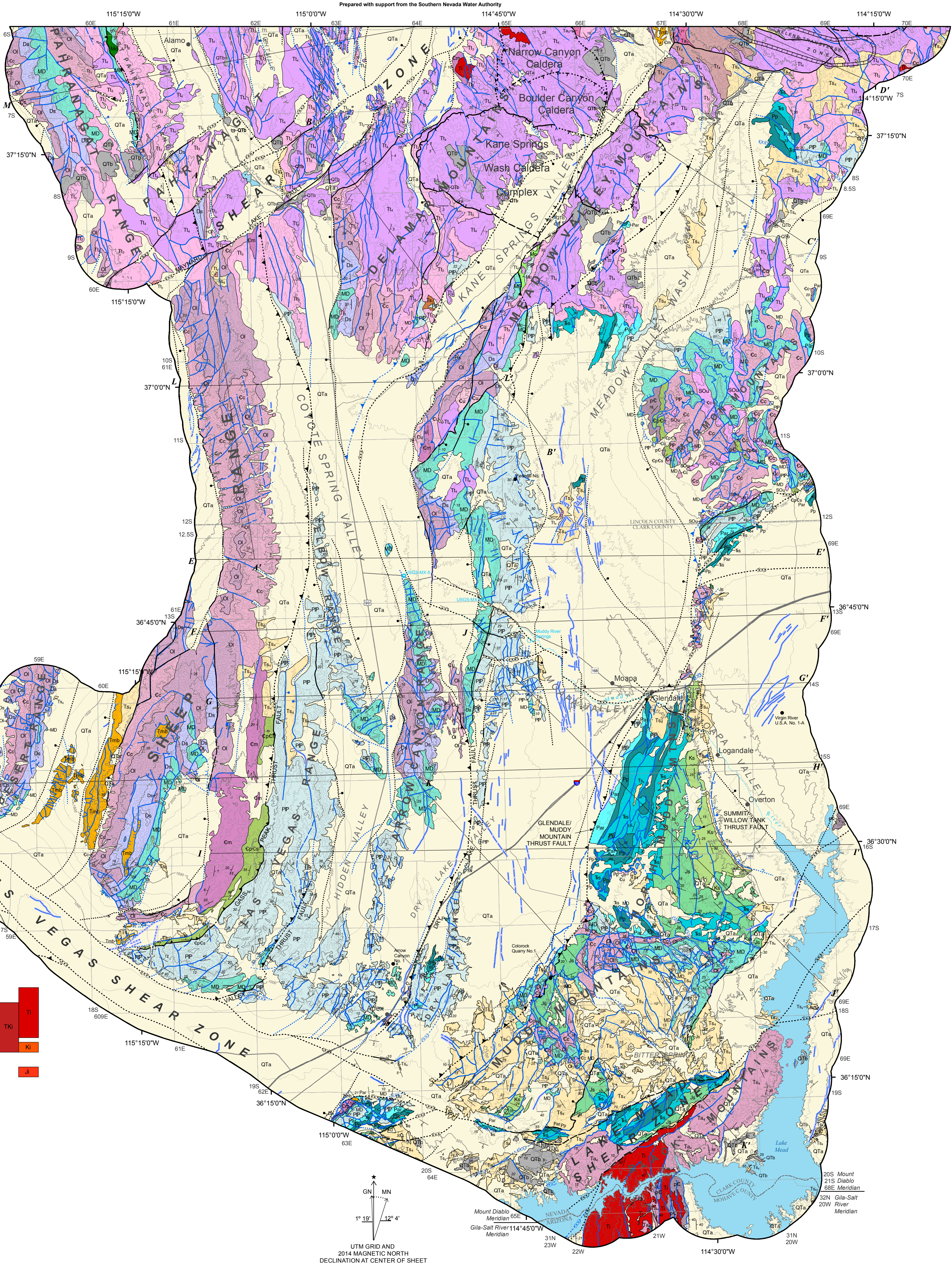
