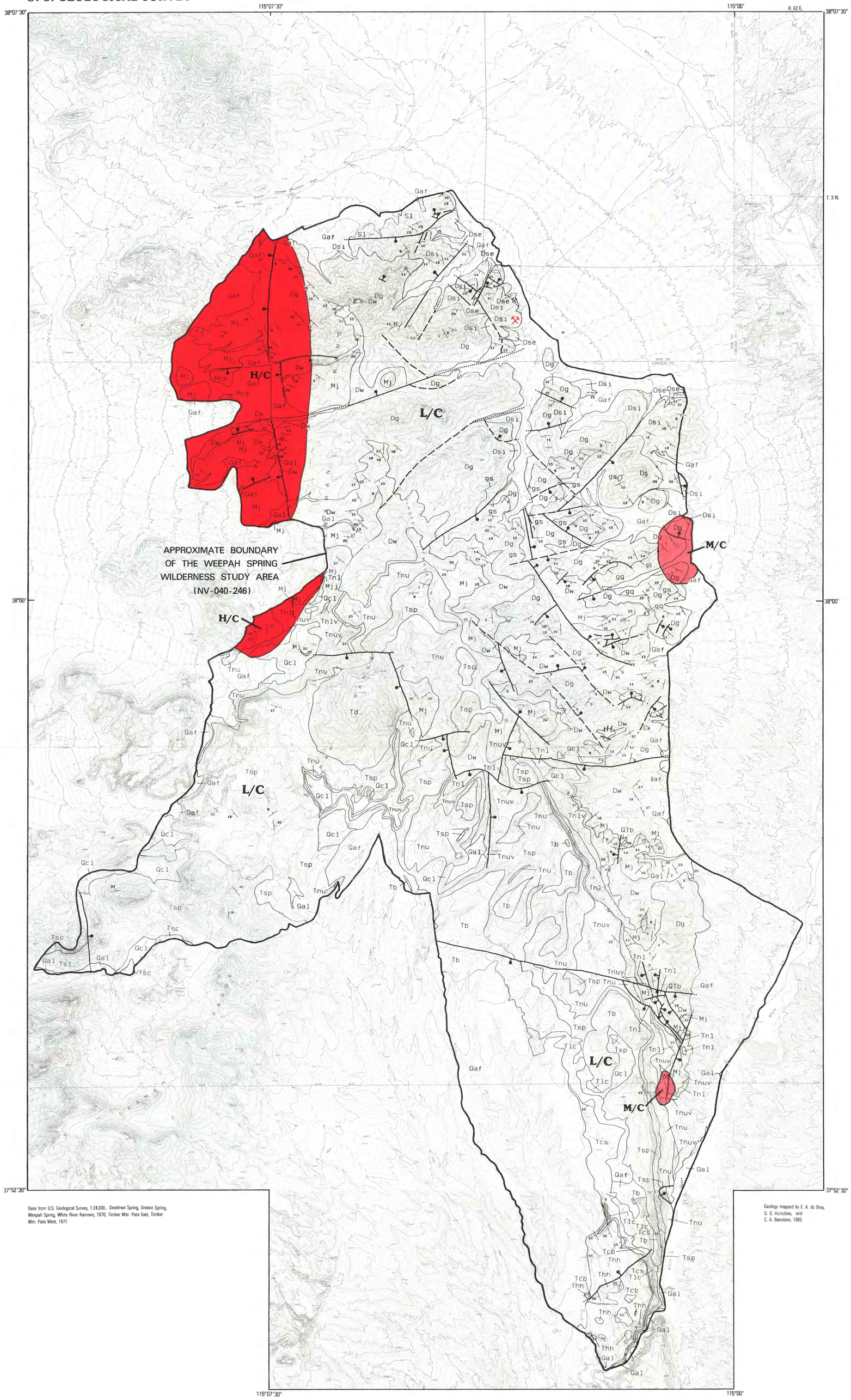
DEPARTMENT OF THE INTERIOR
U. S. GEOLOGICAL SURVEY

BULLETIN 1728-E
PLATE 1A



MINERAL RESOURCE POTENTIAL AND GEOLOGIC MAP OF THE WEEPAH SPRING WILDERNESS STUDY AREA, LINCOLN AND NYE COUNTIES, NEVADA

EXPLANATION OF MINERAL RESOURCE POTENTIAL

[Areas underlain by carbonate rock or surficial deposits have moderate mineral resource potential, with level-C certainty, for limestone, dolomite, sand, and gravel, all of which have industrial applications]

