

# Attachment 2: Geology and Seismology



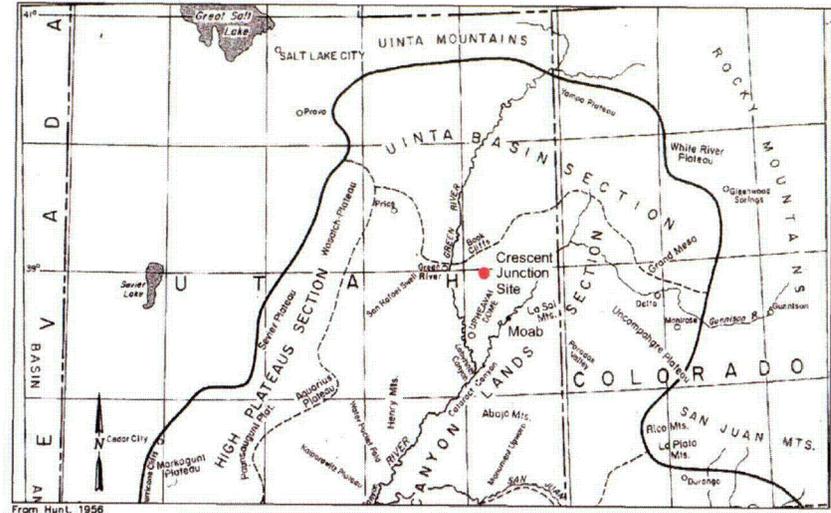
# Attachment 2: Geology

- Literature search for regional geology, geomorphology, and structural geology
- Reconnaissance visit of site
- More detailed fieldwork based on literature search and initial site visits
- Drilling of coreholes and geotechnical holes, test pit excavations, and surface geologic mapping
- Erosional features and geomorphology
- Structural features identified by photogeologic interpretation and fault investigation

