U.S. Department of the Interior
U.S. Geological Survey

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Carbonate aquifer—Plate 4

EXPLANATION

Regional carbonate aquifer—Approximate saturated extent of permeable carbonate rocks
- Shallow part—Area where flow is most active and where top of saturation is within about 6,000 ft of land surface
- Thrusted—Area where shallow carbonate aquifer is thrust over another shallow carbonate aquifer and the two aquifers are separated by siliciclastic rock
- Thrusted—Area where shallow carbonate aquifer is thrust over a deep carbonate aquifer and the two aquifers are separated by siliciclastic rock
- Thrusted—Area where shallow carbonate aquifer is thrust directly over another carbonate aquifer with no intervening siliciclastic rock
- Deep part—Area where flow is assumed less active and where top of saturation is greater than about 6,000 ft below land surface

Local carbonate aquifer—Approximate saturated extent of localized blocks of moderately permeable carbonate rock

Siliceous confining unit—Area where no saturated carbonate aquifer is present and siliceous confining unit is the shallowest saturated pre-Tertiary rock

Generalized extent of alluvial–volcanic aquifer system as shown on plate 3

C C' CC CC' — **Line of hydrogeologic section**—Sections for thin and thick lines shown on plates 1 and 2, respectively

Study area boundary

17 — **Boundary of Nevada National Security Site**—Dashed line indicates boundary of internal operational area. Number identifies operational area

Major geologic structures important to groundwater flow—Location on map is below land surface at depth of saturation
- Thrust fault, teeth on upthrown block
- Normal fault

2480 — **Potentiometric contour**—Shows altitude of potentiometric surface in uppermost regional carbonate aquifer. Contour interval is 20 foot. Supplemental 2390-foot contour added. Two 2380-foot alternative contours shown; see text for discussion. Dashes indicate contour is uncertain. Datum is National Geodetic Vertical Datum of 1929

2440 — Potentiometric surface in the deeper of two shallow regional carbonate aquifers in area where shallow carbonate aquifer is thrust over another shallow carbonate aquifer and the two aquifers are separated by siliciclastic rock

Regional groundwater flow—Arrow indicates general flow direction. Arrows dashed within the two alternative 2380-foot contours