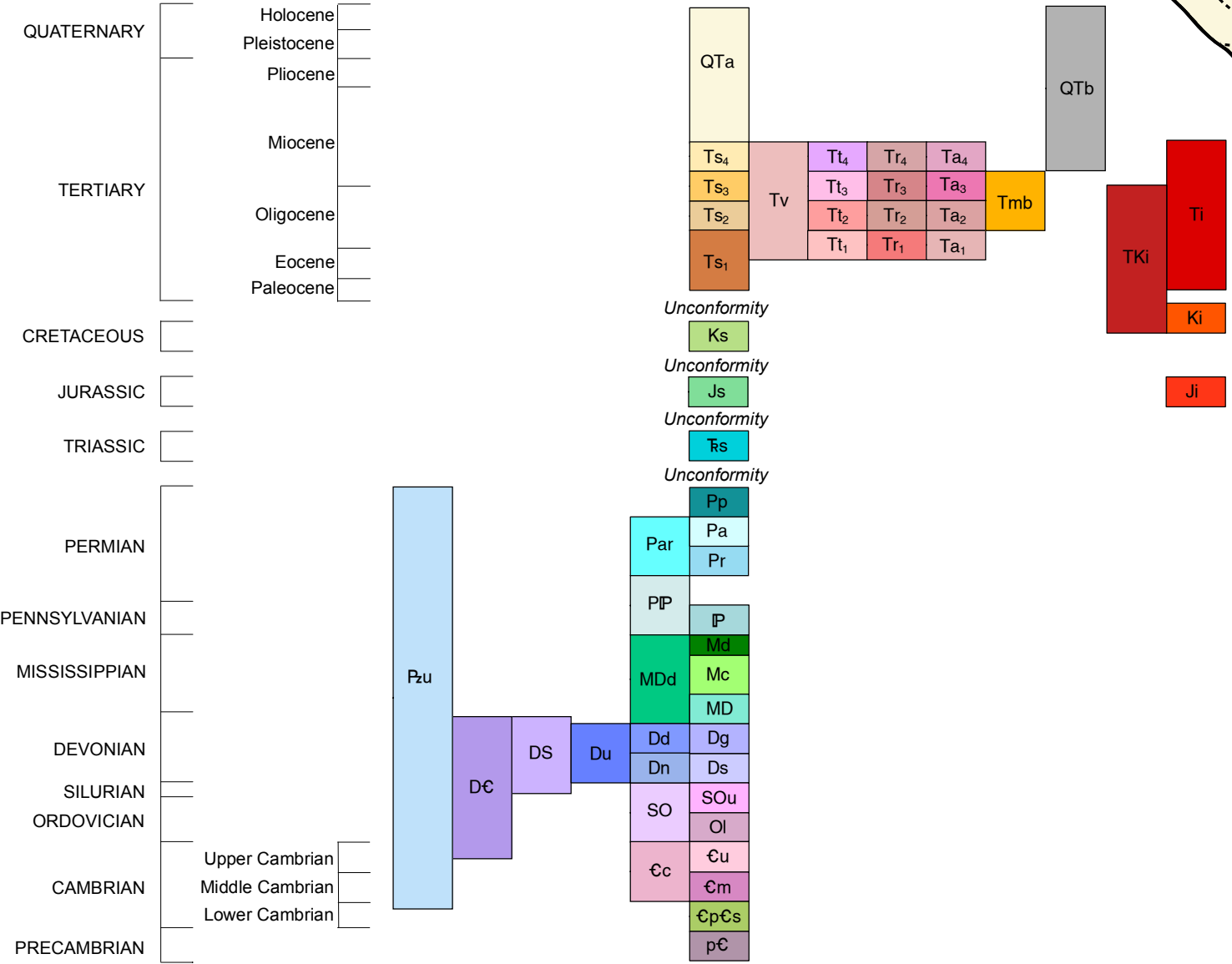