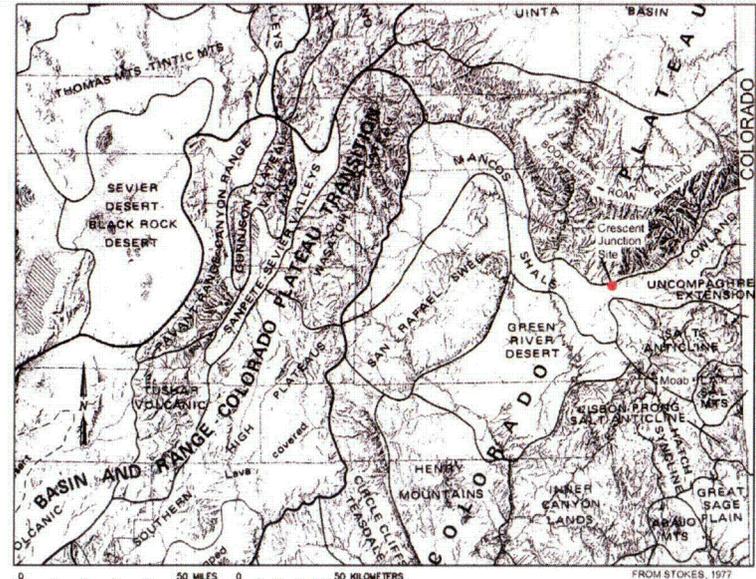
# Regional Setting

- Site in Canyon Lands section of Colorado Plateau in Mancos Shale Lowland

Site location and relation to physiographic features



75 MILES COLORADO PLATEAU PROVINCE, Northern Part

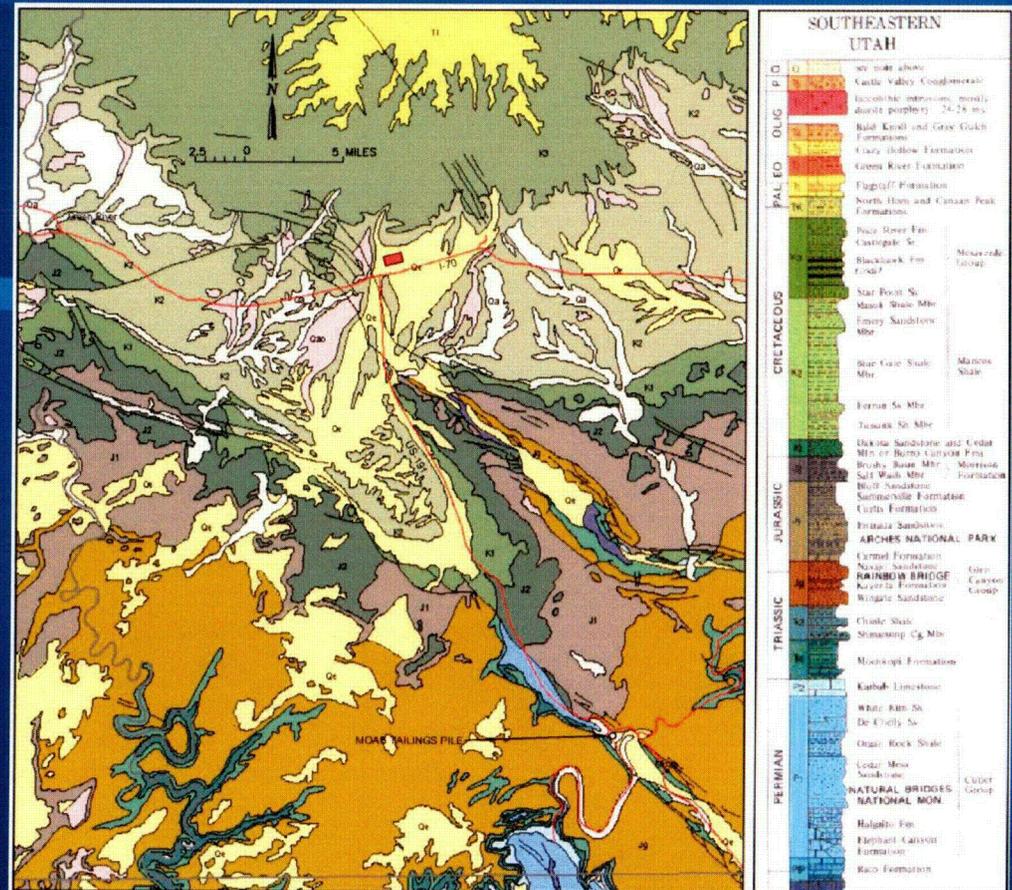


PHYSIOGRAPHIC SUBDIVISIONS OF UTAH, Central Part

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# Regional Setting (continued)

