BACKGROUND INFORMATION

Compiled by

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Note: Many of the figures in this document were constructed from published sources and/or created independently by the author for field-trips for numerous petroleum and mining companies (e.g., Unocal, Kerr-McGee, Anadarko, Bowie Resources, Newfield, Encana, Bill Barret, Williams, Berry, C&C Energy, EOG, and Kosmos), professional organizations (AAPG, RMAG, UGS, SPE, and GSA) and private groups. Thus, some of the content herein may be considered proprietary. Please contact the author for more information (grandmesageoscience@gmail.comor rcole@coloradomesa.edu).

GEOLOGIC SETTING

The field trip will take place in westernmost Colorado and easternmost Utah, and will consider geologic features in the southwestern Piceance Basin, the northwestern nose of the Uncompahgre Uplift, the southern Douglas Creek Arch, southern Uinta Basin, and northern Paradox Basin (**Figure BG-1**).

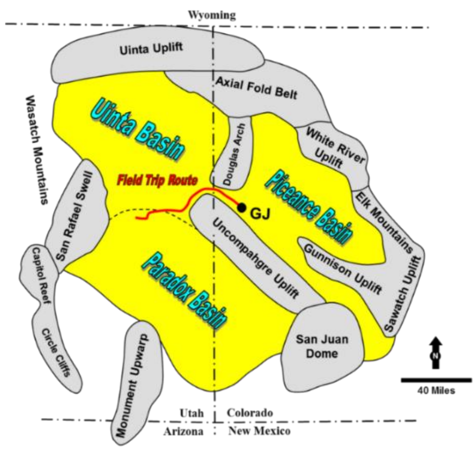
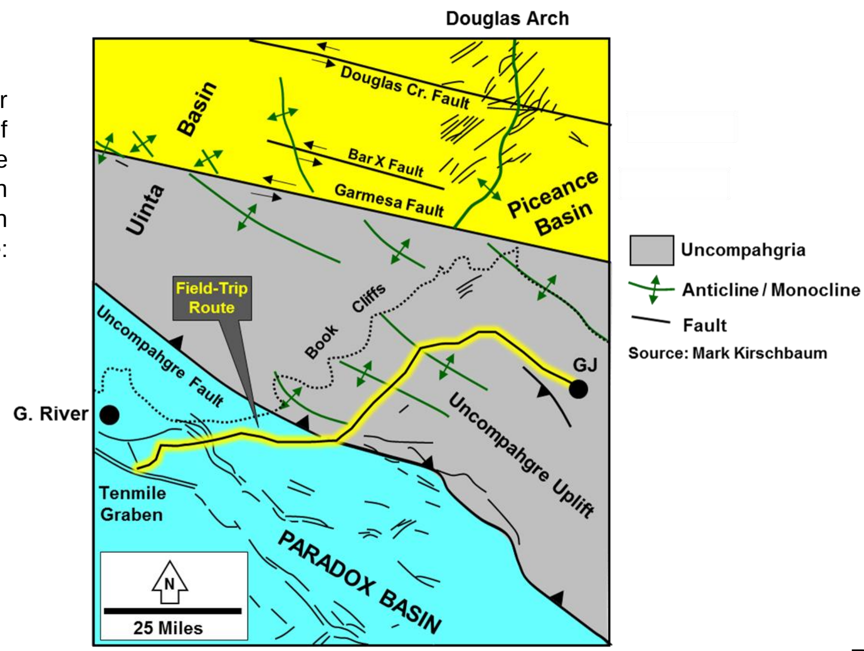


Figure BG-1. Uplifts and basins of western Colorado and eastern Utah, showing the field-trip route. Source: **Kelley, (1955**).

During the excursion, the terrain traversed is not the most scenic parts of western Colorado and eastern Utah. Primarily, we will see mile after mile of Mancos Shale; but in the distance, outcrops of Mesozoic strata in the Book Cliffs, Colorado National Monument, the nose of the Uncompahgre Uplift, and Arches National Park will be visible. However, beneath the surface, the geologic framework is much more complicated and interesting, as illustrated in **Figure BG-2**.

Figure BG-2. Map showing the major structural and topographic components of western Colorado and eastern Utah. The gray polygon represents Precambrian metamorphic and igneous rocks overlain by Mesozoic and Cenozoic strata. Source: **Mark Kirshbaum, personal com.**



Two major tectonic elements are present in the field-trip area: the ancestral Uncompahgre Uplift ("Uncompahgria") and the Paradox Basin. Both features developed during the Pennsylvanian-Permian, Ancestral Rocky Mountain (ARM) Orogeny (**Figure BG-3**). Superimposed on these large tectonic elements are the Laramide Piceance Basin, Uinta Basin, Douglas Creek Arch, and San Rafael Swell. The present-day Uncompahgre Uplift represents a large "sliver" of Uncompahgria. Numerous salt-tectonic structures are present in the Paradox Basin, such as the Ten Mile Graben.