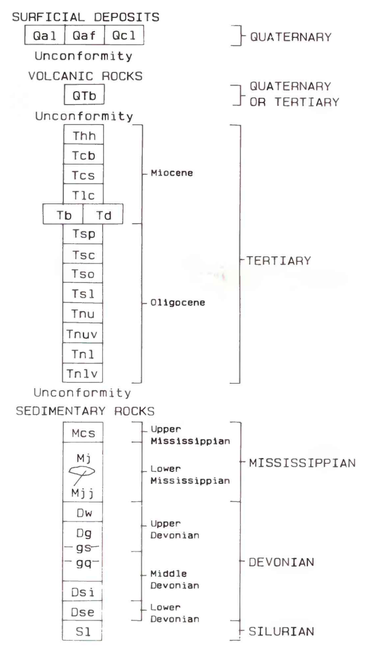
⚒ **Mine having identified subeconomic resources of silver**

H/C **Geologic terrane having high mineral resource potential, with level-C certainty, for deposits of disseminated gold and associated mercury**

M/C **Geologic terrane having moderate mineral resource potential, with level-C certainty, for gold, silver, copper, lead, and zinc**

L/C **Geologic terrane having low mineral resource potential, with level-C certainty, for all energy sources (applies to entire study area) and all metals**

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS

Qal **Alluvium (Quaternary)**—Undifferentiated surficial deposits, principally sediment in active stream channels, but includes small amounts of talus. Locally includes small amounts of windblown sand, silt, and evaporite deposits

Qaf **Alluvial fan deposits (Quaternary)**—Poorly sorted, braided-stream distributary deposits including angular material that ranges from silt to boulder size. Forms aprons around topographic highs

Qcl **Colluvium (Quaternary)**—Loose, heterogeneous, incoherent masses of soil material and rock fragments deposited on slopes by rainwash, sheetwash, or slow continuous downslope creep; usually found at base of slopes or hillsides

VOLCANIC ROCKS

[Phenocrysts listed in decreasing order of abundance]

QTb **Basalt (Quaternary or Tertiary)**—Medium-dark-gray, fine-grained, porphyritic basalt; plagioclase phenocrysts. Local columnar jointing

Thh **Harmony Hills Tuff (Miocene)**—Pinkish-gray, moderately welded, dacitic ash-flow tuff; forms prominent cliffs. Contains about 25 percent crystals; phenocrysts are plagioclase, biotite, quartz, and small diagnostic needles of hornblende (Cook, 1965)

Condor Canyon Formation (Miocene)

Tcb **Bauers Tuff Member**—Light-bluish-gray, moderately to weakly welded, rhyolitic ash-flow tuff; weathers recessively. Contains about 10 percent crystals; phenocrysts are plagioclase, sanidine, and biotite (Cook, 1965)

Tcs **Swett Tuff Member**—Pale-red-purple, moderately welded, rhyolitic ash-flow tuff; forms small cliffs. Contains about 5 percent crystals; phenocrysts are plagioclase and biotite (Cook, 1965). Base is a black vitrophyre (glass) as much as 4 ft thick

Tlc **Leach Canyon Formation (Miocene)**—Light-pinkish-gray, moderately welded, dacitic ash-flow tuff; forms prominent cliffs. Contains about 10 percent crystals; phenocrysts are quartz, sanadine, plagioclase, and biotite (Cook, 1965). Contains small, diagnostic pinkish-gray, flattened pumice lapilli

