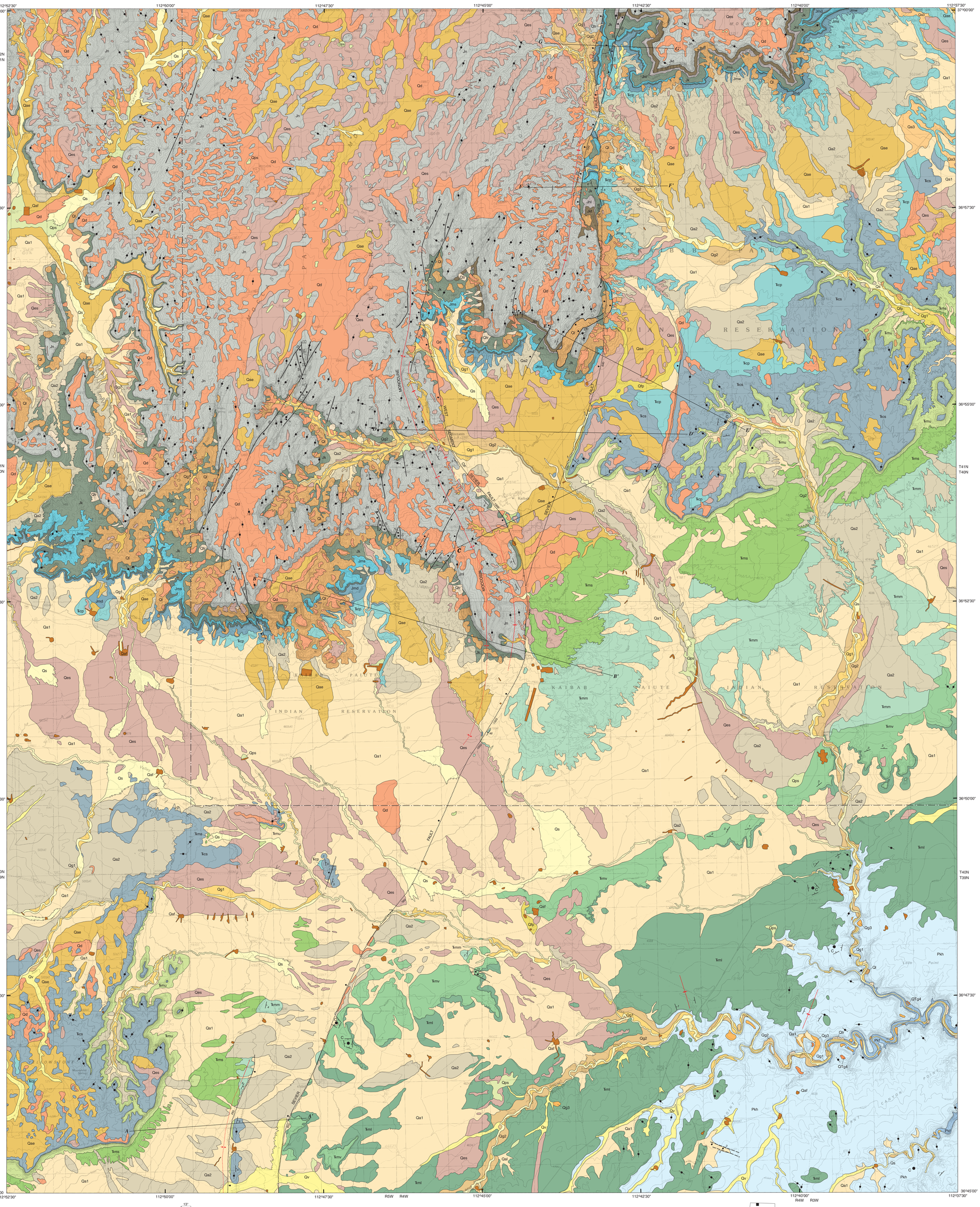
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

Prepared in cooperation with the
NATIONAL PARK SERVICE
and the KAIBAB-PAIUTE INDIAN TRIBE