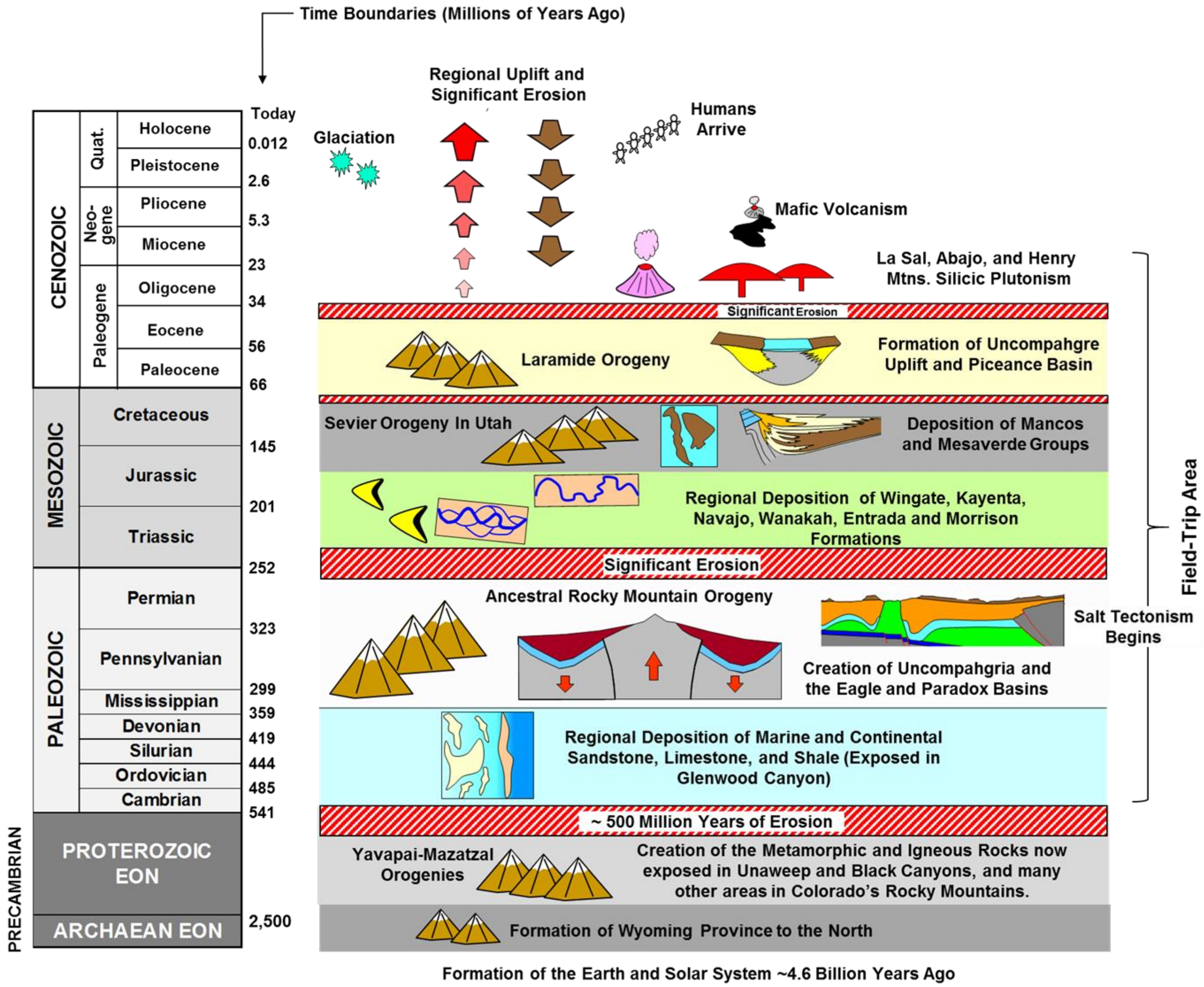


Figure BG-3. Diagrammatic summary of the geologic history of western Colorado and eastern Utah from the Precambrian to now. The column on the left depicts standard geological time designations; the numbers are in millions of years ago. The oldest rocks exposed on the Uncompahgre Uplift are Precambrian in age (~1.8 to 1.4 Ga). An ancient erosional surface called the "Great Unconformity" separates these "basement" metamorphic and igneous rocks from the overlying sedimentary strata, which were deposited in ancient deserts, shallow seas, lakes, and by rivers during the Paleozoic, Mesozoic, and Cenozoic Eras. Thus, a significant hiatus of about 1.2 billion years exists between the Precambrian and these strata. The Uncompahgre Uplift (now a plateau) elevated during the Laramide Orogeny. The Laramide event was the starting point for the present-day Rocky Mountains. Diagram constructed by R. Cole from numerous sources.

