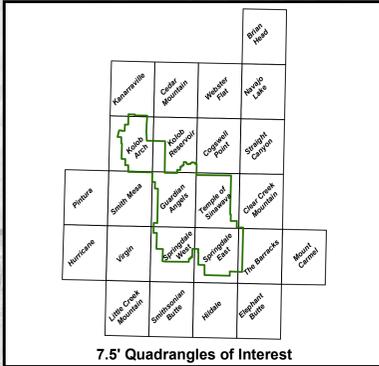
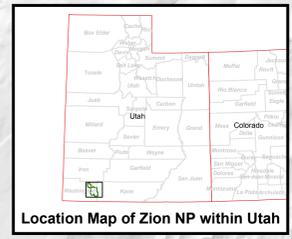
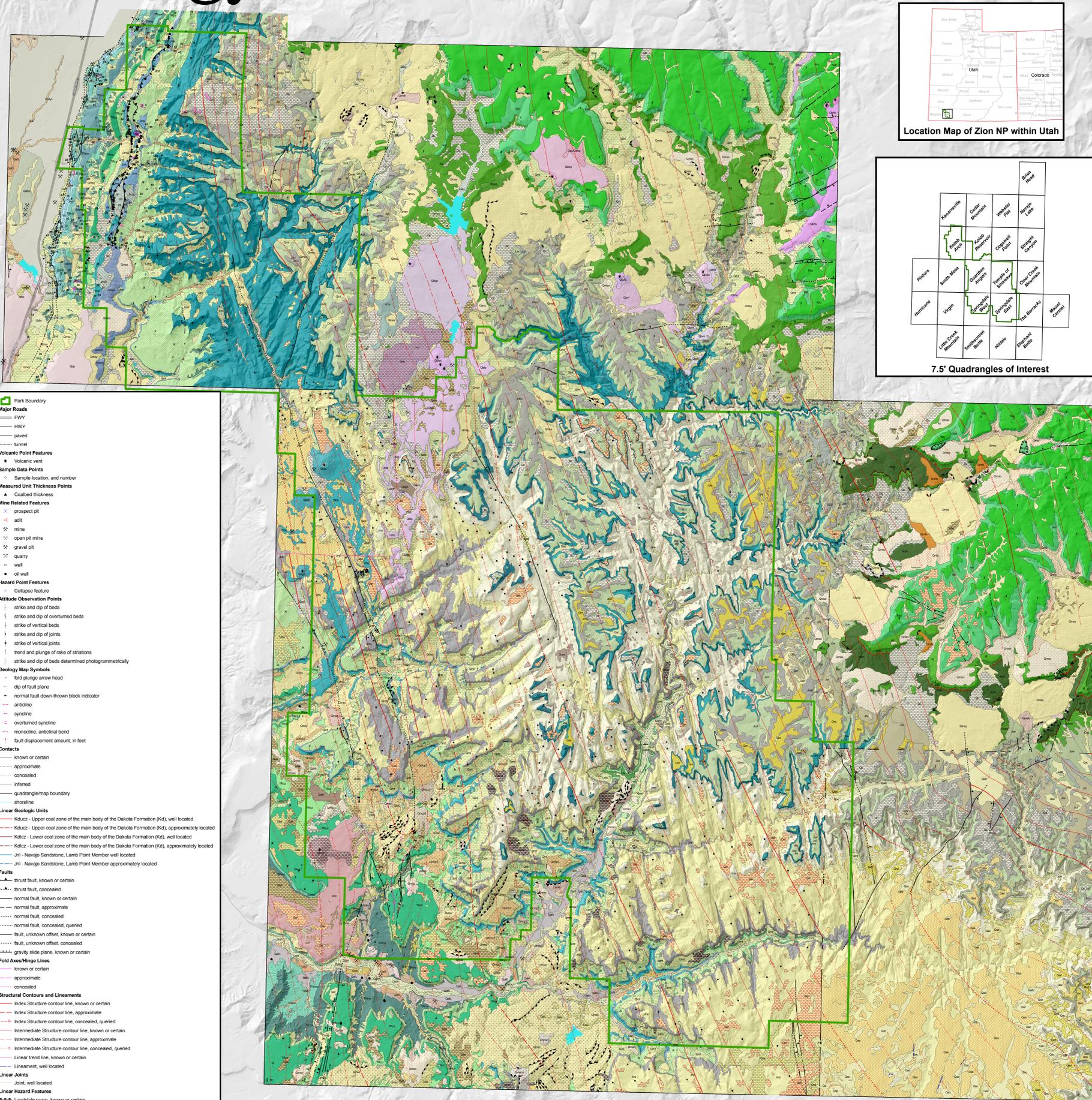


