PREPARED IN COOPERATION WITH THE U.S. GEOLOGICAL SURVEY AND WITH SUPPORT FROM THE NEVADA DIVISION OF MINERALS

Nevada Bureau of Mines and Geology

OPEN-FILE REPORT 10-4
PLATE 1 GEOLOGIC TERRANE MAP OF NEVADA

Quaternary Sediments and Rocks (Holocene and Pleistocene)

Sediments and Sedimentary Rocks

Qal	Alluvium, undifferentiated
Qs	Sand dunes
Qpl	Playa, lake bed, and flood plain deposits
Qg	Glacial moraines

Volcanic Rocks

Qb	Basalt flows

Quaternary and Pliocene Sediments and Rocks

Sediments and Sedimentary Rocks

QThs	Hot spring travertine, sinter, and tufa (Holocene to Pliocene)
QTls	Landslide deposits, colluvium, and talus (Holocene to Pliocene)
QTg	Older gravels (Pleistocene to Pliocene)
QToa	Older alluvium and alluvial fan deposits (Pleistocene and Pliocene)
QTs	Tuffaceous limestone, siltstone, sandstone, and conglomerate (Holocene to Pliocene)

Volcanic Rocks

QTb	Basalt flows (Holocene to Pliocene)
QTa	Andesite flows and breccias (Holocene to Pliocene)
QTr	Rhyolite dome (Holocene to Pliocene)

Tertiary and Upper Cretaceous(?) Rocks

Volcanic and Sedimentary Rocks

Tba	Andesite and basalt flows (Miocene and Oligocene)
Tbg	Basalt, gravel, and tuffaceous sedimentary rocks (Miocene)
Ths	Tuffaceous sedimentary rocks (middle Miocene to upper Oligocene)
Ts_3	Younger tuffaceous sedimentary rocks (Pliocene and Miocene)
Tb_3	Basalt (Miocene)
Ta_3	Younger andesite and intermediate flows and breccias (Miocene)
Tt_3	Younger silicic ash flow tuffs (Miocene)
Tr_3	Younger rhyolitic flows and shallow intrusive rocks (Miocene)
Ts_2	Older tuffaceous sedimentary rocks (lower Miocene and Oligocene)
Tb_2	Basalt, tuff, and breccia (lower Miocene and Oligocene)
Ta_2	Intermediate andesite and intermediate flows and breccias (lower Miocene and Oligocene)
Tt_2	Intermediate silicic ash flow tuff (lower Miocene and Oligocene)
Tr_2	Intermediate rhyolitic flows and shallow intrusive rocks (lower Miocene and Oligocene)
TKs_1	Conglomerate, lacustrine, and tuffaceous sedimentary rocks (lower Oligocene to upper Cretaceous(?))
Ta_1	Older andesite and intermediate flows and breccias (lower Oligocene to middle Eocene)
Tt_1	Older silicic ash flow tuffs (lower Oligocene to middle Eocene)
Tr_1	Older rhyolitic flows and shallow intrusive rocks (lower Oligocene to middle Eocene)

Intrusive Rocks

Tmi	Mafic phaneritic intrusive rocks (Miocene to middle Eocene)
Tfi	Felsic phaneritic intrusive rocks (Miocene to Eocene)
Tri	Rhyolitic intrusive rocks with aphanitic groundmass (Miocene to middle Eocene)

Miocene(?) to Jurassic(?) Intrusive Rocks

TJmi	Mafic phaneritic intrusive rocks (Miocene(?) to Jurassic(?))
TJfi	Felsic phaneritic intrusive rocks (Miocene(?) to Jurassic(?))

Mesozoic Intrusive and Volcanic Rocks

Intrusive Rocks

Kmi	Mafic phaneritic intrusive rocks (Cretaceous)
Kfi	Felsic phaneritic intrusive rocks (Cretaceous)
Ki	Dikes (Cretaceous)
Jgb	Gabbro complex, anorthosite, and albitite (early Cretaceous to middle Jurassic)
Jmi	Older mafic phaneritic intrusive rocks (Jurassic)
Jfi	Older felsic phaneritic intrusive rocks (Jurassic)
Ji	Phaneritic intrusive rocks (Jurassic)
Ŧfi	Felsic phaneritic intrusive rocks (Triassic)

Volcanic Rocks

Jvb	Flows, basaltic tuffs, and lapilli tuffs (middle(?) Jurassic)
Jvr	Rhyolite flows, tuffs, and volcaniclastic rocks (upper Jurassic)
JŦv	Metavolcanic rocks (Jurassic(?) and Triassic(?))
Ŧvm	Mafic flows and volcanic breccias (lower upper Triassic to lower middle Triassic)
Ŧkv	Andesite, rhyolite, tuff, and volcaniclastic rocks (middle and lower Triassic)