- QTa Surficial and basin-fill deposits (Holocene to lower Miocene)  
QTb Basalt lava flows (Holocene to lower Miocene)  
Ts4 Sedimentary rocks, unit 4 (Miocene)  
Ts3 Sedimentary rocks, unit 3 (plate 1 and cross sections) (Miocene to Oligocene)  
Ts2 Sedimentary rocks, unit 2 (plate 1 and cross sections) (Oligocene)  
Ts1 Sedimentary rocks, unit 1 (Oligocene to Upper Cretaceous?)  
Tv Volcanic rocks, undivided (cross sections only) (Miocene to Eocene)  
Tl4 Ash-flow tuff and interbedded ash-fall tuff, unit 4 (Miocene)  
Tl3 Ash-flow tuff and interbedded ash-fall tuff, unit 3 (Miocene to Oligocene)  
Tl2 Ash-flow tuff and interbedded ash-fall tuff, unit 2 (Oligocene)  
Tl1 Ash-flow tuff and interbedded ash-fall tuff, unit 1 (plate 1 and cross sections) (Oligocene to Eocene)  
Tr4 Rhyolite lava flows, unit 4 (plate 1 and cross sections) (Miocene)  
Tr3 Rhyolite lava flows, unit 3 (plate 1 and cross sections) (Miocene to Oligocene)  
Tr2 Rhyolite lava flows, unit 2 (plate 1 and cross sections) (Oligocene)  
Tr1 Rhyolite lava flows, unit 1 (plate 1 and cross sections) (Oligocene to Eocene)  
Ta4 Intermediate-composition lava flows, unit 4 (Miocene)  
Ta3 Intermediate-composition lava flows, unit 3 (Miocene to Oligocene)  
Ta2 Intermediate-composition lava flows, unit 2 (plate 1 and cross sections) (Oligocene)  
Ta1 Intermediate-composition lava flows, unit 1 (plate 1 and cross sections) (Oligocene to Eocene)  
Tmb Megabreccia (Miocene to Oligocene)  
M Intrusive rocks (Miocene to Paleocene)  
TKi Intrusive rocks (Miocene to Cretaceous)  
Ki Intrusive rocks (plate 1 and cross sections) (Upper Cretaceous)  
Js Sedimentary rocks, undivided (Upper and Lower Cretaceous)  
Ji Intrusive rocks (plate 1 and cross sections) (Jurassic)  
Js Sedimentary rocks, undivided (plate 2 only) (Jurassic)  
Ts Sedimentary rocks, undivided (Triassic)  
Pu Sedimentary rocks, undivided (cross section only) (Paleozoic)  
Pp Park City Group, undivided (Permian)  
Par Arcturus Formation and Rib Hill Sandstone, undivided (Permian)  
Pa Arcturus Formation (plate 1 and cross sections) (Permian)  
Pr Rib Hill Sandstone (plate 1 and cross sections) (Lower Permian)  
PP Riepe Spring Limestone and Ely Limestone, undivided (Lower Permian to Pennsylvanian)  
P Ely Limestone (plate 1 and cross sections) (Pennsylvanian)  
MDd Diamond Peak Formation, Chainman Shale, Joana Limestone, and Pilot Shale, undivided (plate 1 and cross sections) (Upper Mississippian to Upper Devonian)  
MDs Diamond Peak Formation (Upper Mississippian)  
Mc Chainman Shale (Upper Mississippian)  
MD Joana Limestone and Pilot Shale, undivided (Lower Mississippian to Upper Devonian)  
DC Carbonate and clastic rocks, undivided (plate 1 and cross sections) (Devonian to Upper Cambrian)  
DS Sedimentary rocks, undivided (Devonian to Silurian)  
Du Carbonate sedimentary rocks, undivided (Devonian)  
Dd Devils Gate Formation (plate 1 and cross sections) (Upper to Middle Devonian)  
Dg Guilmette Formation (plate 1 and cross sections) (Upper to Middle Devonian)  
Dn Nevada formation (plate 1 and cross sections) (Middle to Lower Devonian)  
Ds Simonson Dolomite and Sevy Dolomite, undivided (plate 1 and cross sections) (Middle to Lower Devonian)  
SO Sedimentary rocks, undivided (cross sections only) (Silurian to Ordovician)  
SOu Dolomite, upper part, undivided (Silurian to Upper Ordovician)  
Ol Dolomite, lower part, undivided (Middle to Lower Ordovician)  
Cc Carbonate sedimentary rocks, undivided (Cambrian)  
Cu Limestone and shale, upper part, undivided (Lower Ordovician? to Upper Cambrian)  
Cm Limestone and shale, middle part, undivided (Upper to Middle Cambrian)  
CpCs Sedimentary rocks, lower part (Middle Cambrian to Neoproterozoic)  
pC Metamorphosed and crystalline basement rocks (Neoproterozoic to Paleoproterozoic)