Tb **Basalt (Miocene)**—Dark-gray, dense, fine-grained, porphyritic basalt; forms prominent cliffs. Phenocrysts are hornblende and plagioclase. Comprises a series of thick flows; locally present between Leach Canyon Formation (Tlc) and Shingle Pass Tuff (Tsp)

Td **Dacite (Miocene)**—Pale-grayish-red purple, dense, flow-banded, fine-grained, porphyritic, crystral-poor dacite; forms prominent cliffs. Phenocrysts are quartz and plagioclase. Forms a discrete flow-dome complex that intrudes Shingle Pass Tuff (Tsp)

Tsp **Shingle Pass Tuff (Oligocene)**—Pinkish-gray to pale-red-purple, densely welded, rhyolitic ash-flow tuff; forms prominent cliffs. Contains about 7 percent crystals; phenocrysts are sanidine, plagioclase, quartz, and biotite (Cook, 1965). Composed of at least six separately cooled, grossly similar ignimbrites (ash-flow tuffs). In most places base is marked by a black vitrophyre (glass) 3-6 ft thick. Includes the Petroglyph Cliff Ignimbrite (Cook, 1965) in the White River Narrows area

Seaman volcanic center (Oligocene)

Tsc **Core unit**—Light-greenish-gray, fine-grained, porphyritic, hypabyssal (shallow), dacitic intrusive; weathers to rounded boulders and outcrops. Phenocrysts are plagioclase, quartz, and biotite. Local, weak hydrothermal alteration

Tso **Outflow unit**—Brownish-gray to dark-gray, moderately welded, andesitic, ash-flow tuff; forms prominent cliffs composed of quaquaversal flows. Contains about 20 percent crystals; phenocrysts are plagioclase, quartz, and biotite

Tsl **Laharic unit**—Varicolored, poorly sorted, bouldery mud flow deposits; many separate flows present

Needles Range Group (Oligocene)

Tnu **Upper unit**—Very light gray, weakly welded, pumiceous, dacitic ash-flow tuff; weathers recessively. Contains about 15 percent crystals; phenocrysts are plagioclase, quartz, sanidine, biotite, and hornblende (Cook, 1965). Contains subangular, dark-gray, cobble- and boulder-size exotic blocks in many places; appears to be composed of a single, thick ignimbrite

Tnuv **Basal vitrophyre of unit Tnu**—Light-brown to moderate-reddish-brown, blocky, lithic, dacitic vitrophyre; weathers recessively. Contains about 10 percent crystals; plagioclase phenocrysts. Uppermost part characterized by subangular cobbles and boulders of unflattened, black glass. Northernmost exposures medium to dark gray; contain flattened black glass blocks which impart a horizontal parting. Local hydrothermal alteration

Tnl **Lower unit**—Very light gray, weakly welded, pumiceous, dacitic ash-flow tuff very similar to upper unit (Tnu); weathers recessively. Contains about 15 percent crystals; phenocrysts are plagioclase, quartz, sanidine, biotite, and hornblende (Cook, 1965). Cobbles characteristic of upper unit (Tnu) not as abundant. Appears to be a single, very thick ignimbrite

Tnlv **Basal vitrophyre of unit Tnl**—Medium-gray, densely welded, medium-grained, andesitic vitrophyre; forms prominent cliffs. Contains about 20 percent crystals; phenocrysts are plagioclase, hornblende, biotite, and quartz. Contains pumice blocks and gas vesicles, both flattened. Sporadic and limited distribution

SEDIMENTARY ROCKS

Mcs **Chainman Shale (Upper Mississippian)**—Distinctly ripple marked, very light gray, massive to crossbedded quartzite to quartzitic sandstone. Few outcrops; base and top of formation not exposed; only quartzite and sandstone parts present. Underlies small hills; very limited outcrop in northwestern part of map area