- Regional geologic map



### EXPLANATION

CRESCENT JUNCTION CELL  
FAULT

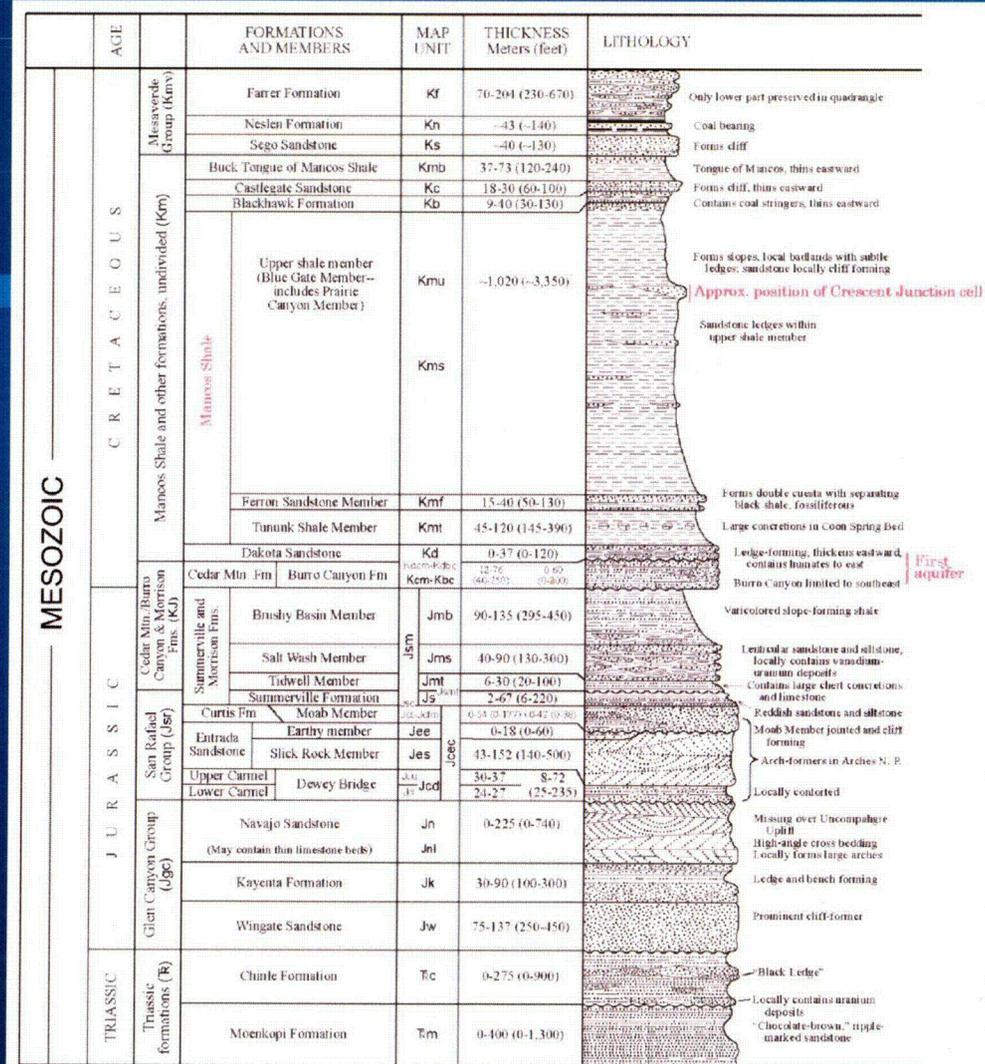
QUATERNARY { Qa ALLUVIUM AND COLLUVIUM  
Qe EOLIAN AND ALLUVIAL DEPOSITS  
Qop OLDER ALLUVIAL DEPOSITS

TERTIARY T1 WASATCH FORMATION

Regional Geologic Map of East-Central Utah  
showing the Crescent Junction Site Location.

# Regional Setting (continued)

- Rocks in site area dip gently to north toward Uinta Basin
- Approximately 2,400 feet of Mancos Shale below site to first aquifer