For general reference, the stratigraphic sequence in the field-trip area around Green River, UT, is compared with the Grand Junction area (**Figure BG-4**). Because the Grand Junction area is on ancient Uncompahgria, its stratigraphic sequence is much thinner than in the Green River area. Paleozoic strata were once present in the Grand Junction area, but were eroded during the Ancestral Rocky Mountain Orogeny. The first unit to onlap the beveled flank of Uncompahgria was the Chinle Formation about 220 million years ago; thus, the Great Unconformity was born.

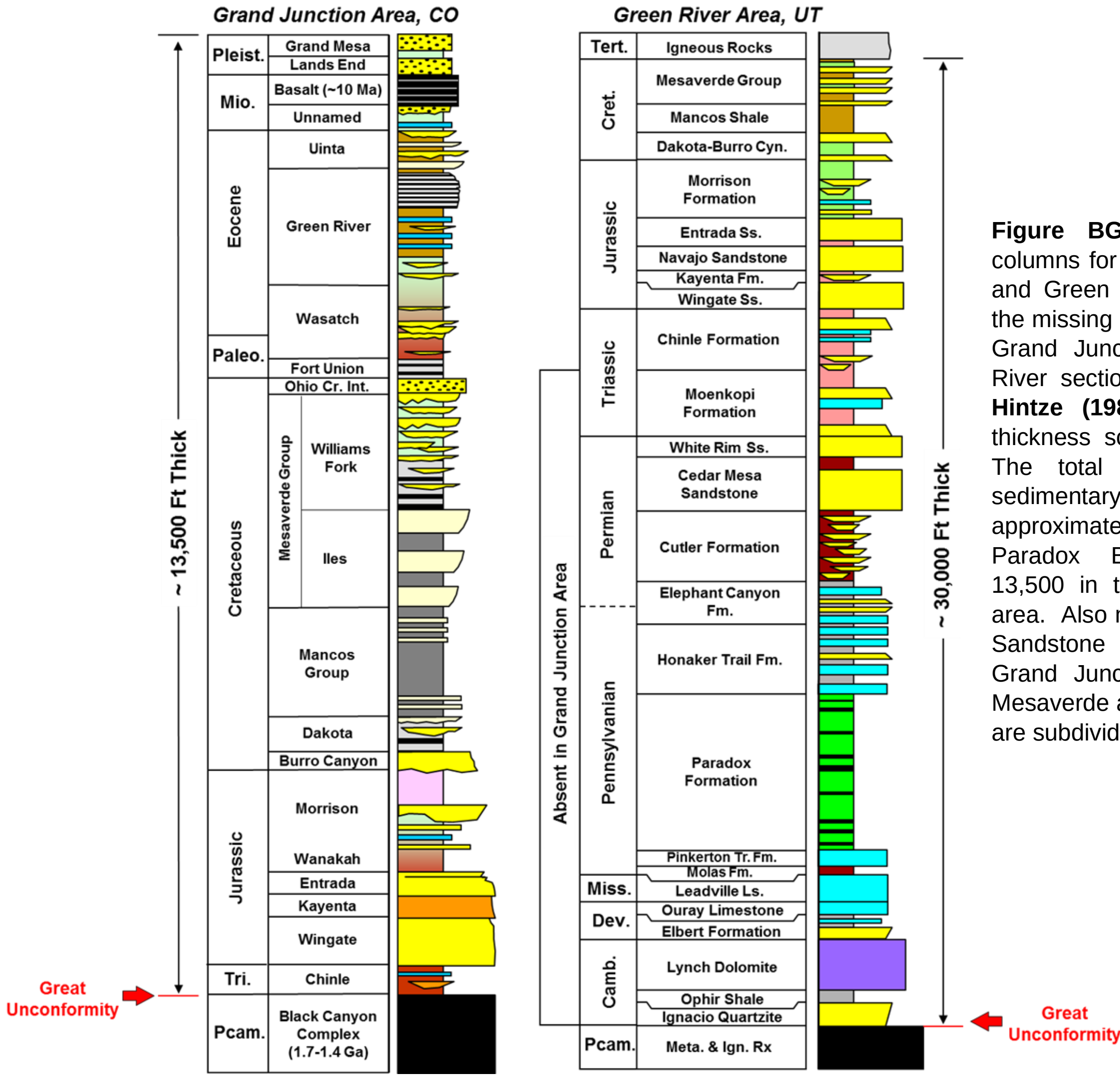


Figure BG-4. Stratigraphic columns for the Grand Junction and Green River areas. Note the missing Paleozoic section in Grand Junction area. Green River section is modified from **Hintze (1988)**. Note that no thickness scales are provided. The total thickness of the sedimentary sequence is approximately 30,000 ft in the Paradox Basin and about 13,500 in the Grand Junction area. Also note that the Navajo Sandstone is absent in the Grand Junction area and the Mesaverde and Mancos Groups are subdivided.

GEOLOGIC FRAMEWORK AND GEO-HISTORY

Paleozoic Era

In Cambrian-Mississippian time, the Paradox Basin area and many other locations across the southwestern US were the site of prolonged shallow-marine, marginal-marine (shoreline) and continental deposition. Sedimentary rocks representing this time include dolomite, limestone, sandstone, conglomerate, and shale. Major stratigraphic units are the Ignacio Quartzite, Ophir Shale, Lynch Dolomite, Elbert Formation, and Leadville (Redwall) Limestone (**Figure BG-4**). None of these units crop out in the field-trip area, but are exposed in the San Juan Mountains, Uinta Mountains, Canyonlands area, and central Colorado.