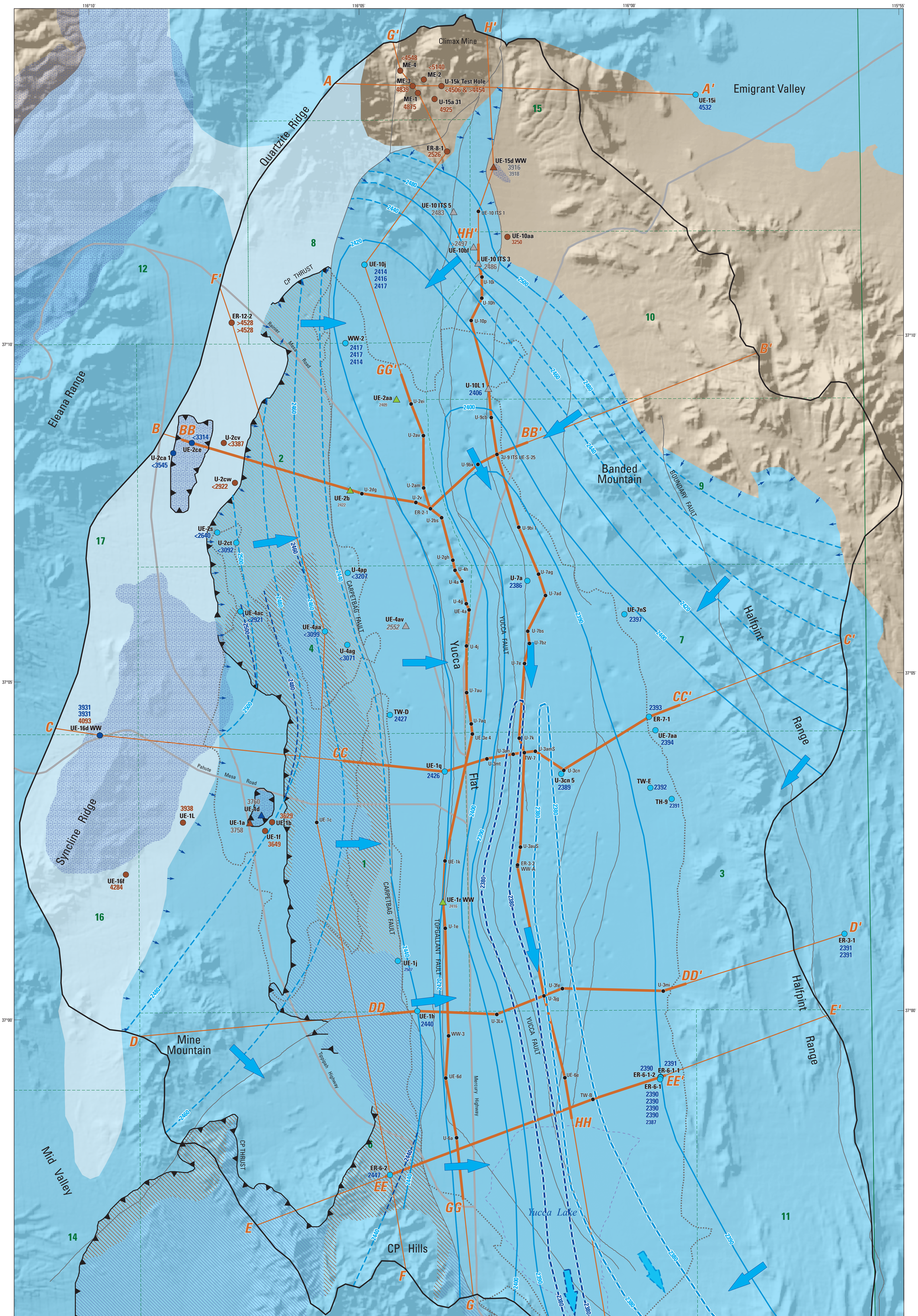
Lateral boundary leakage—Arrow indicates inferred direction of groundwater leakage at aquifer boundary

TW-B — **Borehole on section with name**—Small circle and name identify borehole on section not used for contouring of the carbonate aquifer

Note: Recharge areas used to develop potentiometric contours and flow conceptualization are not shown on plate, but are shown on plate 3 and figure 2

Hydraulic head and measurement location—Shows borehole name and head used to develop contours of the potentiometric surface in the carbonate aquifer. Number is hydraulic head, in feet, at symbol location. Hydraulic heads representing (1) aquifers, (2) confining units, and (3) a composite of two aquifers or an aquifer and a confining unit are shown in blue, brown, and grey fonts, respectively. Heads in italics are anomalous and are not contoured

- Well open to regional carbonate aquifer — 2447 2456 2528 — Hydraulic head represents predevelopment conditions
- Well open to local carbonate aquifer — 2447 2456 2528 — Hydraulic head probably represents predevelopment conditions, but interpretation is uncertain
- Well open to siliceous confining unit — 2447 2456 2528 — Hydraulic head may or may not represent predevelopment conditions; interpretation is highly uncertain
- Well open to volcanic aquifer and regional carbonate aquifer
- Well open to volcanic confining unit and regional carbonate aquifer
- Well open to volcanic confining unit and local carbonate aquifer
- Well open to siliceous confining unit and local carbonate aquifer



Base from U.S. Geological Survey digital data 1:100,000 1978–89
Hillshade from U.S. Geological Survey 3-arc-second National Elevation Dataset
Universal Transverse Mercator Projection, Zone 11, North American Datum of 1983

Subsurface hydrologic unit types and fault locations extracted from hydrostratigraphic framework models in National Security Technologies (2007a) and Bechtel Nevada (2006)

0 2 4 6 8 10 MILES
0 2 4 6 8 10 KILOMETERS

Scale 1:50,000 No vertical exaggeration National Geodetic Vertical Datum of 1929

Predevelopment Hydraulic Heads, Potentiometric Contours, and Flow Directions for the Carbonate Aquifer System in Yucca Flat, Nevada National Security Site

By
Joseph M. Fenelon, Donald S. Sweetkind, Peggy E. Elliott, and Randell J. Laczniak

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