Detailed geologic mapping in the Muddy Springs area, Clark County Nevada

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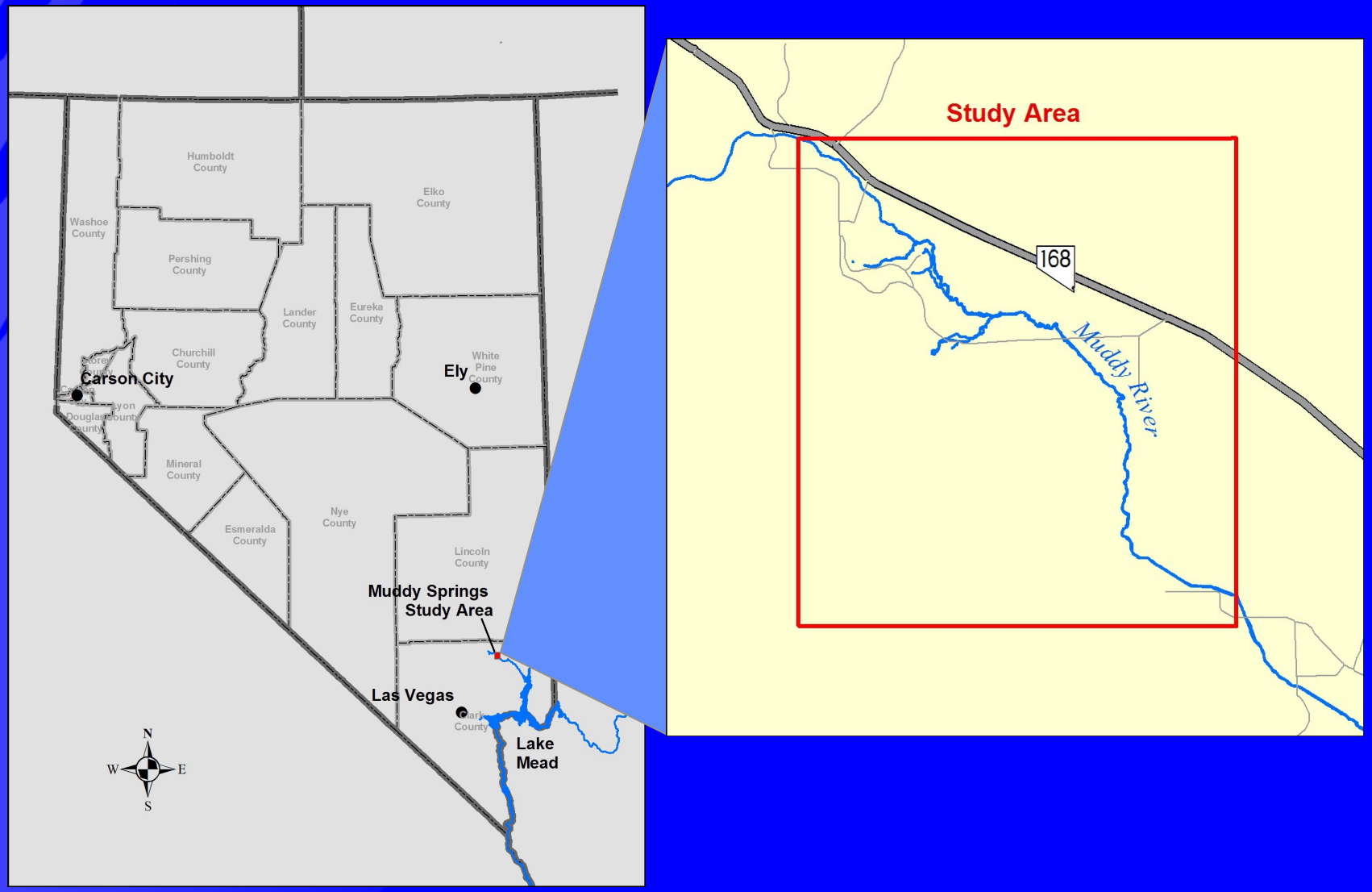
Location Map



Muddy Springs area

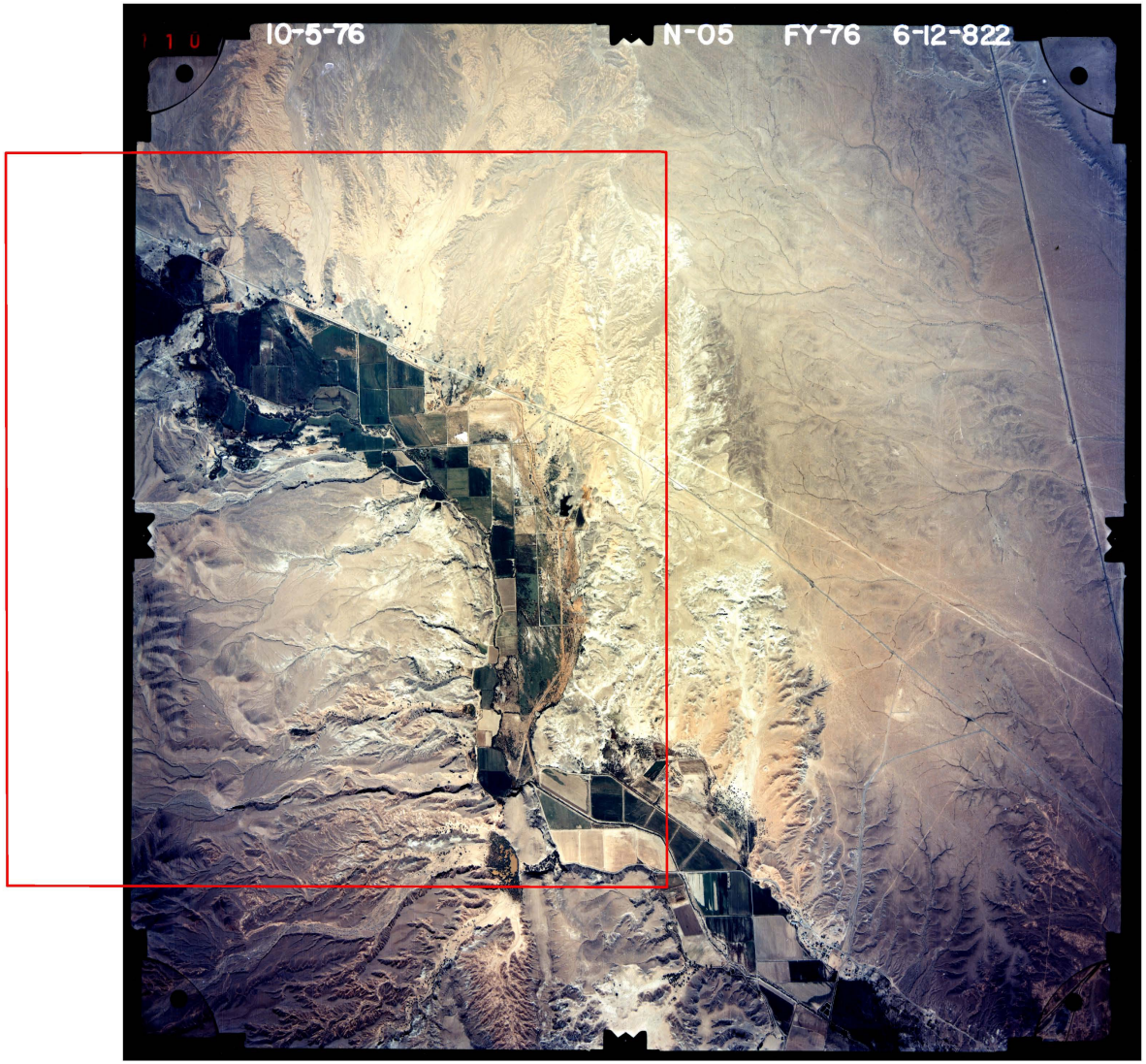
- Near Moapa, in Clark County, Northeast of Las Vegas
- High profile because of water supply and endangered species issues
- A major discharge point for a large part of the carbonate terrain (White River system)