See report for full unit descriptions and references for this map.



Contact Solid where certain.

Regional Faults

Normal fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Ball on downthrown side.  
Quaternary normal fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Ball on downthrown side.  
Mainly strike-slip fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Arrows show relative motion.

Detachment fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Hatchures on upper plate.

Thrust fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Sawtooth on upper (tectonically higher) plate.

Subsidiary Faults

Normal fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Ball on downthrown side.  
Quaternary normal fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Ball on downthrown side.

Mainly strike-slip fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Arrows show relative motion.

Detachment fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Hatchures on upper plate.

Thrust fault Solid where certain and location accurate, dashed where approximately located, dotted where concealed; queried if identity or existence uncertain. Sawtooth on upper (tectonically higher) plate.

Note: Many faults, primarily subsidiary faults, not shown in cross section.

Caldera margin Solid where certain and location accurate, dashed where approximately located, dotted where concealed; ticks point into caldera.

Strike and dip of bedding  
Inclined Overturned

Federal No. 1  
Oil Well Water Well Spring

A A'  
Line of cross section

Transverse zone  
(Zone of possible disruption)

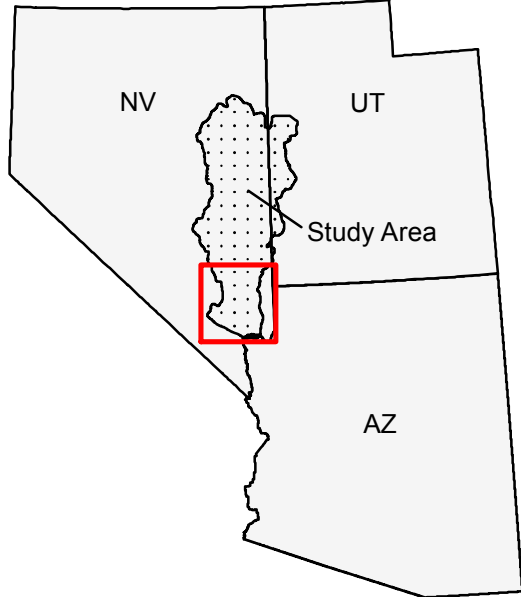
## GEOLOGIC MAP OF THE SOUTHERN PART OF THE STUDY AREA, NEVADA AND ARIZONA PLATE 2 of 4

Peter D. Rowley<sup>1</sup>, Gary L. Dixon<sup>2</sup>, Edward A. Mankinen<sup>3</sup>, Keith T. Pari<sup>4</sup>, Darcy K. McPhee<sup>3</sup>, Edwin H. McKee<sup>3</sup>, Andrew G. Burns<sup>4</sup>,  
James M. Watrus<sup>4</sup>, E. Bartlett Ekren<sup>5</sup>, William G. Patrick<sup>4</sup>, and Judith M. Brandt<sup>4</sup>

<sup>1</sup>Geologic Mapping, Inc., New Harmony, UT, <sup>2</sup>Southwest Geology LLC, Blackfoot, ID, <sup>3</sup>U.S. Geological Survey, Menlo Park, CA

<sup>4</sup>Southern Nevada Water Authority, Las Vegas, NV, <sup>5</sup>Private consultant, White Sulphur Springs, MT

2017



Nevada Bureau of Mines and Geology  
Mackay School of Earth Sciences and Engineering  
College of Science  
University of Nevada, Reno

Field work done between 1990 and 2015  
Supported by the Southern Nevada Water Authority

PEER-REVIEWED MAP  
Office review by Andrew Zuza and James Faulds

Edited by Andrew Zuza, Jennifer Vican, Jack Hursh, Rachel Mander,  
and James Faulds  
Compilation by Southern Nevada Water Authority  
Cartography and map production in ESRI ArcGIS v10.3 (ArcGeology v1.3)  
by Rachel Mander and Irene M. Seelye  
First Edition, July 2017  
Symbology (per FGDC-STD-013-2006)  
Printed by Nevada Bureau of Mines and Geology  
© Copyright 2017 The University of Nevada, Reno. All Rights Reserved

This map was printed on an electronic paper directly from digital files. Dimensional calibration may vary between electronic plates and a hard copy on the same plate, and paper may change size. Therefore, scale and proportions may not be exact on copies of this map.

For sale by:  
Nevada Bureau of Mines and Geology  
2175 Raggio Pkwy  
Reno, Nevada 89512  
ph. (775) 882-8766  
www.nbmng.unr.edu, nbmng@unr.edu

2445