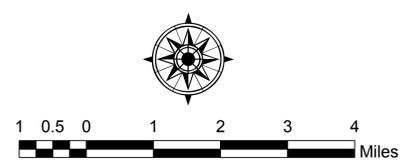


# Geology of Zion National Park



- Park Boundary**
- Major Roads**
  - FWY
  - paved
  - unpaved
- Volcanic Point Features**
  - Volcanic vent
- Sample Data Points**
  - Sample location, and number
- Measured Unit Thickness Points**
  - Coated thickness
- Mine Related Features**
  - prospect pit
  - adit
  - mine
  - open pit mine
  - gravel pit
  - quarry
  - well
  - oil well
- Hazard Point Features**
  - Collapse feature
- Attitude Observation Points**
  - strike and dip of beds
  - strike and dip of overturned beds
  - strike of vertical beds
  - strike and dip of joints
  - strike of vertical joints
  - trend and plunge of rake of striations
  - strike and dip of beds determined photographically
- Geology Map Symbols**
  - fold plunge arrow head
  - dip of fault plane
  - normal fault down thrown block indicator
  - anticline
  - syncline
  - overturned syncline
  - monocline, anticlinal bend
  - fault displacement amount, in feet
- Contacts**
  - known or certain
  - approximate
  - concealed
  - inferred
  - quadrangle/map boundary
  - unconformity
- Linear Geologic Units**
  - Kiduz - Upper coal zone of the main body of the Dakota Formation (Kd), well located
  - Kiduz - Upper coal zone of the main body of the Dakota Formation (Kd), approximately located
  - Kiduz - Lower coal zone of the main body of the Dakota Formation (Kd), well located
  - Kiduz - Lower coal zone of the main body of the Dakota Formation (Kd), approximately located
  - Jnl - Navajo Sandstone, Lamb Point Member well located
  - Jnl - Navajo Sandstone, Lamb Point Member approximately located
- Faults**
  - thrust fault, known or certain
  - thrust fault, concealed
  - normal fault, known or certain
  - normal fault, approximate
  - normal fault, concealed
  - normal fault, concealed, queried
  - fault, unknown offset, known or certain
  - fault, unknown offset, concealed
  - gravity slide plane, known or certain
- Fold Axes/Hinge Lines**
  - known or certain
  - approximate
  - concealed
- Structural Contours and Lineaments**
  - Index Structure contour line, known or certain
  - Index Structure contour line, approximate
  - Index Structure contour line, concealed, queried
  - Intermediate Structure contour line, known or certain
  - Intermediate Structure contour line, approximate
  - Intermediate Structure contour line, concealed, queried
  - Linear trend line, known or certain
  - Lineament, well located
- Linear Joints**
  - Joint, well located
- Linear Hazard Features**
  - Landslide scarp, known or certain
  - Landslide scarp, approximate