The Paradox Basin formed in Late Mississippian-Early Pennsylvanian time as a consequence of the Ancestral Rocky Mountain Orogeny. This orogeny was a consequence of plate convergence and rotation produced by the collision of Gonwana and Laurentia, and Laurussia (**Figure BG-5**), plus convergence of the Quesnell and Strikine Terranes (**Kluth and Coney, 1981; Blakey and Ranney, 2008, Blakey, 2009**). Two major, fault-bounded uplifts (Uncompahgria and Frontrangia; **Figure BG-6**) were created, surrounded by shallow epicontinental seas. The Paradox Basin formed southwest of Uncompahgria, whereas the Central Colorado trough (Eagle Basin) formed between Uncompahgria and Frontrangia. Within the Paradox Basin, approximately 30,000 feet of Pennsylvanian and Permian sediment was deposited as subsidence progressed. The basin is markedly asymmetric with the structural foredeep adjacent to Uncompahgria. Subsequent to filling of the Paradox Basin with Pennsylvanian-Permian sediment, the area was modified or influenced by the Sevier Orogeny (Late Jurassic-Middle Cretaceous), the Laramide Orogeny (Late Cretaceous-Early Paleogene), Mid-Paleogene volcanic and plutonic activity, and late Cenozoic regional uplift associated with formation of the Colorado Plateau (**Figure BG-3**).

Figure BG-5. Paleogeographic map depicting the formation of the Ancestral Rocky Mountains about 300 million years ago. Colorado and Utah are outlined. Modified from **Blakey and Ranney (2008)**.

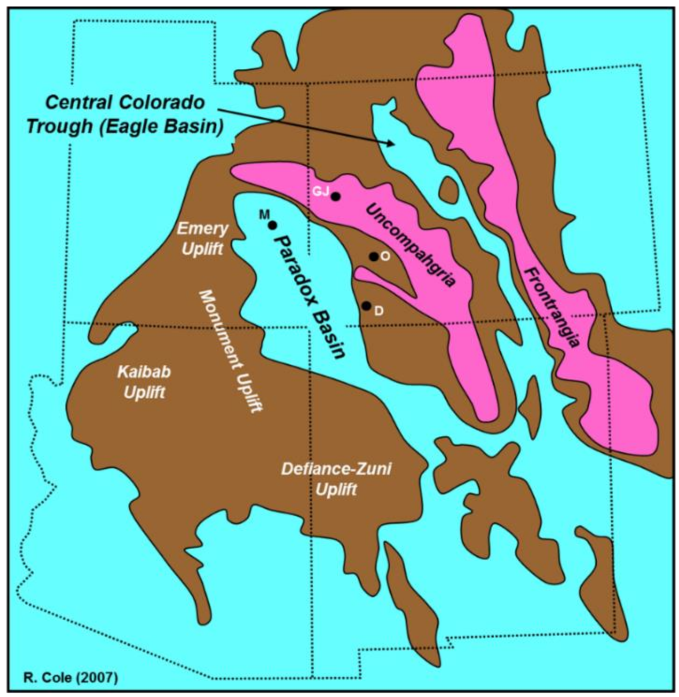


Figure BG-6. Paleogeographic map for Early Pennsylvanian time (~300 Ma). Source: website by **Ron Blakey**. Abbreviations: D, Durango; GJ, Grand Junction; M, Moab; O, Ouray.