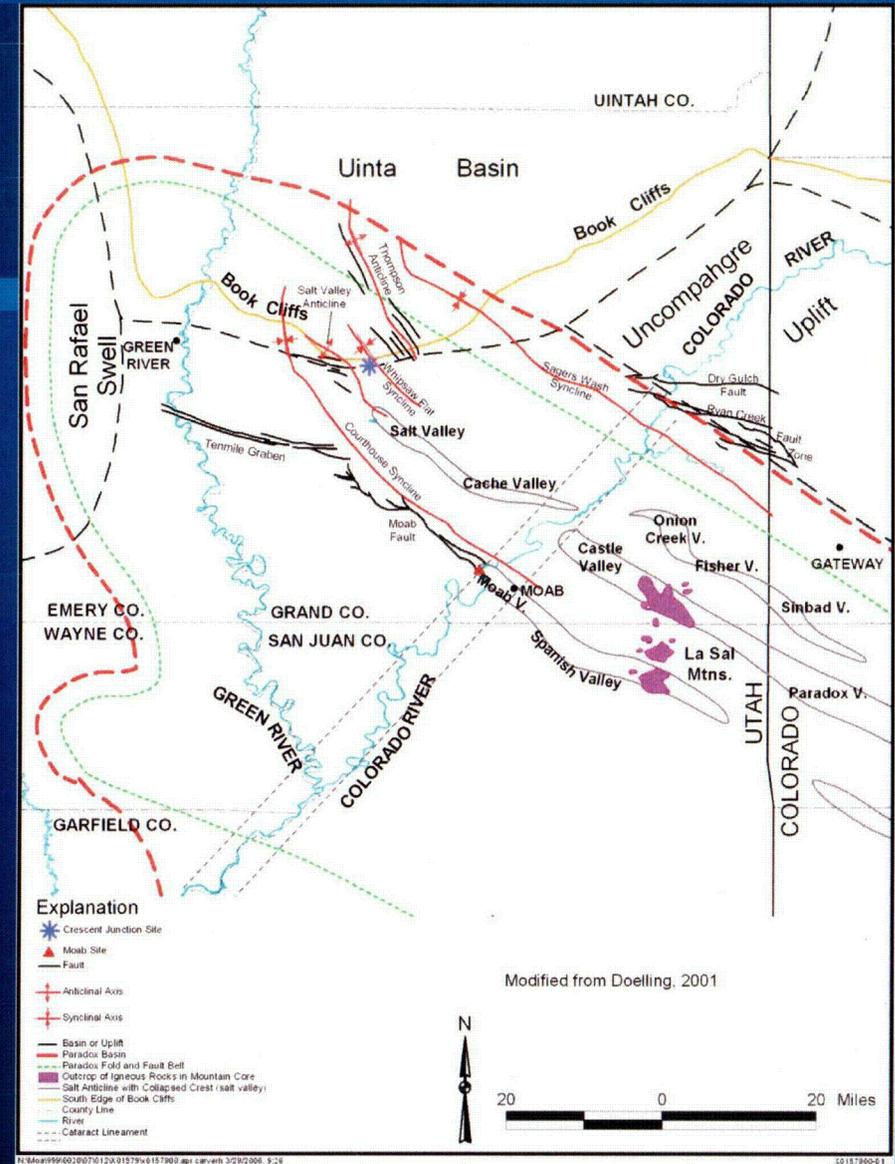


From Doelling, 2001

Columnar Stratigraphic Section of Mesozoic Rocks  
in the Crescent Junction Site Area

# Regional Setting (continued)

- Site in north part of ancestral Paradox Basin in Paradox fold and fault belt
- Northwest-trending structures