Mesozoic Terranes, Sedimentary Rocks, and Assemblages

Terranes

Walker Lake Terrane

WPN	Pine Nut assemblage—Volcanogenic, carbonate, and clastic rocks (middle(?) Jurassic to middle Triassic)
WPL	Pamlico-Lodi assemblage—Carbonate and volcanogenic rocks (middle(?) Jurassic to middle Triassic)
WLB	Luning-Berlin assemblage—Carbonate and terrigenous clastic rocks (middle(?) Jurassic to middle Triassic)

Black Rock-Jackson Terrane

BRJ	Basinal, island arc, carbonate, and volcanogenic rocks (middle Jurassic to Mississippian)

Sand Springs Terrane

SAS	Basinal volcanogenic rocks and carbonate turbidites (lower Jurassic and upper Triassic)

Quartz Mountain Terrane

QM	Orthoquartzite, feldspathic sandstone, and volcanic rocks (Mesozoic or Paleozoic, possibly Jurassic)

Jungo Terrane

JO	Turbiditic, fine-grained terrigenous clastic rocks (middle Jurassic to upper Triassic)

Sediments Rocks and Assemblages

Localized Clastic Rocks

TKcg	Conglomerate, and clastic rocks (Tertiary(?) and Cretaceous(?))
Kcg	Siltstone, shale, conglomerate, and limestone (Cretaceous)
Jcg	Conglomerate, limestone, and quartz sandstone (middle and lower Jurassic)

Gold Range Assemblage

JŦgor	Terrigenous clastic and volcanogenic rocks (lower Jurassic and upper Triassic)

Humboldt Assemblage

JŦs	Shale, siltstone, sandstone, and minor carbonate (lower Jurassic and upper Triassic)
Ŧc	Limestone, dolomite, shale sandstone, and conglomerate (middle(?) and lower Triassic)

Siliciclastic Overlap Assemblage

Ŧcl	Shale, sandstone, and limestone (lower Triassic)

Cratonal Sequence

Jas	Eolian crossbedded sandstone (Jurassic)
JŦch	Continentally derived siltstone and clay (lower Jurassic and upper Triassic)
Ŧmt	Marine siltstone, limestone, and conglomerate (middle(?) and lower Triassic

Paleozoic Rocks

Sedimentary and Metamorphic Rocks

Carbonate Shelf Sequence

Pc	Cherty limestone, dolomite, shale, and sandstone (middle to lower Permian)
Psc	Siltstone, sandstone, limestone, and dolomite (lower Permian, Leonardian and Wolfcampian)
PIPc	Limestone, dolomite, siltstone, sandstone, and shale (lower Permian and Pennsylvanian)
IPMbc	Bioclastic limestone (Pennsylvanian and upper Mississippian)
Mc	Limestone (Mississippian)
Dc	Limestone and minor dolomite (upper and middle Devonian)
Dcd	Dolomite, sandstone, and limestone (middle and lower Devonian)
DSc	Dolomite (lower Devonian and Silurian)
SOc	Dolomite, limestone, and shale (lower Silurian to middle Ordovician)
Ocq	Quartzite (middle Ordovician)
OЄc	Limestone, dolomite, and quartzite (middle Devonian to upper Cambrian)
Єc	Dolomite, limestone, and shale (Cambrian)

Undivided and Metamorphosed Carbonate Shelf Sequence Rock

DЄc	Dolomite and limestone (middle Devonian to upper Cambrian)
DOcm	Dolomite and graphitic marble (Devonian to upper Ordovician)
Ocqm	Metaquartzite (middle Ordovician)
OЄcm	Calcite marble (middle Ordovician to Cambrian)

Paleozoic Rocks

Terranes and Assemblages

Golconda Terrane

GC	Basinal, vocanogenic, terrigenous clastic, and minor carbonate rocks (Permian to upper Devonian)
GChr	Home Ranch subterrane - Limestone, basalt, chert, and volcaniclastic rocks (Mississippian)

Siliciclastic Overlap Assemblage

Pacl	Sandstone, siltstone, limestone, conglomerate, and carbonaceous limestone (Permian)
PIPacl	Conglomerate, sandstone, siltstone, and limestone (Permian to middle Pennsylvanian)

Foreland Basin Assemblage

IPMcl	Shale, siltstone, sandstone, and conglomerate (middle Pennsylvanian to lower Mississippian)
MDcl	Siltstone, limestone, shale, and sandstone (lower Mississippian and upper Devonian)

Dutch Flat Terrane

DF	Feldspathic sandstone, shale, and turbiditic limestone (upper Devonian)