Pennsylvanian-Permian deposition in the Paradox Basin involved numerous depositional environments, which varied in location and size. Rapid temporal and spatial changes in these depositional settings were triggered by a number of factors, including regional tectonics, variation in relative sea level, salt movement, and climate change (**Blakey and Ranney, 2008; Blakey, 2009; Trudgill** and **Paz, 2009; Fillmore, 2011**). Adjacent to Uncompahgria, large alluvial-fan complexes were common, which gave rise to braided and meander-belt fluvial complexes to the southwest, towards the Paradox Sea. Eolian depositional systems were also common at distal margins of the alluvial-fan complexes. The marginal-marine (coastal) areas of the Paradox sea included distributary complexes (delta plain, delta front, and prodelta subenvironments) and interdeltaic settings (mudflats, tidal flats, bays, and lagoons). Siliciclastic sediment was also carried offshore to form intertidal and shallow subtidal, high-energy shoals. Where siliciclastic influx was limited, the sublittoral setting allowed deposition of a variety of carbonate facies, ranging from algal bioherms and biostromes to bioclastic limestones and mudstones. Carbonate deposition was much more pervasive in the southwestern part of the Paradox Seaway than in the northeast.

During the Late Pennsylvanian, saline-mineral deposition began in the restricted-marine parts of the basin, that was contemporaneous with carbonate and siliciclastic deposition. **Rasmussen and Rasmussen (2009)** have documented 80 depositional cycles of gypsum, halite, sylvite, anhydrite, and organic-rich marine mudrocks during the Late Pennsylvanian and Early Permian. Within the main body of the Paradox Salt, 29-33 cycles have been correlated across a broad area (**Hite and Buckner, 1981; Raup and Hite, 1992**). An idealized vertical cycle begins with beds of anhydrite and/or gypsum, followed upward by dolomite, organic-rich mudrock, dolomite, anhydrite-gypsum, halite, and potash salts. These cycles are typically bracketed by disconformities. The main forcing mechanism for the depositional cycles is thought to be the late Paleozoic glaciation in Pangaea (Gondwana), driven by Milankovitch cycles (**Fillmore, 2011**).

The depositional history of the Paradox Basin is documented by a complex stratigraphic architecture (**Figure BG-7**). To the west, two main groups are recognized, Hermosa and Cutler, whereas to the east, only the Cutler Formation is distinguished. The Hermosa Group rests conformably on the Molas Formation and consists of the Pinkerton Trail, Paradox, and Honaker Trail Formations. The Cutler Group intertongues with the Hermosa Group and consists of the Cutler Formation, Elephant Canyon Formation (also called the "lower Cutler beds" and the Rico Formation), Halgaito Shale, Cedar Mesa Sandstone, Organ Rock Formation, and White Rim Sandstone. See also **Figure BG-4**.

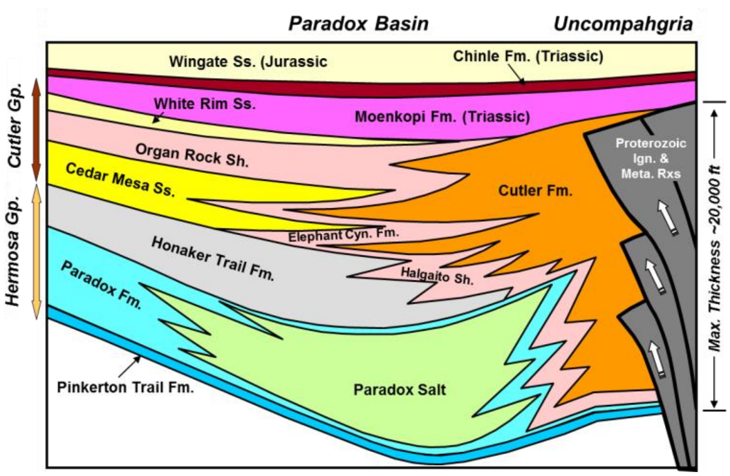
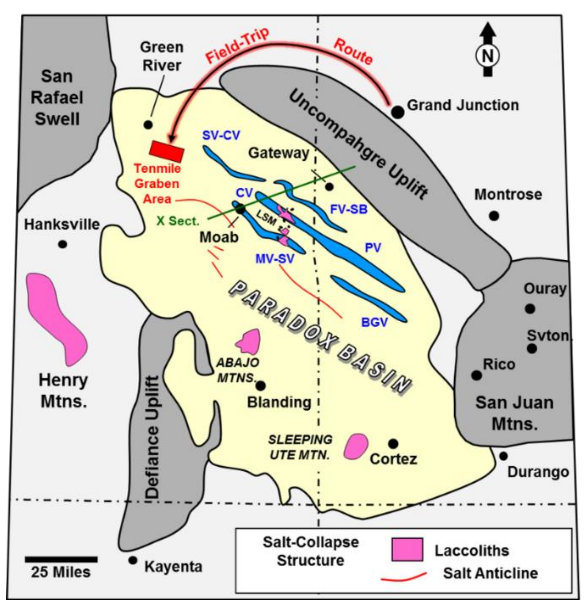