Structural geologic setting of the  
Crescent Junction site area

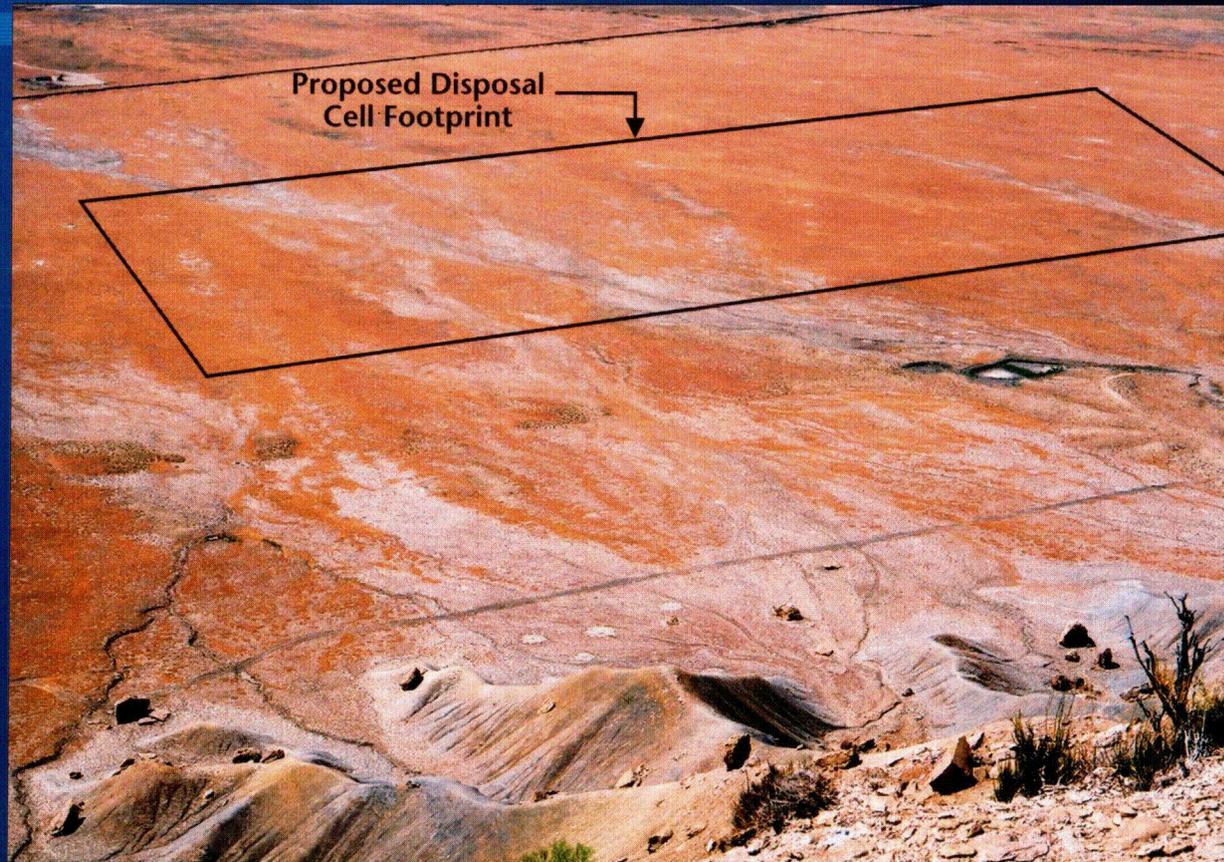
# Site Setting

- Site is below the base of the Book Cliffs on Crescent Flat, which dips gently south at 2% to 3% grade



View west-southwest of Crescent Flat and unbroken face of Book Cliffs

# Site Setting (continued)



View south-southwest of Crescent Flat and proposed disposal cell footprint from top of Book Cliffs

# Field Investigations

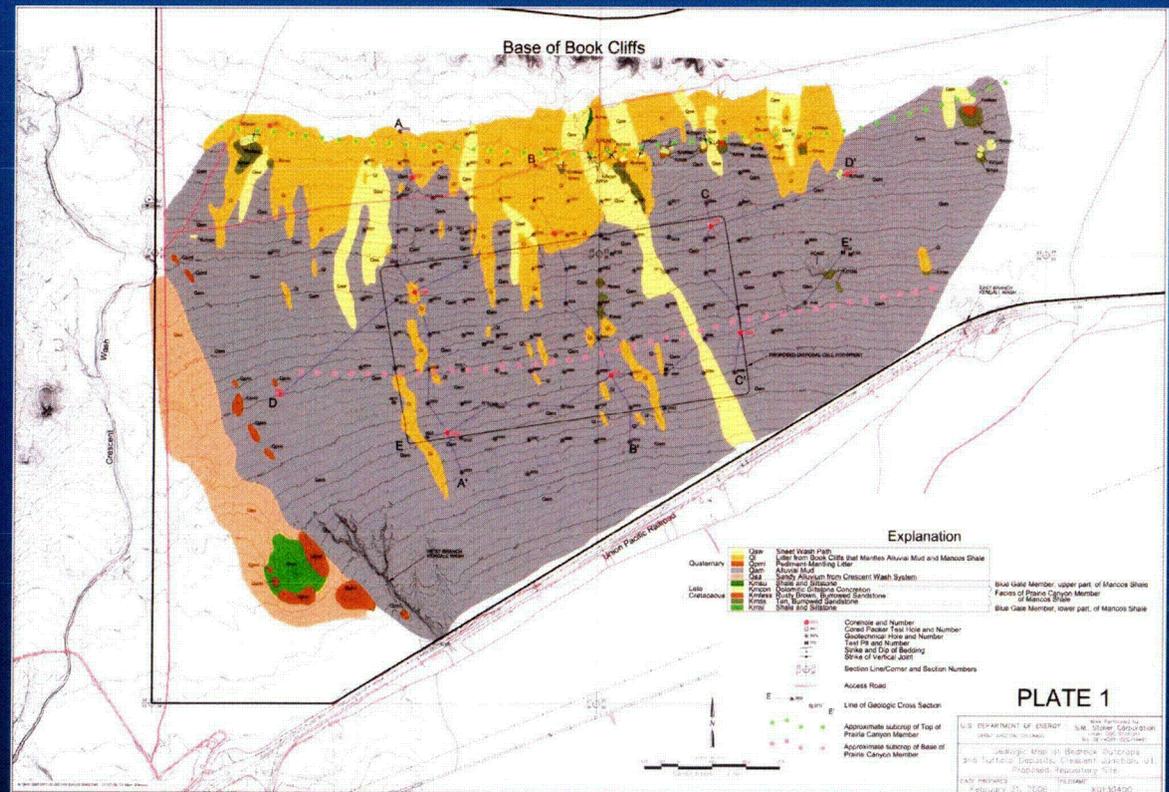
- Geologic mapping
  - Surficial deposits and bedrock outcrops mapped at scale of 1 inch = 400 feet