Background

- A preliminary geologic 7.5 minute quad map was prepared by the USGS in an open file report (Schmidt and others, 1996)
- This map is adjacent to four other quad maps and may be the first since the NBMG Clark County report (Longwell and others, 1965)
- Neither of the maps indicate that there is a major structure responsible for the location of the springs

Detailed mapping

- Using the preliminary geologic map (Schmidt and others, 1996) as a base:
  - One part of the map was selected for investigation (Muddy Springs area)
  - Field mapping to look for evidence of faults and paleo-spring discharge
  - Lithology / texture of the paleo- spring deposits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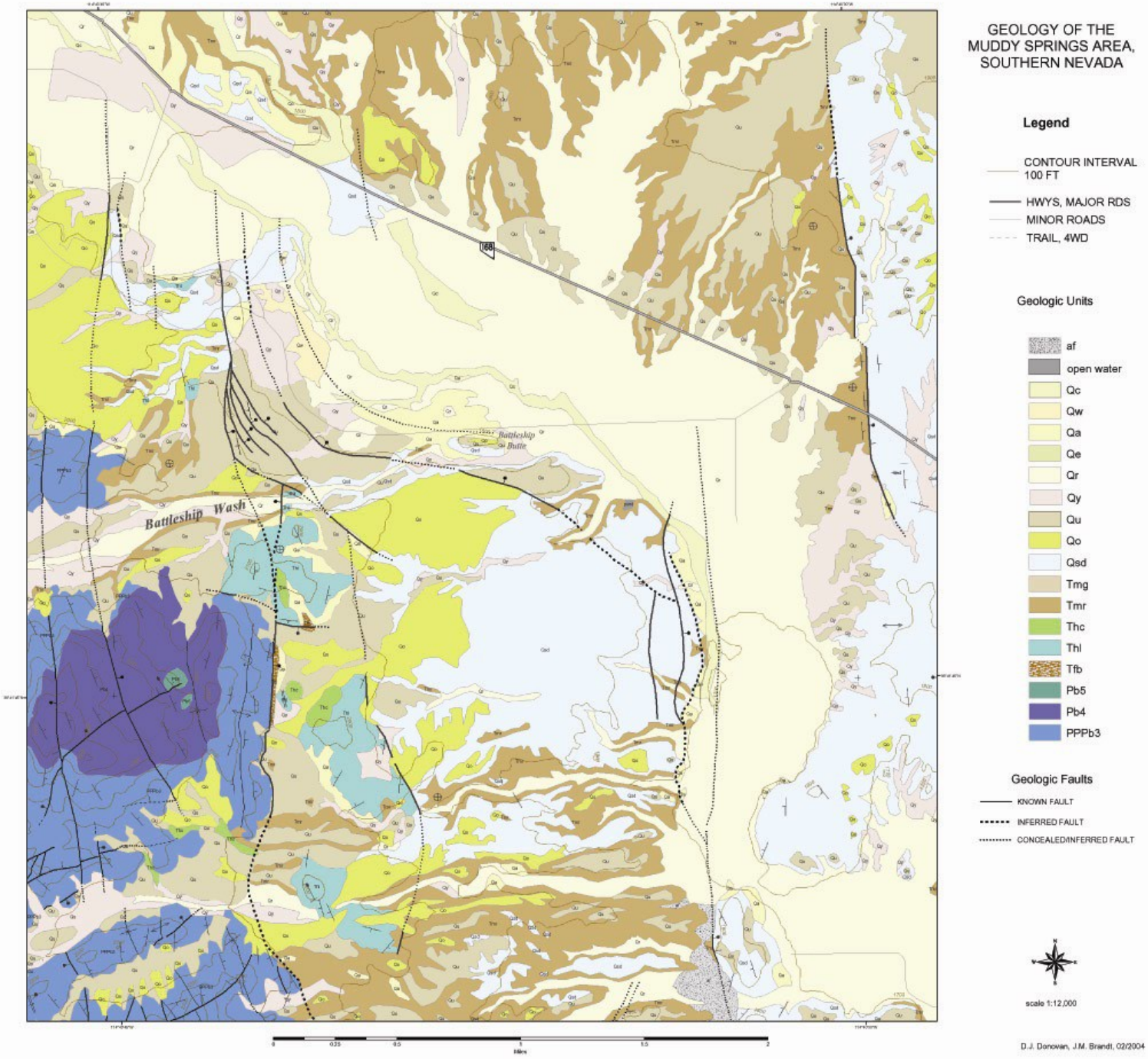
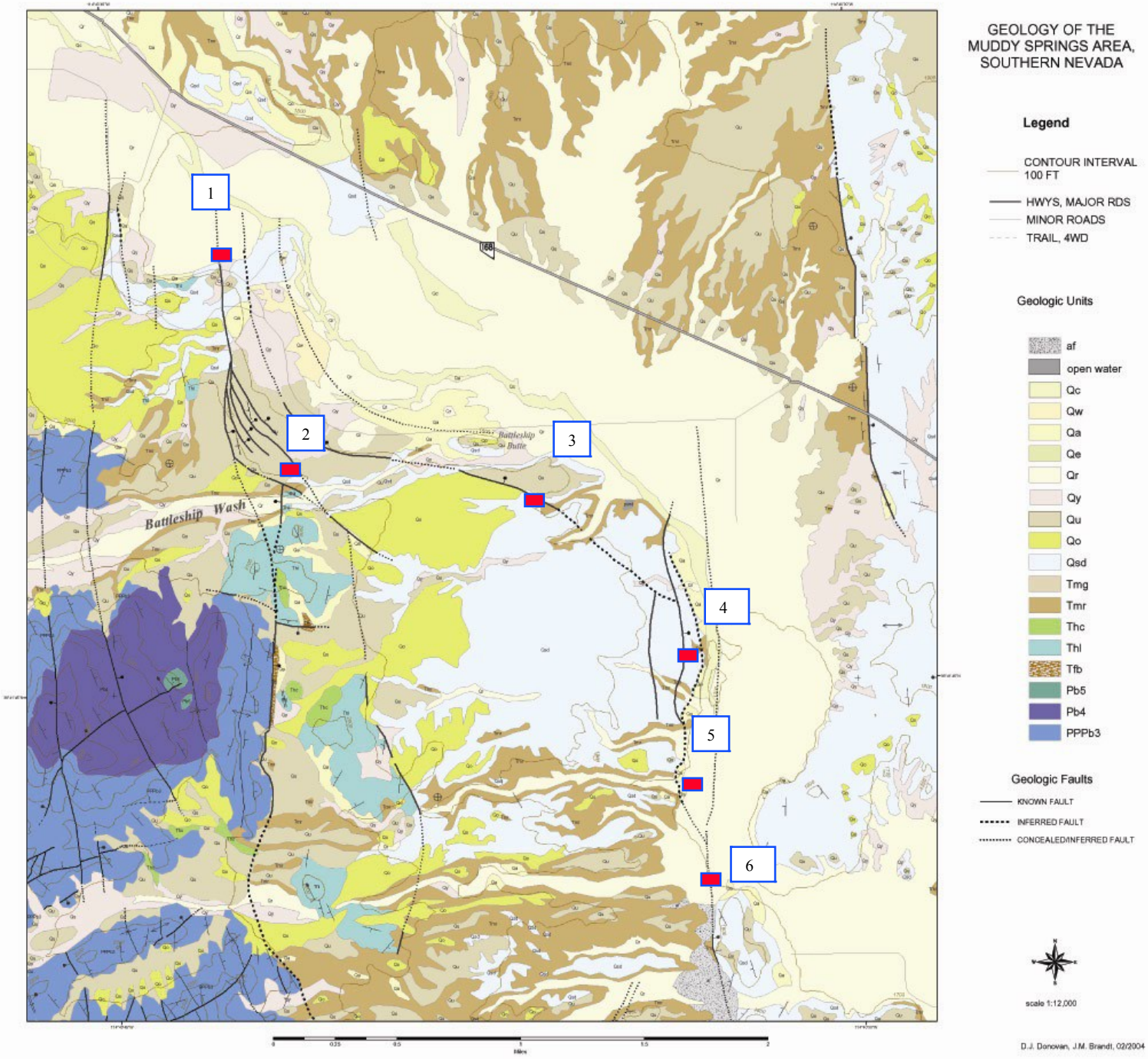
N-05
FY-76
6-12-822