Figure BG-7. Stratigraphic architecture of Pennsylvanian-Permian strata in Paradox Basin. Modified from **Williams (2009)**.

One of the most interesting features in the Paradox Basin is the occurrence of large salt-collapse structures (**Figure BG- 8**) which have a southeast-northwest orientation. The Ten Mile Graben has a similar orientation. A cross section through the largest salt structures is provided in **Figure BG-9**. Again, the Ten Mile Graben is related to salt movement, but is at a much smaller scale.

Figure BG-8. Salt structures and uplifts in the Paradox Basin area. Abbreviations: BGV = Big Gypsum Valley; CV = Castle Valley; FV-SB = Fischer Valley and Sinbad Valley; LSM = La Sal Mountains; MV-SV = Moab Valley and Spanish Valley; and SV-CV = Salt Valley-Cache Valley. Sources: **Kelly (1958), Doelling (1983),** and **Hintze (1988)**, with minor modifications.



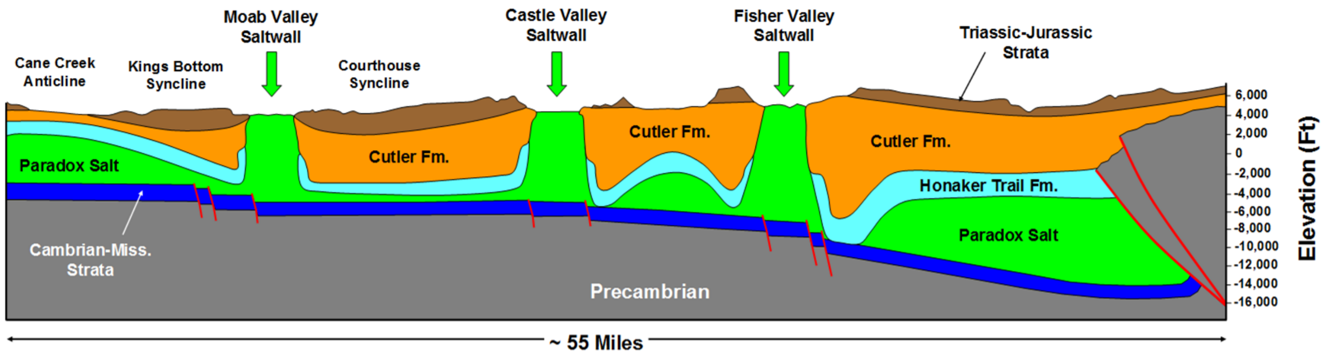


Figure BG-9. Structural cross section of the northern Paradox fold and fault belt from the thrust front of ancient Uncompahgria to near Moab, Utah. Source: **Trudgill** and **Paz (2009)**. Notice dramatic thickening of Cuter interval in the salt-withdrawal basins (now synclines) on both sides of the salt walls. The section line (green) is posted on the previous figure.

Mass movement of the Paradox Salt began during Cutler deposition and continued at least into Late Cretaceous time. The salt is not exposed in the Ten Mile Graben area. The closest outcrops are in the Salt Valley collapsed anticline, that is associated with Arches National Park.

Mesozoic Era

Following the Permian, the Paradox Basin area subsided and received thousands of feet of Triassic-Jurassic siliciclastic sediment that was derived from the Sevier orogenic belt to the west. With time, each stratigraphic unit onlapped the southwestern flank of Uncompahgria (**Figure BG-10**). The Entrada, Curtis, Summerville, and Morrison formations will be transected during the excursion. The Paradox Basin area was also the site of voluminous sedimentation during the Cretaceous Period, as discussed below.