Dolomitic siltstone  
concretion mound at top of  
Prairie Canyon Member

# Field Investigations (continued)

- Geologic mapping
  - Few bedrock exposures at site
  - Site in upper middle part of Mancos Shale
  - One narrow sheet-wash path extends across site

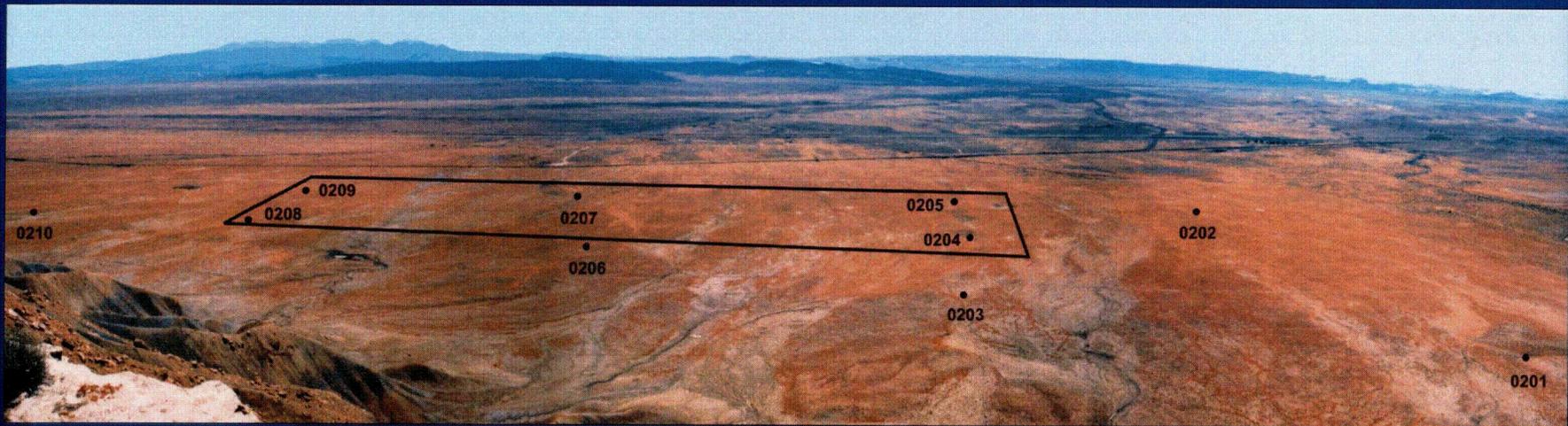


Geologic map of Crescent Junction site area

# Field Investigations (continued)

- Drilling

- 10 deep (300-foot) coreholes and 3 shallow (40-foot) coreholes for packer tests
- 100 geotechnical holes to depth of refusal in bedrock



View south of Crescent Flat showing proposed disposal cell footprint and 10 deep coreholes

# Field Investigations (continued)

- Drilling



Shallow coring at corehole 0209  
with Terramec 1000 rig



Setting up blowout preventer for deep coring with Acker  
BB-80 rig at corehole 0209

# Field Investigations (continued)

- Drilling



Deep coring with CS-1000 rig at 0210

# Field Investigations (continued)

- Drilling
  - Weathering effects observed in core; most fractures within top 20 to 30 feet of bedrock



Logging core and placing core in box at corehole 0210



Weathering decreases from depth of 26 feet (left) to 36 feet (right) in corehole 0210

# Field Investigations (continued)

- Drilling
  - Infrequent fractures below 50-foot depth and hard, competent mudstone below 80- to 100-foot depth



Hard, competent mudstone of lower Blue Gate Member at depth of 85 to 95 feet in corehole 0209