Slope Assemblage

MDst	Shale, graywacke, siltstone, chert, conglomerate, and limestone (lower Mississippian and Devonian)
DSt	Platy limestone, dolomite, and chert (lower Devonian to Silurian)
DOts	Calcareous shale, siltstone, chert, quartzite, and greenstone (Devonian to Ordovician)

Basin Assemblage

DЄs	Shale, chert, quartzite, greenstone, and limestone (Devonian to upper Cambrian)
Ss	Feldspathic sandstone, siltstone, shale, and chert (Silurian)

Nolan Belt

OЄtd	Shale, chert, phyllite, quartzite, and limestone (Ordovician to Cambrian)
Єtd	Phyllite, schist, shale, thin-bedded limestone, chert, and siltstone (Cambrian)

Precambrian and Other Rocks

Lower Cambrian to Latest Proterozoic Clastic Rocks

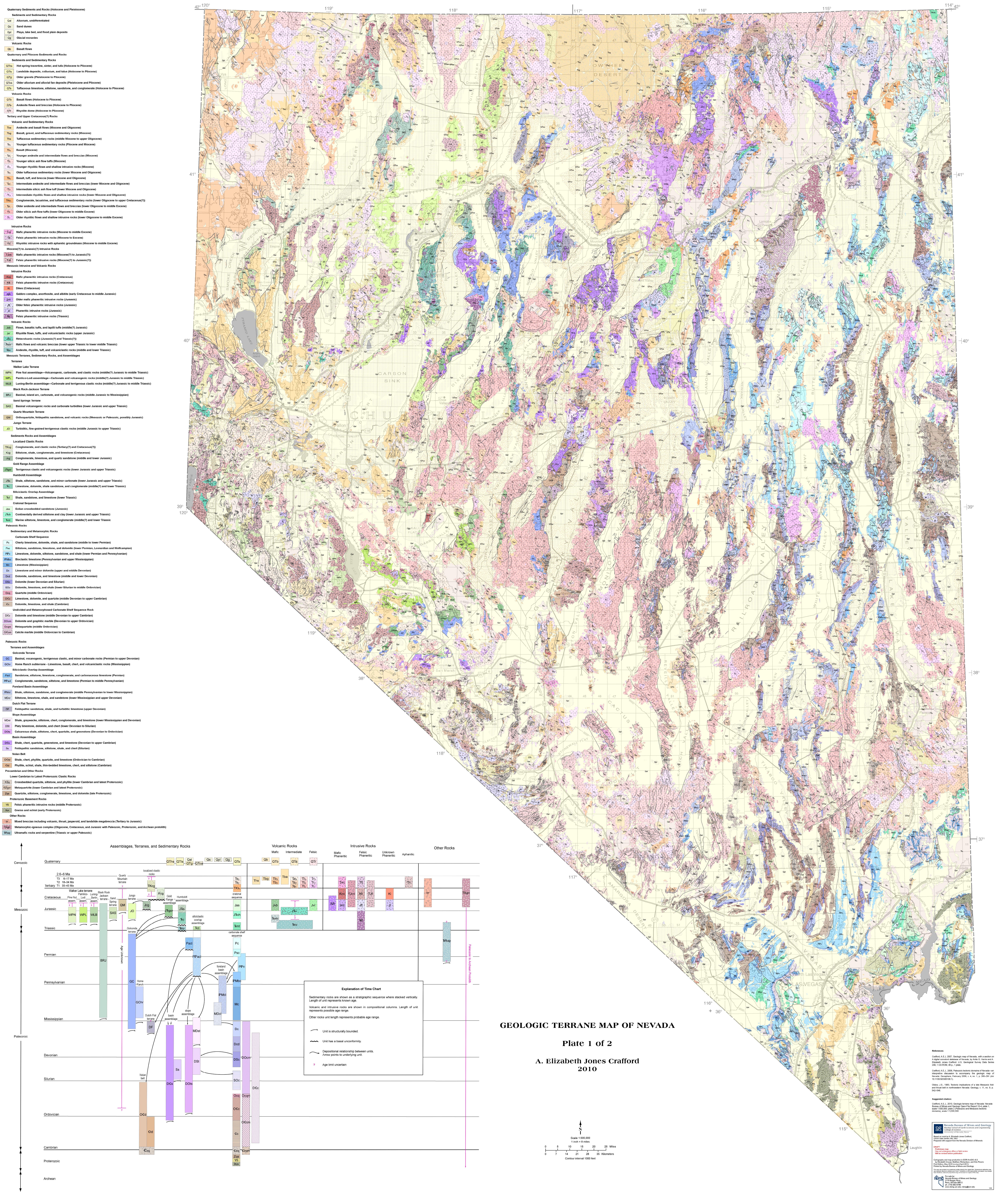
ЄZq	Crossbedded quartzite, siltstone, and phyllite (lower Cambrian and latest Proterozoic)
ЄZqm	Metaquartzite (lower Cambrian and latest Proterozoic)
Zqs	Quartzite, siltstone, conglomerate, limestone, and dolomite (late Proterozoic)