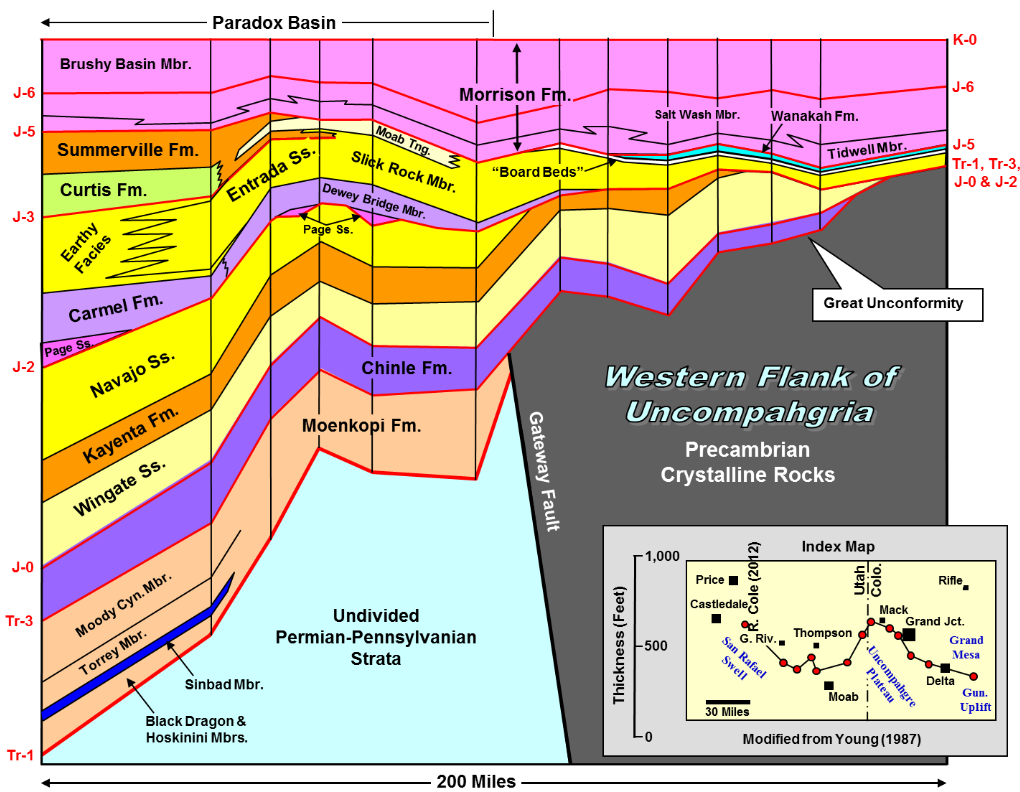


Figure BG-10. Stratigraphic onlap of Triassic and Jurassic strata onto the northwest flank of Uncompahgria. No thickness values are provided. The red lines represent regional unconformities and disconformities; abbreviations are from the USGS. Modified from **Young (1987)**, who used various USGS sources.

Cretaceous strata in the Rocky Mountain area were deposited during the Sevier Orogeny which affected western North America from the Late Jurassic into the Late Cretaceous (**Figure BG-3**). As a result of convergence between the Farallon and North American plates, a large fold and thrust belt (Sevier Highlands) developed in Utah, Arizona, Nevada, and Idaho (**Figure BG-11**). East of the Sevier orogenic belt an elongate foreland basin subsided and received thousands of feet of sediment derived from the highlands. With time, the basin flooded, thus creating the Western Interior Seaway. The Mancos Shale was deposited in this setting.

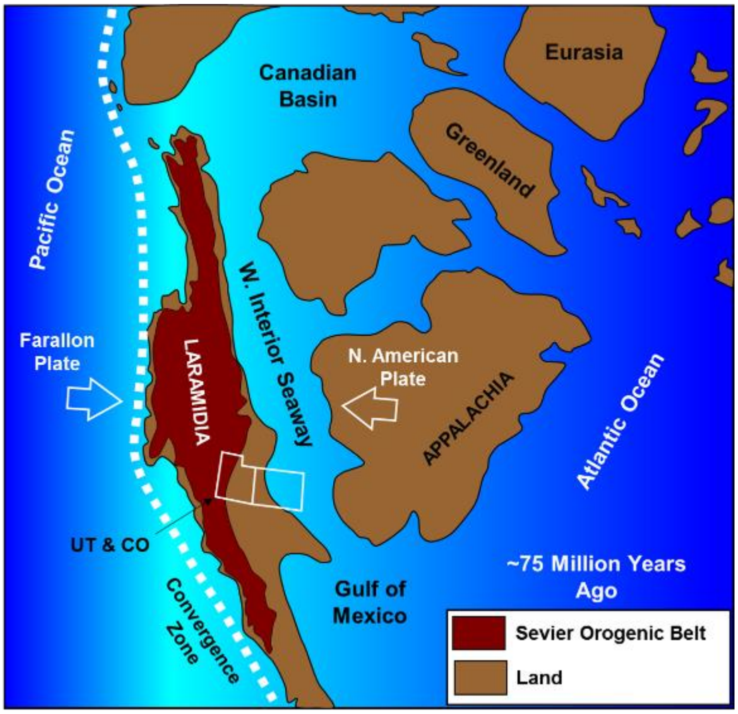


Figure BG-11. General paleogeographic map of North America during the Late Cretaceous. The Western Interior Seaway subdivided North America into two enormous islands: Laramidia and Appalachia. The approximate locations of Colorado and Utah are shown. An enlargement of the depositional environments along the western side of the Seaway is shown in the **Figure BG-15**. Map modified from drawing by **Ron Blakey**.

