plunge of lineation shown only where platy structure is steep or where amount of plunge differs appreciably from that of dip

Strike of vertical platy structure in igneous rocks showing plunge of lineation

Strike and dip of platy structure in igneous rocks with horizontal lineation

Strike and dip of joints

Vertical joint

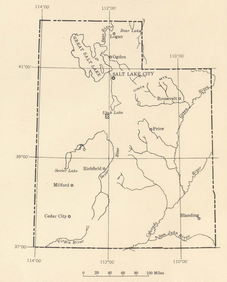
Shaft

Trench

Prospect

Drill holes
Single circle for diamond-drill hole; double circle for churn-drill; also shows number and organization that drilled it
CC, Chief Consolidated Mining Co.; NL, North Lily Mining Co.; N, Newmont Mining Co.; TS, Tintic Standard Mining Co.; GS, U. S. Geological Survey; T, Trixie Exploration area (includes Bear Creek Mining Co. and G. S.); USS & R, United States Smelting and Refining Co.

[1] Lindgren, Waldemar, and Loughlin, G. F., 1919, Geology and ore deposits of the Tintic mining district, Utah: U. S. Geol. Survey Prof. Paper 107.
[2] Morris, H. T., and Lovering, T. S., Stratigraphy of the East Tintic Mountains, Utah, with a section on Quaternary deposits by H. D. Goode: U. S. Geol. Survey Prof. Paper
[3] [illegible]
[4] [illegible]



INDEX MAP OF UTAH SHOWING LOCATION OF THE EAST TINTIC DISTRICT

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GEOLOGIC MAP OF THE EAST TINTIC DISTRICT, UTAH

By
T. S. Lovering and others

SCALE 1:9 600

1000 500 0 1000 2000 3000 4000 FEET

CONTOUR INTERVAL 25 FEET
DATUM IS MEAN SEA LEVEL

1960

TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1960

Utah (East Tintic district). Geol. 1:9,600. 1960.
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