Proterozoic Basement Rocks

Yfi	Felsic phaneritic intrusive rocks (middle Proterozoic)
Xm	Gneiss and schist (early Proterozoic)

Other Rocks

br	Mixed breccias including volcanic, thrust, jasperoid, and landslide megabreccia (Tertiary to Jurassic)
TAgn	Metamorphic-igneous complex (Oligocene, Cretaceous, and Jurassic with Paleozoic, Proterozoic, and Archean protolith)
ŦPzsp	Ultramafic rocks and serpentine (Triassic or upper Paleozoic)


Assemblages, Terranes, and Sedimentary Rocks
Volcanic Rocks
Mafic
Intermediate
Felsic
Intrusive Rocks
Mafic Phaneritic
Felsic Phaneritic
Unknown Phaneritic
Aphanitic
Other Rocks
Cenozoic
Mesozoic
Paleozoic
Quaternary
2.6–6 Ma
T3 6–17 Ma
T2 18–34 Ma
Tertiary T1 35–43 Ma
Cretaceous
Jurassic
Triassic
Permian
Pennsylvanian
Mississippian
Devonian
Silurian
Ordovician
Cambrian
Proterozoic
Archean
Walker Lake terrane
Pine Nut assem.
Pamlico-Lodi assem.
Luning-Berlin assem.
Black Rock Jackson terrane
Sand Spring terrane
Quartz Mountain terrane
Jungo terrane
localized clastic rocks
Gold Range assemblage
Humboldt assemblage
siliciclastic overlap assemblage
cratonal sequence
carbonate shelf sequence
Golconda terrane
Home Ranch
Dutch Flat terrane
basin assemblage
slope assemblage
foreland basin assemblage
Nolan belt
Age Unknown
Paleozoic to Archean Protolith
QThs QTls Qal QTg QToa Qs Qpl Qg QTs
Qb QTb QTa QTr
Ths Tbg Tb3 Tb2 Tba Ta3 Ta2 Ta1 Tt3 Tt2 Tt1 Tr3 Tr2 Tr1
Ts3 Ts2 TKs1
Tmi Kmi Jmi TJmi Tfi Kfi Jfi Ŧfi TJfi Ki Ji Jgb Tri
br TAgn ŦPzsp
WPN WPL WLB BRJ SAS QM JO TKcg Kcg Jcg JŦgor JŦs Ŧc Ŧkv Ŧcl
Jas JŦch Ŧmt Jvb Ŧvm JŦv Ŧkv Jvr
Pc Psc PIPc IPMbc Mc Dc Dcd DSc SOc Ocq OЄc Єc Єzq Zqs Yfi Xm
DOcm Ocqm OЄcm Єzqm DЄc
GC GChr Pacl PIPacl IPMcl MDcl DF DЄs Ss DOts MDst DSt OЄd Єtd Єzq
?

Explanation of Time Chart

Sedimentary rocks are shown as a stratigraphic sequence where stacked vertically. Length of unit represents known age.

Volcanic and intrusive rocks are shown in compositional columns. Length of unit represents possible age range.

Other rocks unit length represents probable age range.

Unit is structurally bounded.

Unit has a basal unconformity.

Depositional relationship between units. Arrow points to underlying unit.

? Age limit uncertain

42° 120°
119°
118°
117°
116°
115°
114° 42°
41°
40°
39°
38°
37°
36°
OWYHEE DESERT
CARSON SINK
PYRAMID LAKE
LAKE TAHOE
WALKER LAKE
LAKE MEAD
Elko
Wells
Winnemucca
Battle Mountain
Fallon
Hawthorne
Tonopah
Eureka
Ely
Pioche
Caliente
North Las Vegas
LAS VEGAS
Henderson
Boulder City
Laughlin
Mesquite
Wendover
Jackpot
Denio

GEOLOGIC TERRANE MAP OF NEVADA

Plate 1 of 2

A. Elizabeth Jones Crafford
2010

N
Scale 1:500,000
1 inch = 8 miles
0 5 10 15 20 25 Miles
0 7 14 21 28 35 Kilometers
Contour interval 1000 feet

References

Crafford, A.E.J, 2007, Geologic map of Nevada, *with a section on* A digital conodont database of Nevada, by Anita G. Harris and A. Elizabeth Jones Crafford: U.S. Geological Survey Data Series 249, 1 CD-ROM, 46 p., 1 plate.

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DRAFT
Preliminary map
Has not undergone office or field review
Will be revised before publication

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