GEOLOGY OF THE
MUDDY SPRINGS AREA,
SOUTHERN NEVADA
Legend
CONTOUR INTERVAL
100 FT
HWYS, MAJOR RDS
MINOR ROADS
TRAIL, 4WD
Geologic Units
af
open water
Qc
Qw
Qa
Qe
Qr
Qy
Qu
Qo
Qsd
Tmg
Tmr
Thc
Thl
Tfb
Pb5
Pb4
PPPb3
Geologic Faults
KNOWN FAULT
INFERRED FAULT
CONCEALED/INFERRED FAULT
Battleship Wash
Battleship Butte
168
scale 1:12,000
D.J. Donovan, J.M. Brandt, 02/2004

Geologic map

- Large north-south fault west of the spring area
- Smaller northwest structures
- Structures explain the locations of the springs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MINOR ROADS
TRAIL, 4WD
Geologic Units
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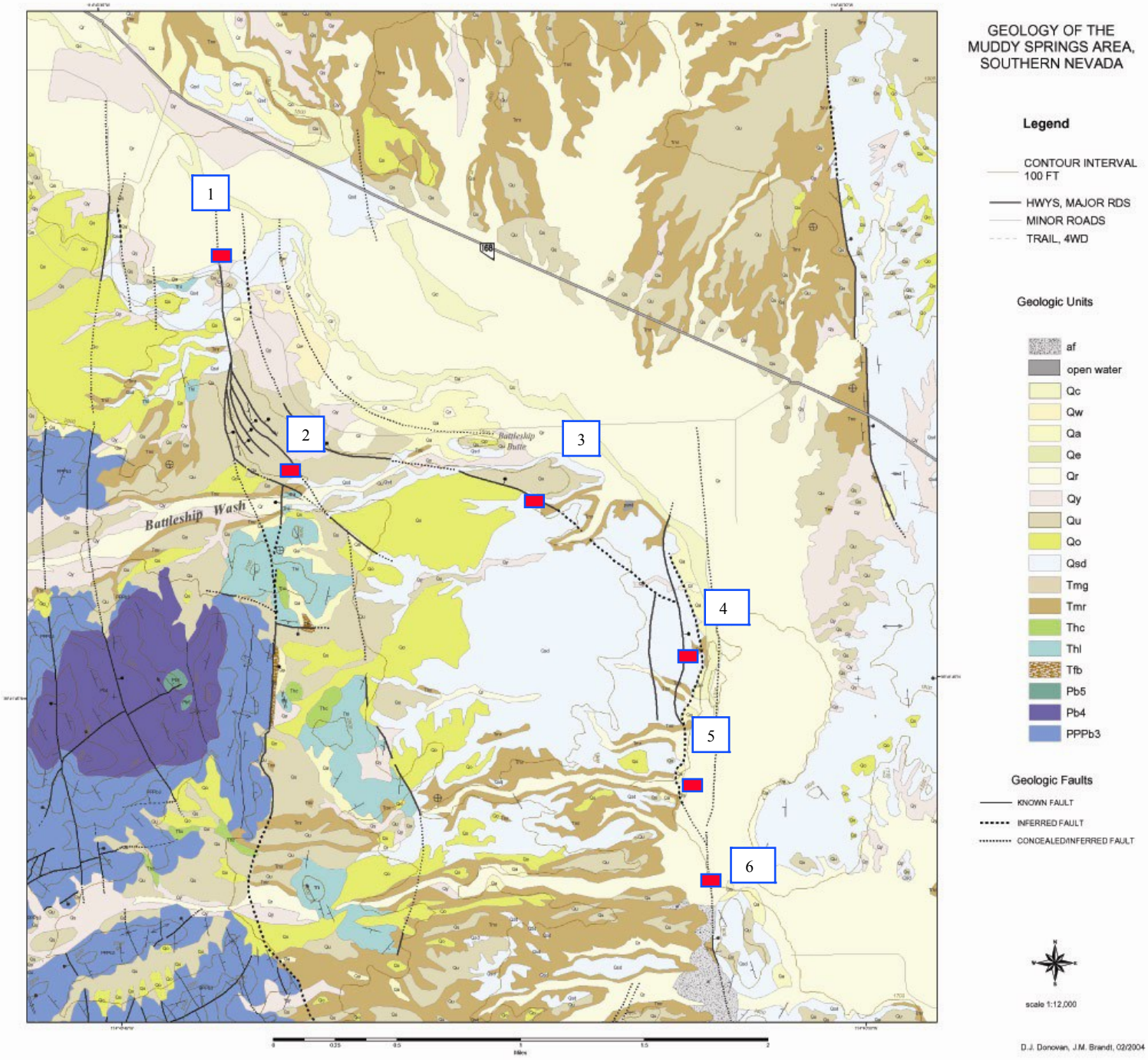
D.J. Donovan, J.M. Brandt, 02/2004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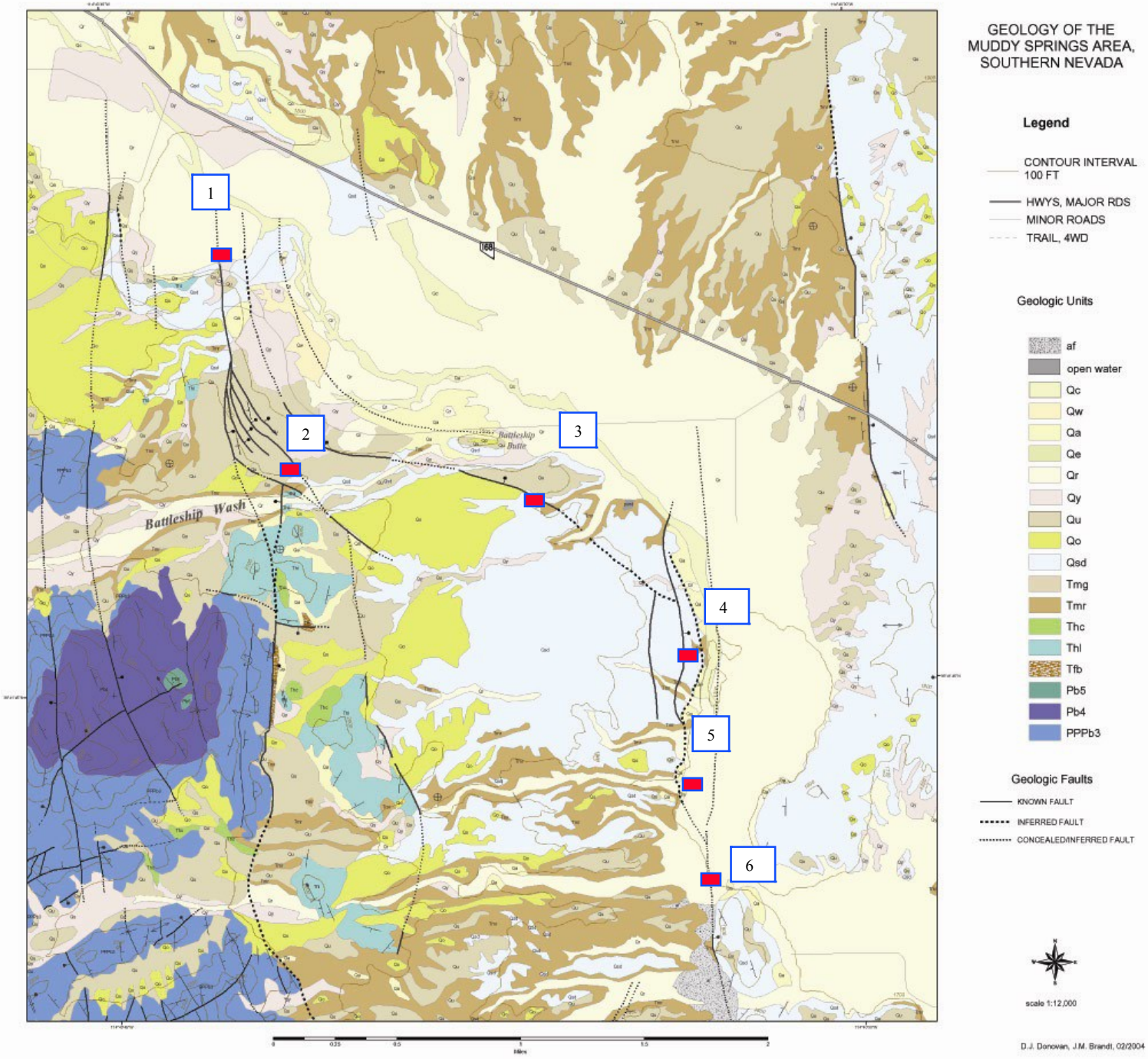