Map Unit Descriptions	
Artificial fill	Qaf - High-level alluvial terrace deposits, level 6
Mine-dump deposits	Qbg - Grapevine Wash basalt flows
Historical mass-movement slide and slump deposits	Qbpc - Grapevine Wash basalt cinders
Low-level alluvial deposits of the Virgin River, level 1 (active channel)	Qbvc - Volcano Knoll flow
Low-level alluvial deposits of the Virgin River, level 2 (modern)	Qbvc - Volcano Knoll flow and cinder cone
Low-level alluvial deposits of the Virgin River, level 3 (historic)	Qbvf - Virgin Flats flow
Alluvial terrace deposits (settlement and late prehistoric)	Qbvf - Virgin Flats flow and cinder cone
Younger alluvial fan deposits	Qbvc - Three Creeks flow
Younger alluvial deposits	Qbhp - Hornet Point flow
Level 1 alluvial deposits	Qbhp - Hornet Point flow and cinder cone
Level 2 alluvial deposits	Qbhc - Horse Knoll flow
Stream deposits	Qbhc - Horse Knoll flow and cinder cone
Younger mass-movement flow deposits	Qbp - Lava Point basalt flows
Fine-grained alluvium	Qbpc - Lava Point flow and cinder cones
Younger alluvium	Qbp - Pintura flow
Middle alluvial-fan deposits, includes level 2 fan deposits	Qbpc - Pintura flow and cinder cone
Older alluvium	Qbpc - Horse Ranch Mountain flow
Alluvial mud	Qbc - Little Creek Peak flow
Spring mud	Qbpc - Kolob Peak flow
Spring tufa	Qbpc - Kolob Peak flow and cinder cone
Lacustrine and basin-fill deposits of Sentinel Landslide	Qms - Older mass-movement slide, slump and flow deposits
Alluvial gyttseroid deposits	QTng - Old boulder-gravel deposits
Mixed eolian and residual deposits	Taf - Old alluvial fan deposits
Young alluvial fan and colluvial deposits	Tp - Quartz monzonite porphyry
Younger undifferentiated mass-movement slide and slump deposits	Tc - Claron Formation
Talus sand	Kat - Straight Cliffs Formation, Tibbet Canyon Member
High-level alluvial-terrace deposits, level 2	Kat(s) - Straight Cliffs Formation, Tibbet Canyon Member (sliding)
Older alluvial deposits	Klu - Straight Cliffs Formation, upper unit
Mixed alluvial and eolian deposits	Kt - Tropic Shale
Mixed alluvial and eolian sand deposits	Kd - Dakota Sandstone
Mixed eolian and alluvial deposits	Kd(s) - Dakota Sandstone slump blocks
Mixed alluvium and colluvium	Kdu - Dakota Sandstone, upper Member
Alluvial sand deposits	Kdl - Dakota Formation, lower member
Mixed alluvial gravel and eolian sand deposits	Kdm - Dakota Formation, main body
Talus	Kcm - Cedar Mountain Formation
Eolian sand deposits, includes sheet sand	Kcmc - Cedar Mountain Formation, Conglomerate Member
Eolian sand in dunes and rampa	Kju - Dakota Formation, Cedar Mountain Formation, and Windsor Member for the Carmel Formation, undivided
Eolian sand deposits covering Hornet Point Basalt	Jcw - Carmel Formation, Windsor Member
Mixed residual and eolian deposits	Jcp - Carmel Formation, Paria River Member
Talus	Jcx - Carmel Formation, Crystal Creek Member
Eolian sand deposits	Jcc - Carmel Formation, Co-op Creek Limestone Member, undivided
Mixed residual and eolian deposits	Jccu - Carmel Formation, Upper unit of Co-op Creek Limestone Member
Colluvium	Jccu - Carmel Formation, Lower unit of Co-op Creek Limestone Member
Talus and colluvium	Jt - Temple Cap Sandstone
Older alluvial-fan deposits	Jtw - Temple Cap Formation, White Throne Member
Landslide deposits, undivided	Jts - Temple Cap Formation, Sawinawa Member
Slide blocks of Navajo Sandstone	Jn - Navajo Sandstone, undifferentiated
Residual deposits of Little Creek Peak flow	Jnw - Navajo Sandstone, White unit (upper part)
Colluvial and eolian deposits	Jnp - Navajo Sandstone, Pink unit (middle part)
Mixed colluvial and eolian sand	Jnb - Navajo Sandstone, Brown unit (lower part)
Younger coalesced alluvial-fan deposits	Jnl - Navajo Sandstone, Lamb Point Member
Mixed eolian, alluvial, and colluvial deposits	Jk - Kayenta Formation
Mixed alluvial, eolian, and colluvial deposits	Jk - Kayenta Formation, Tenny Canyon Tongue
Older mixed alluvial and colluvial deposits	Jmk(s) - Slide blocks of Moenave and Kayenta Formations, undivided
High-level alluvial terrace deposits, level 3	Jm - Moenave Formation, undivided
Older mixed alluvium and colluvium	Jm(s) - Slide blocks of Moenave Formation, undivided
Middle-level alluvial-fan and colluvial deposits	Jmo - Moenave Formation, Springdale Sandstone Member
Older alluvial sand deposits	Jmw - Moenave Formation, Whitmore Point Member
Collapsed blocks of basalt	Jmo - Moenave Formation, Dinosaur Canyon Member
Older mass-movement, colluvial, and alluvial pediment-mantle deposits, low-level	Jrcp - Chinle Formation, Petrified Forest Member
Older mass-movement, colluvial, and alluvial pediment-mantle deposits, middle-level	Jr(s) - Chinle Formation, Petrified Forest Member (slump)
Older mass-movement, colluvial, and alluvial pediment-mantle deposits, high-level	Jr(s) - Chinle Formation, Shinarump Conglomerate Member
Older alluvial-terrace deposits	Jrm - Moenkopi Formation, undivided
Older coalesced alluvial-fan deposits	Jrmu - Moenkopi Formation, upper red member
High-level alluvial terrace deposits, level 4	Jrms - Moenkopi Formation, Shinarump Member
Older mass-movement deposits	Jrmu - Moenkopi Formation, middle red member
Lacustrine and basin-fill deposits of Coal Pits Wash	Jrmu - Moenkopi Formation, Virgin Limestone Member
Lacustrine and basin-fill deposits of ancestral Lake Grafton	Jrmu - Moenkopi Formation, lower red member
Alluvial pediment-mantle deposits	Jrmu - Moenkopi Formation, Timpowag Member
Basaltic flows of Crater Hill	Jrmu - Moenkopi Formation, Rock Canyon Conglomerate Member
Ash of Crater Hill	Jrk - Kaibab Formation, Harmsburg Member
Cinders of Crater Hill	Jrk - Kaibab Formation, Fossil Mountain Member
Rattled blocks of Crater Hill	Jrk - Kaibab Formation, Woods Ranch Member
Older stream deposits	Jrk - Torowasp Formation, Brady Canyon Member
Older colluvium	WATER
High-level alluvial terrace deposits, level 5	
Alluvial gravel and sand consisting primarily of basaltic sediment	



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