SCIENTIFIC INVESTIGATIONS MAP 2863
*Pamphlet accompanies map*




## CORRELATION OF MAP UNITS

SURFICIAL DEPOSITS

Qaf | Qs | Qfp | Qps | Qes | Qd | Qae | Qv | Qtr | Qg1 | Qa1 | Qg2 | Qa2 | Qg3 | Qa3 | QTg4 | Ql

- Holocene
- Pleistocene
- Pliocene(?)
- QUATERNARY
- TERTIARY

SEDIMENTARY ROCKS

JURASSIC
- Jn
- Unconformity
- Jkt, Jnl, Jk
- Unconformity
- Lower Jurassic: Jms, Jmw, Jmd

TRIASSIC
- Unconformity
- Upper Triassic: Ticp, Tics
- Unconformity
- Middle (?) Triassic: Tmu, Tms
- Lower Triassic: Tmm, Tmv
- Unconformity
- Tml
- Unconformity

PERMIAN
- Pkh, Pkf
- Unconformity
- Lower Permian

UNITS SHOWN ONLY IN CROSS SECTION
- Ptw, Ptb, Pts

## LIST OF MAP UNITS

SURFICIAL DEPOSITS

- Qaf — Artificial fill and quarries (Holocene)
- Qs — Stream-channel alluvium (Holocene)
- Qfp — Floodplain deposits (Holocene)
- Qps — Ponded sediments (Holocene)
- Qes — Eolian sand sheet deposits (Holocene)
- Qd — Eolian sand dune deposits (Holocene)
- Qae — Mixed eolian and fluvial deposits (Holocene)
- Qv — Valley-fill alluvial deposits (Holocene)
- Qtr — Talus and rock fall deposits (Holocene)
- Qg1 — Young alluvial terrace-gravel deposits (Holocene)
- Qa1 — Young alluvial fan deposits (Holocene)
- Qg2 — Intermediate alluvial terrace-gravel deposits (Holocene and Pleistocene(?))
- Qa2 — Intermediate alluvial fan deposits (Holocene and Pleistocene(?))
- Ql — Landslide debris deposits (Holocene and Pleistocene)
- Qg3 — Old alluvial terrace-gravel deposits (Pleistocene)
- Qa3 — Old alluvial fan deposits (Pleistocene)
- QTg4 — Oldest alluvial terrace-gravel deposits (Pleistocene and Pliocene(?))

SEDIMENTARY ROCKS

- Jn — Navajo Sandstone (Lower Jurassic)
- Jkt — Tenney Canyon Tongue of the Kayenta Formation (Lower Jurassic)
- Jnl — Lamb Point Tongue of the Navajo Sandstone (Lower Jurassic)
- Jk — Kayenta Formation (Lower Jurassic)
- Moenave Formation (Lower Jurassic)
  - Jms — Springdale Sandstone Member
  - Jmw — Whitmore Point Member
  - Jmd — Dinosaur Canyon Member
- Chinle Formation (Upper Triassic)
  - Ticp — Owl Rock and Petrified Forest Members, undivided
  - Tics — Shinarump Member
- Moenkopi Formation (Middle(?) and Lower Triassic)
  - Tmu — Upper red member (Middle(?) and Lower Triassic)
  - Tms — Shnabkaib Member (Lower Triassic)
  - Tmm — Middle red member (Lower Triassic)
  - Tmv — Virgin Limestone Member (Lower Triassic)
  - Tml — Lower red member and Timpoweap Member, undivided (Lower Triassic)
- Kaibab Formation (Lower Permian)
  - Pkh — Harrisburg Member
  - Pkf — Fossil Mountain Member

UNITS SHOWN ONLY IN CROSS SECTION

- Toroweap Formation (Lower Permian)
  - Ptw — Woods Ranch Member
  - Ptb — Brady Canyon Member
  - Pts — Seligman Member

## EXPLANATION

**Contact**—Dashed where Jkt becomes Jk; approximate contact for alluvial units only

**Fault**—Dashed where inferred or approximately located; dotted where concealed; bar and ball on downthrown side. Faults shown as bounding alluvium do not offset alluvium. Number is estimated separation displacement in feet