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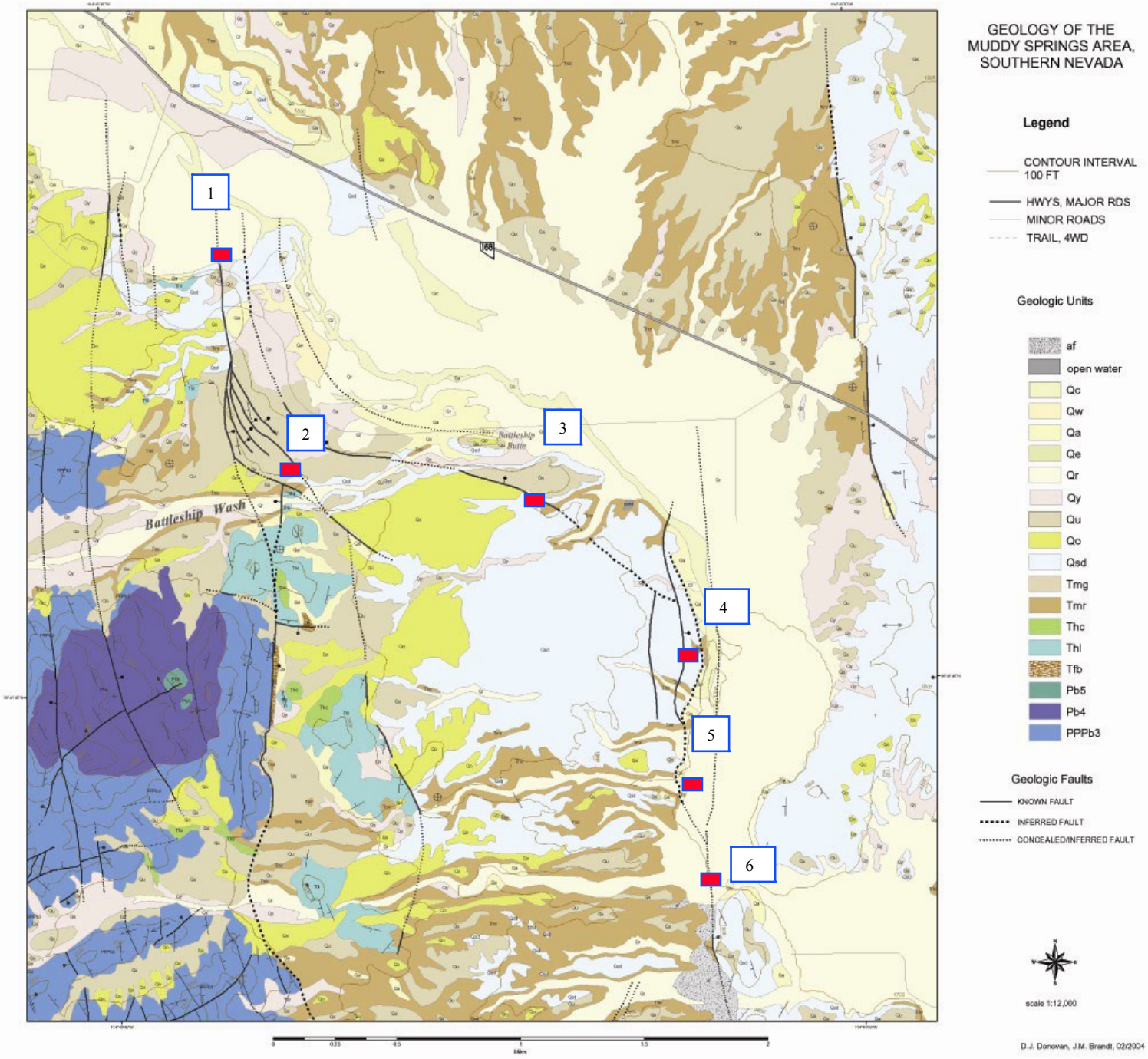
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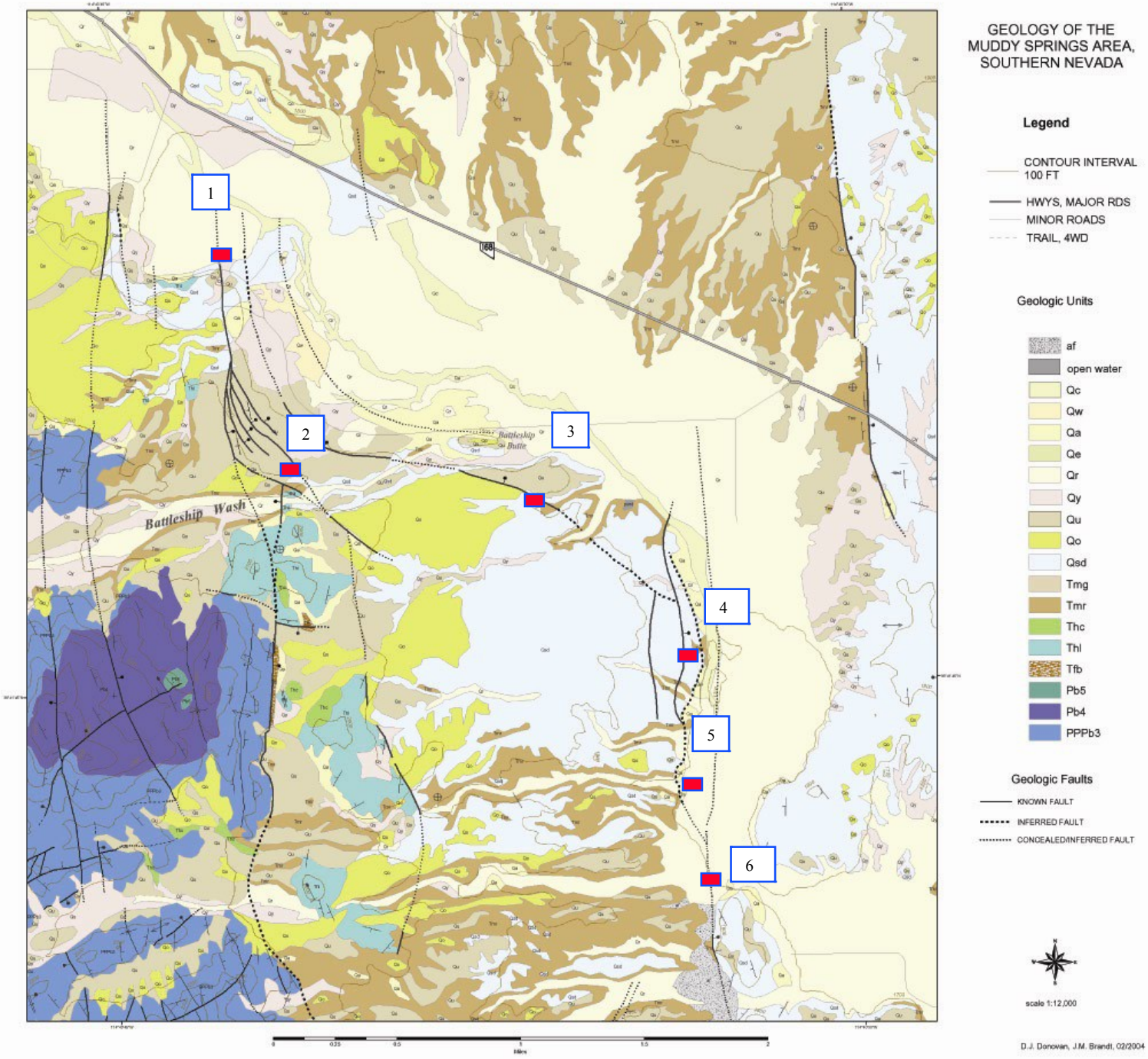
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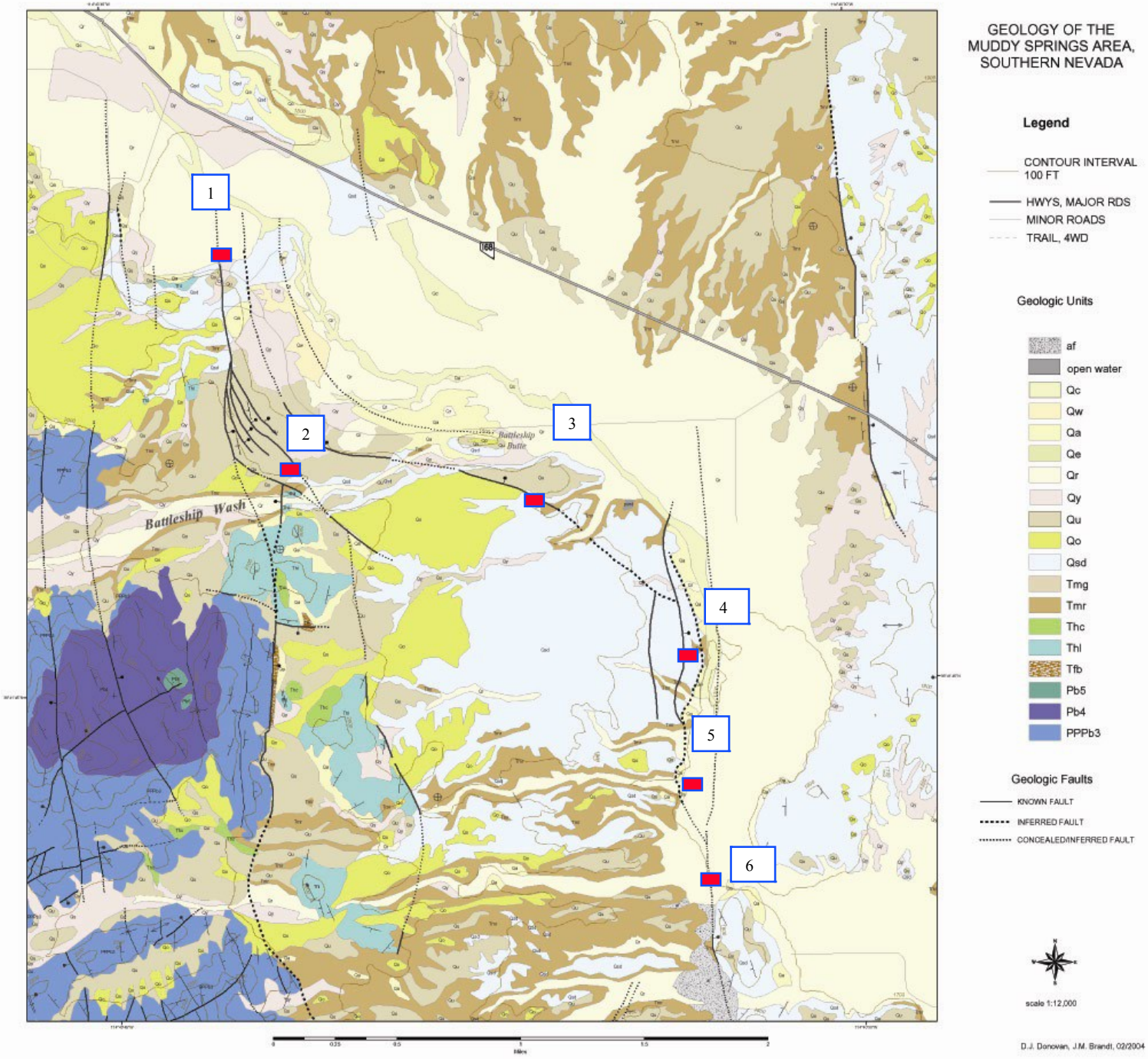
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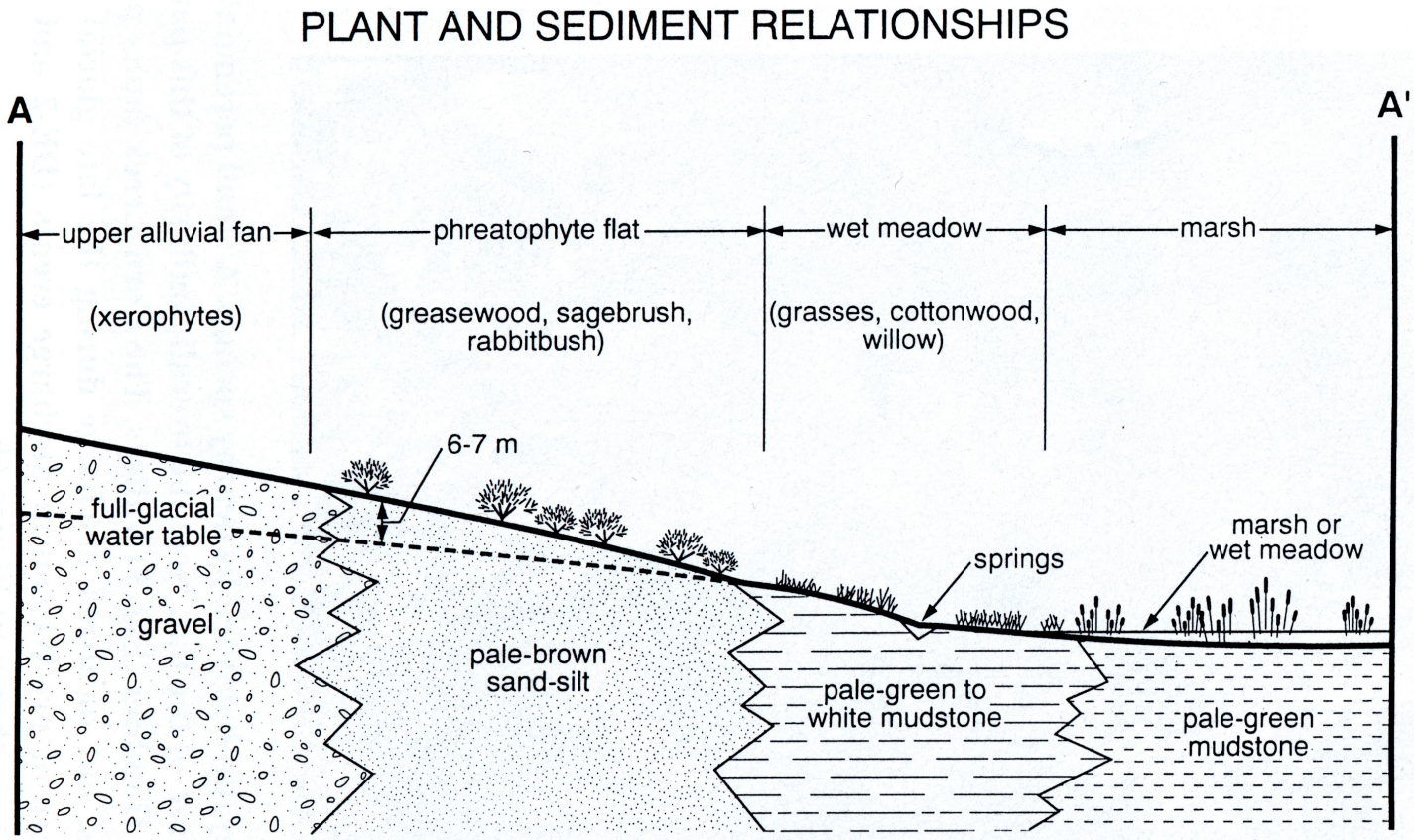