Mj **Joana Limestone (Lower Mississippian)**—Fine-grained, medium-gray, cliff-forming limestone; massive in lower half, medium-to thin-bedded in upper half. Locally contains abundant chert nodules and fossils, including abundant crinoids and corals

Mjj **Unit Mj locally altered to jasper**

Dw **West Range Limestone (Upper Devonian)**—Blue-gray, fine-grained silty limestone and calcareous siltstone; weathers very recessively to yellow-orange soil

Dg **Guilmette Formation (Upper and Middle Devonian)**—Medium-gray to dark-brown, medium- to fine-grained limestone. Massive, cliff forming, locally cavernous. Locally dolomitized within the Seaman Range. Contains abundant fossils including numerous types of stromatoporoids, corals, brachiopods, and gastropods. Also includes two distinctive marker horizons

-gq- **White quartzite marker bed**—As much as 15 ft thick

-gs- **Marker horizon composed of two, locally three, tan sandstone beds**—Each as much as 5 ft thick

Dsi **Simonson Dolomite (Middle Devonian)**—Alternating beds of light- and dark-colored dolomite divisible into four members; described in order of increasing age. Member D, at top, is alternating whitish-gray and aphanitic (submicroscopic) and brownish-gray, fine- to medium-grained dolomite. Member C is massive, cliff-forming, brown dolomite; contains abundant stromatoporoids and corals. Member B is distinctly alternating light- and dark-colored dolomite similar to uppermost member. Member A, at base, is light-tan, coarse-grained, cliff-forming dolomite. Contact with Guilmette Formation (Dg) is unconformable

Dse **Sevy Dolomite (Lower Devonian)**—Distinctly whitish gray to very pale bluish gray, unfossiliferous microcrystalline dolomite. Remarkably homogeneous, dense; well bedded in layers 6 in. to 2 ft thick; weathers recessively to step-like slopes. Top of formation marked by distinctly reddish-brown-weathering sandstone or quartzite 20-50 ft thick. Reso (1963) suggested that this sandstone and quartzite unit represents basal part of overlying Simonson Dolomite (Dsi). Johnson and Murphy (1984) suggested that the Sevy Dolomite is unconformably overlain by Simonson Dolomite; in Seaman Range, Simonson Dolomite seems conformable on Sevy Dolomite

Sl **Laketown Dolomite (Silurian)**—Light- and dark-gray, fine- to medium-grained crystalline dolomite. Forms massive, recessive-weathering, three-part outcrop with dark-colored dolomite above and below intervening light-colored dolomite; abundant chert nodules and fossils, including various types of coral, in upper one-third of formation. In Seaman Range, Laketown Dolomite is in fault contact with Sevy Dolomite (Dse)

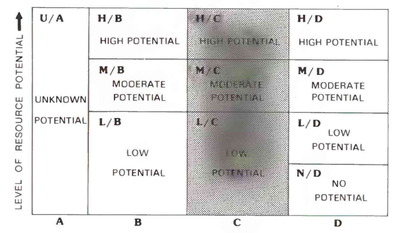
Contact—Approximately located

Fault—Dashed where inferred; dotted where concealed. Ball and bar on downthrown side

70 **Strike and dip of bedding of sedimentary rocks and of compaction foliation of volcanic rocks**

⚒ **Mine or prospect**

Elongate jasperoid zone—May also occur along faults



LEVELS OF RESOURCE POTENTIAL

H High mineral resource potential
M Moderate mineral resource potential
L Low mineral resource potential
U Unknown mineral resource potential
N No known mineral resource potential

LEVELS OF CERTAINTY

A Available data not adequate
B Data indicate geologic environment and suggest level of resource potential
C Data indicate geologic environment, give good indication of level of resource potential, but do not establish activity of resource-forming processes
D Data clearly define geologic environment and level of resource potential and indicate activity of resource-forming processes in all or part of the area

Diagram showing relationships between levels of mineral resource potential and levels of certainty. Shading shows levels that apply to this study area