**Folds**—Showing trace of axial surface and direction of plunge; dotted where concealed

**Syncline**

**Monocline**

**Strike and dip of beds**

**Inclined**—Measured in the field

**Implied**—Interpreted from aerial photographs; dip amount not determined

**Strike of vertical and subvertical joints**

**Collapse structure**—Circular collapse structures characterized by strata dipping inward toward central point. On Kaibab Formation surface (Pkh), may reflect collapse of deep-seated breccia pipe that originated in Redwall Limestone

**Kaibab-Paiute Indian Reservation Boundary**

Base from U.S. Geological Survey, 1:24,000, Moccasin, Kaibab, Pipe Valley, and Pipe Spring, 1988

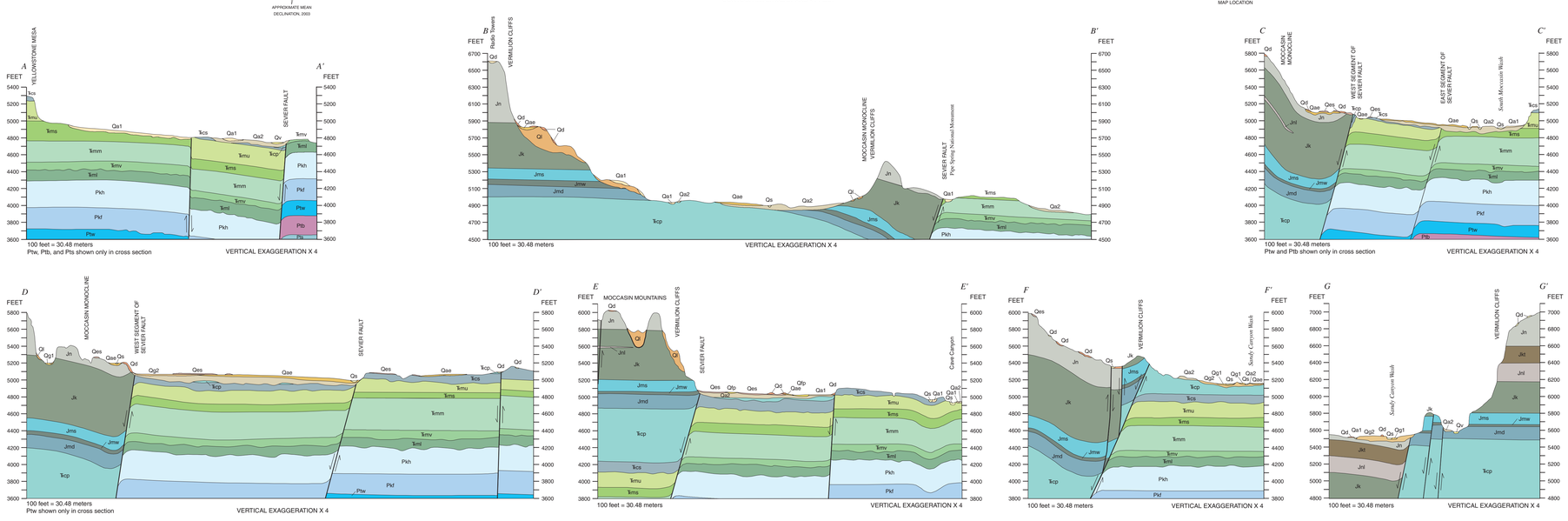
Universal Transverse Mercator Projection
1927 North American Datum
Clark 1866 Ellipsoid, Zone 12

TRUE NORTH
MAGNETIC NORTH
13°
APPROXIMATE MEAN DECLINATION, 2003

SCALE 1:31,680
1 1/2 0 1 MILE
1 .5 0 1 KILOMETER
CONTOUR INTERVAL 20 AND 40 FEET

ARIZONA
MAP LOCATION

Geology mapped in 2002 and 2003 by G.H. Billingsley
Digital database by Susan S. Priest and Tracey Felger
Edited by Theresa Iki
Manuscript approved for publication November 10, 2004




# Geologic Map of Pipe Spring National Monument and the Western Kaibab-Paiute Indian Reservation, Mohave County, Arizona

By

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2004

This map was printed on an electronic plotter directly from digital files. Dimensional calibration may vary between electronic plotters and between X and Y directions on the same plotter, and paper may change size due to atmospheric conditions; therefore, scale and proportions may not be true on plots of this map.

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