Figure 6. (b) Cross section of full glacial-age environments on Corn Creek Flat. See Figure 6a for location. The water table was 6–7 m below the surface at the xerophyte-phreatophyte transition. Water depth decreased downslope, and wet meadows covered by grasses and perhaps trees clustered around areas of spring discharge. Spring flow coalesced into a small (<5 km^2) marsh at the bottom of Corn Creek Flat.

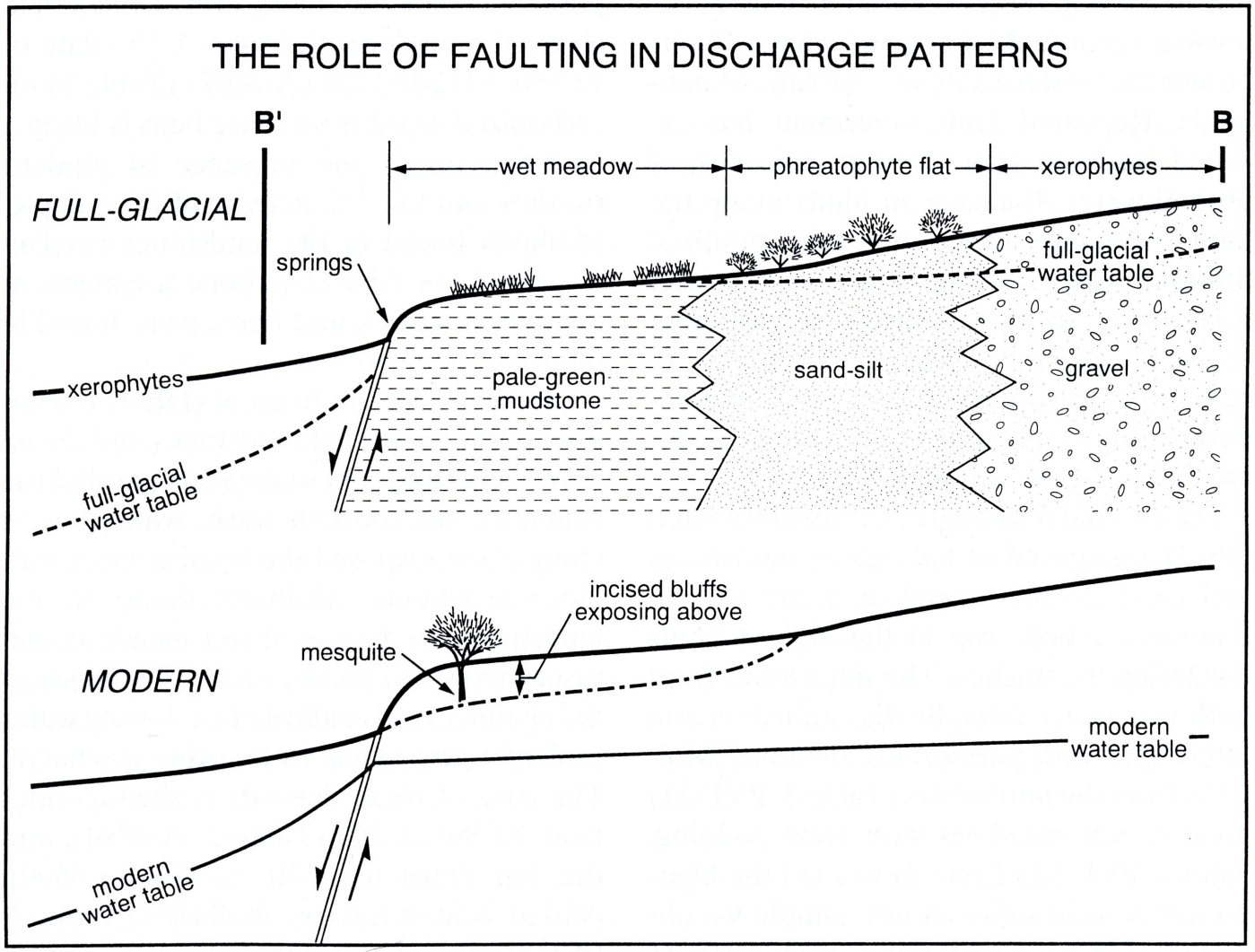
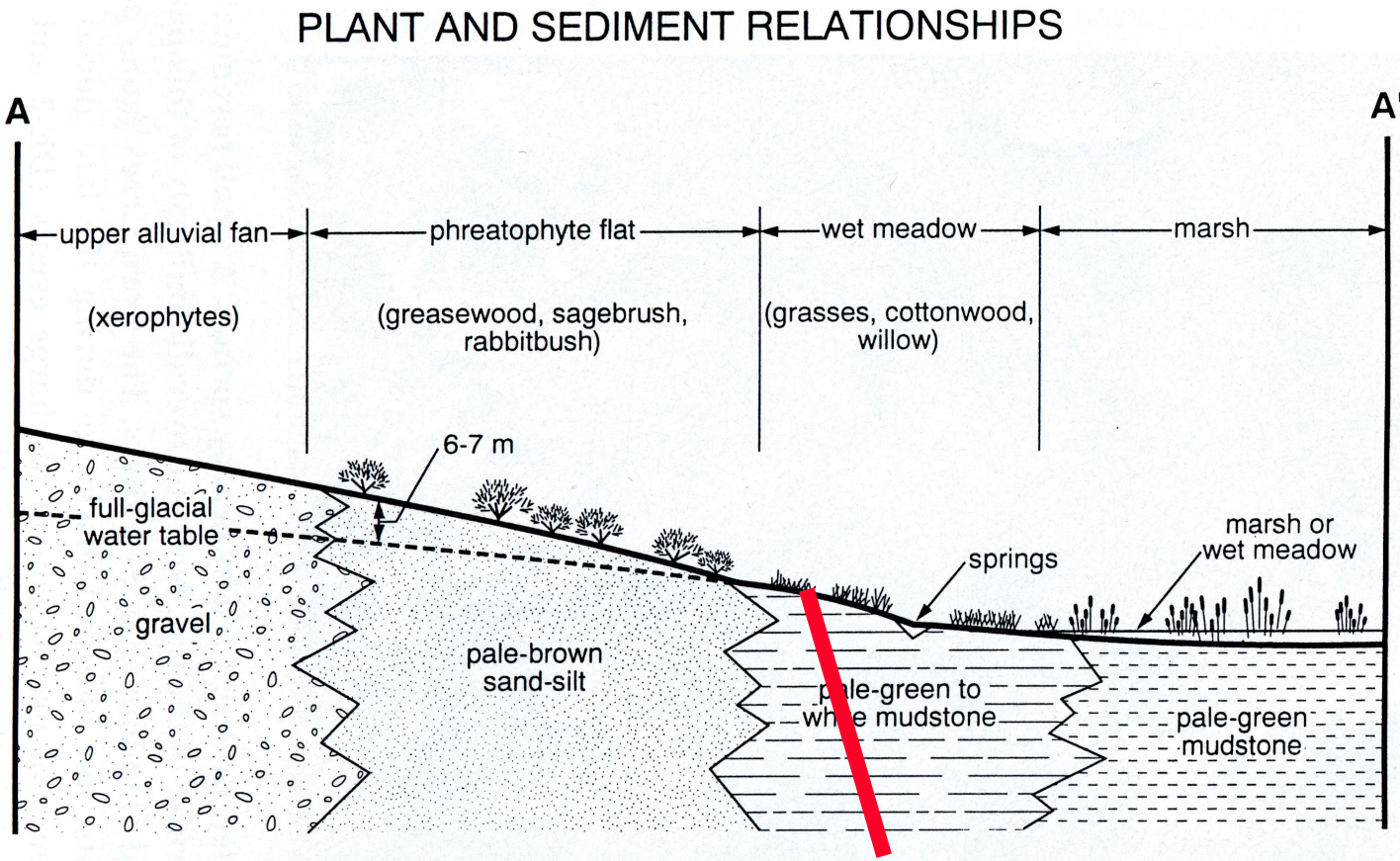


Figure 9. Cross section (see Fig. 8 for location) of modern and full glacial deposits and their relationship to the water table, which has been partially dammed by a fault.



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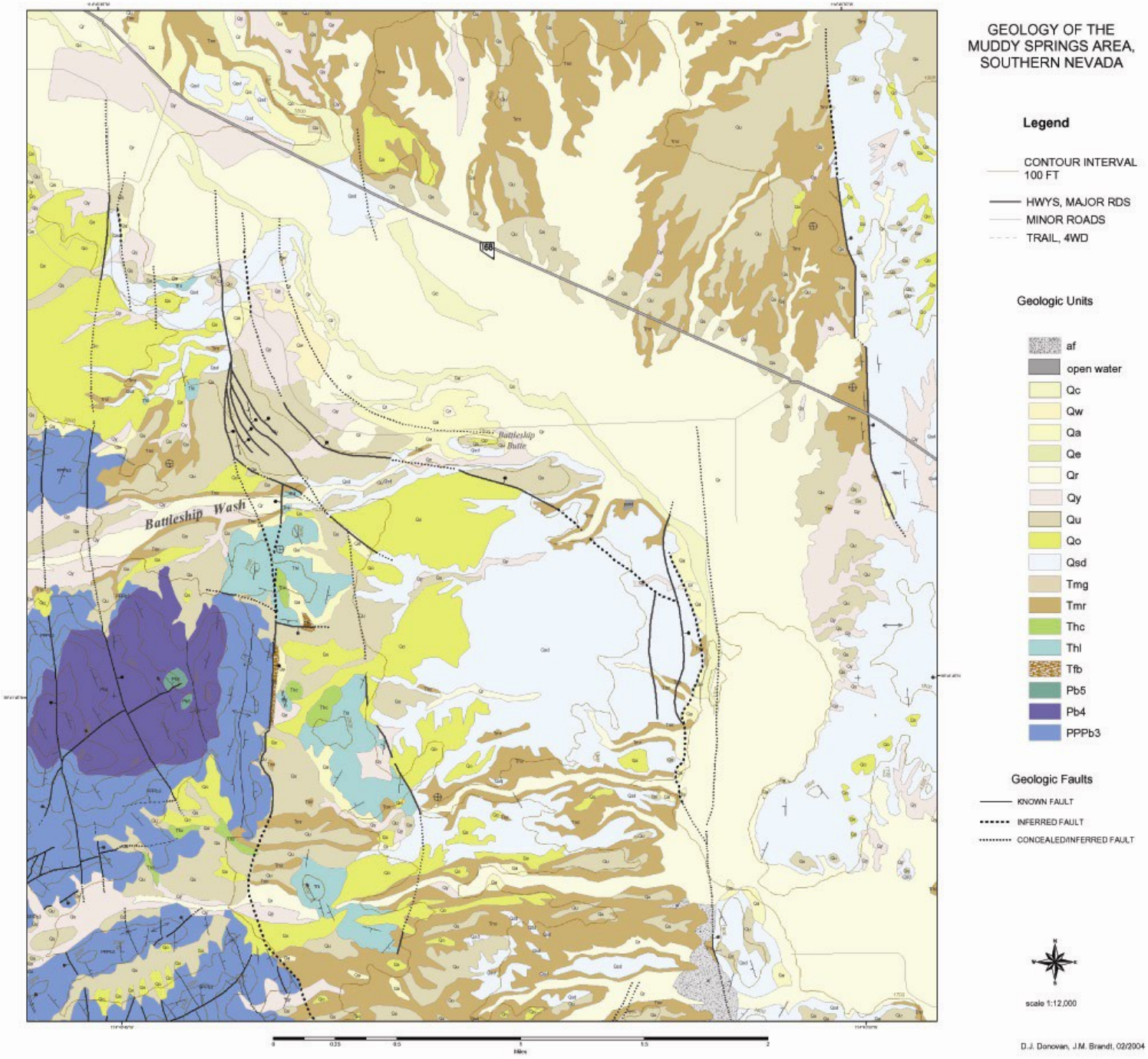
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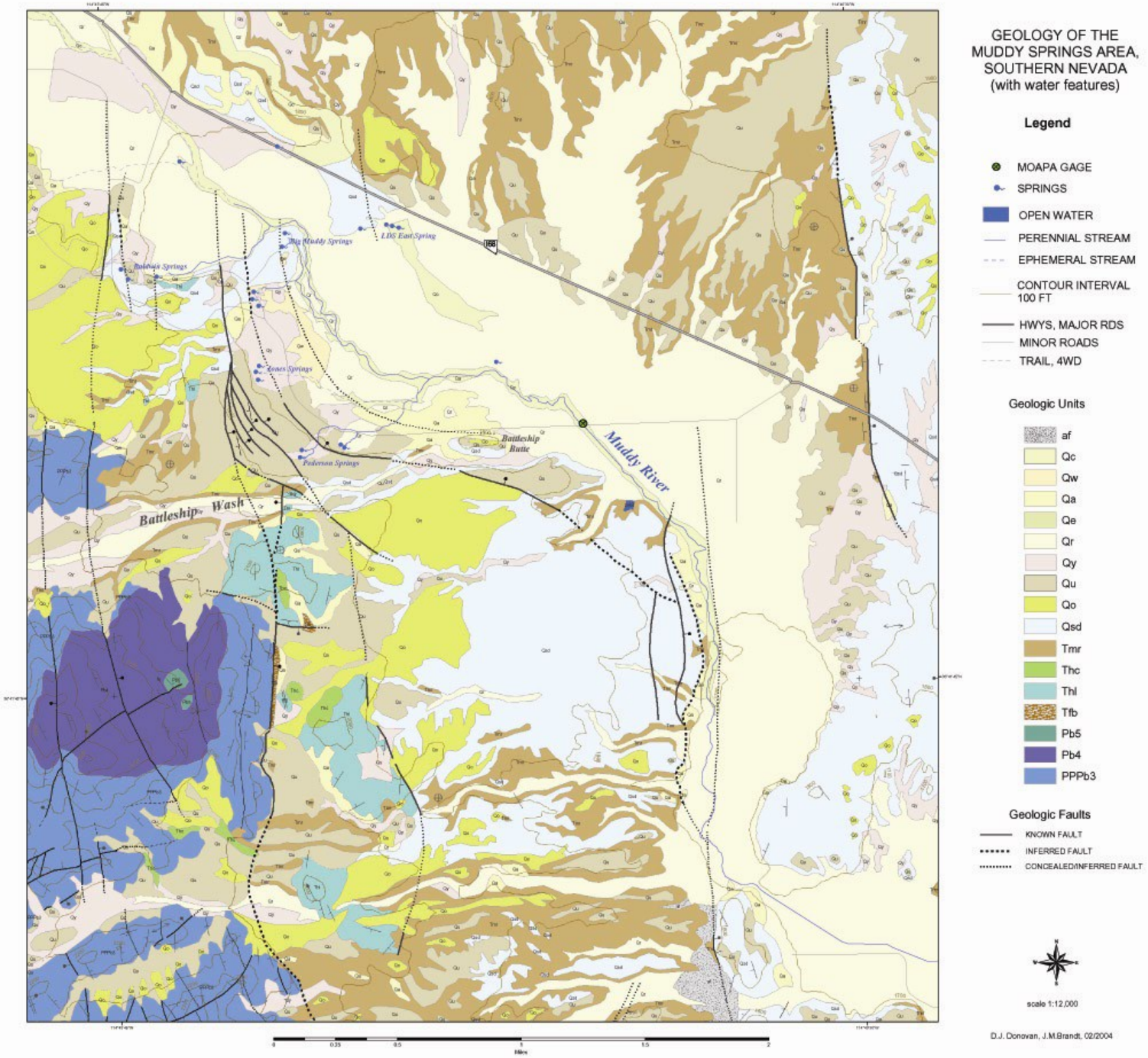
GEOLOGY OF THE
MUDDY SPRINGS AREA,
SOUTHERN NEVADA
(with water features)
Legend
MOAPA GAGE
SPRINGS
OPEN WATER
PERENNIAL STREAM
EPHEMERAL STREAM
CONTOUR INTERVAL
100 FT
HWYS, MAJOR RDS
MINOR ROADS
TRAIL, 4WD
Geologic Units
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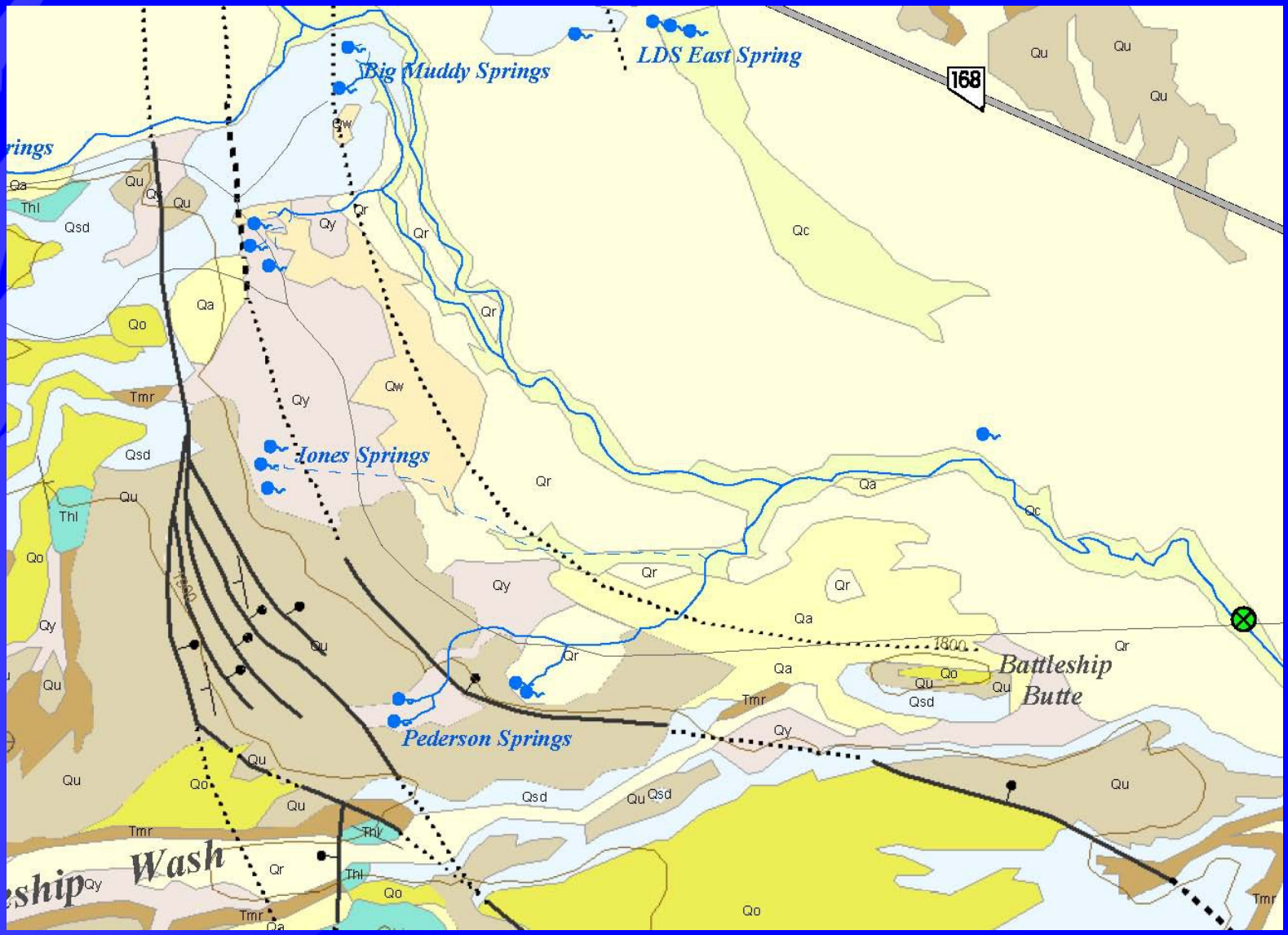
Big Muddy Springs
LDS East Spring
Baldwin Springs
Jones Springs
Pederson Springs
Battleship Butte
Muddy River
Battleship Wash
168
Miles

Detail map of Muddy Springs area



Geologic map

- Original alluvial units were simplified
- Greater detail on structures
- Structures explain the locations of the springs