Subsidence during Early Cretaceous time was most intense along the eastern front of the Sevier orogenic belt. Initial deposits are represented by the Cedar Mountain Formation, which has been subdivided into a number of members based on lithology, geochronological data (detrital zircon), geochemical data (major and trace elements), paleontology (dinosaurs mainly), and sedimentologic observations (**Figure BG-12**). Depositional systems identified in the Cedar Mountain include fluvial, floodplain, mudflat, pedogenic, and lacustrine (**Figure BG-13**). To the west in Colorado, the Burro Canyon Formation correlates with the Cedar Mountain. Additional elaboration is presented at **Stop 5**.

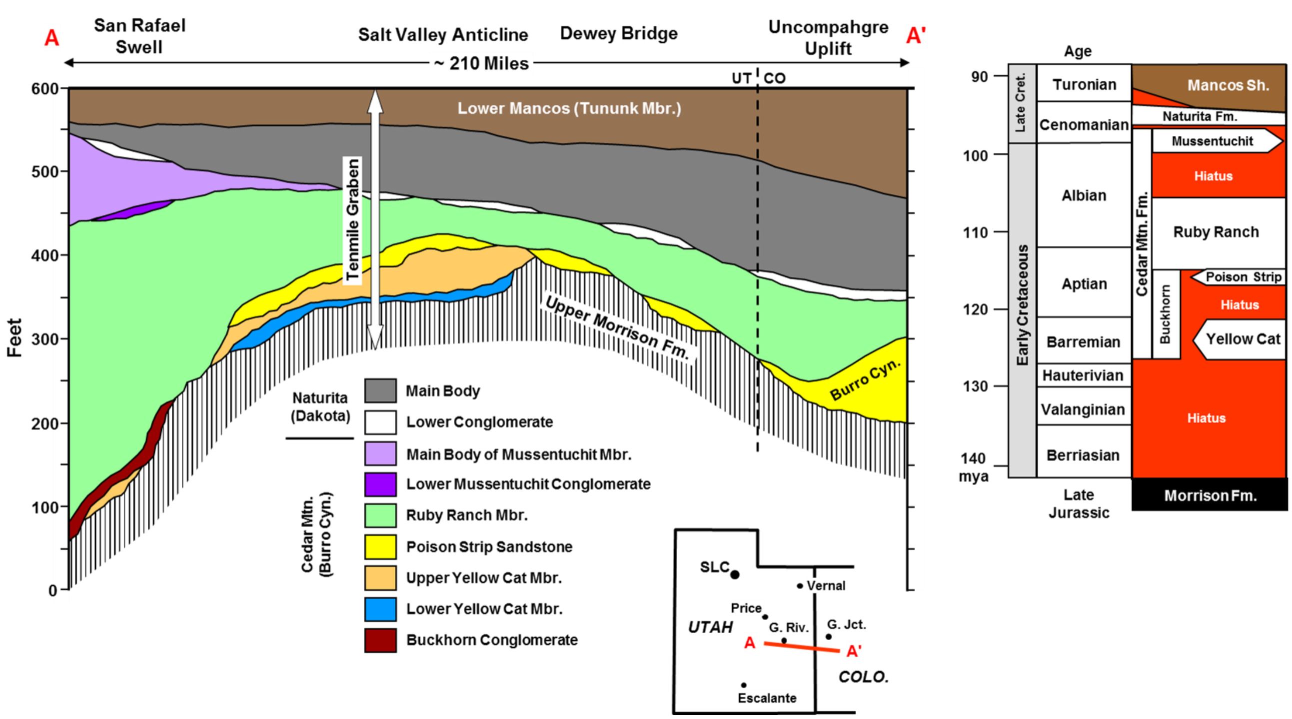


Figure BG-12. Left -- Lithostratigraphic cross-section of Cedar Mountain (Burro Canyon) - Naturita interval along southwest side of the Uinta Basin. **Right** -- Chronostratigraphic chart for same units. Modified from **Kirkland and Madsen (2007)**.

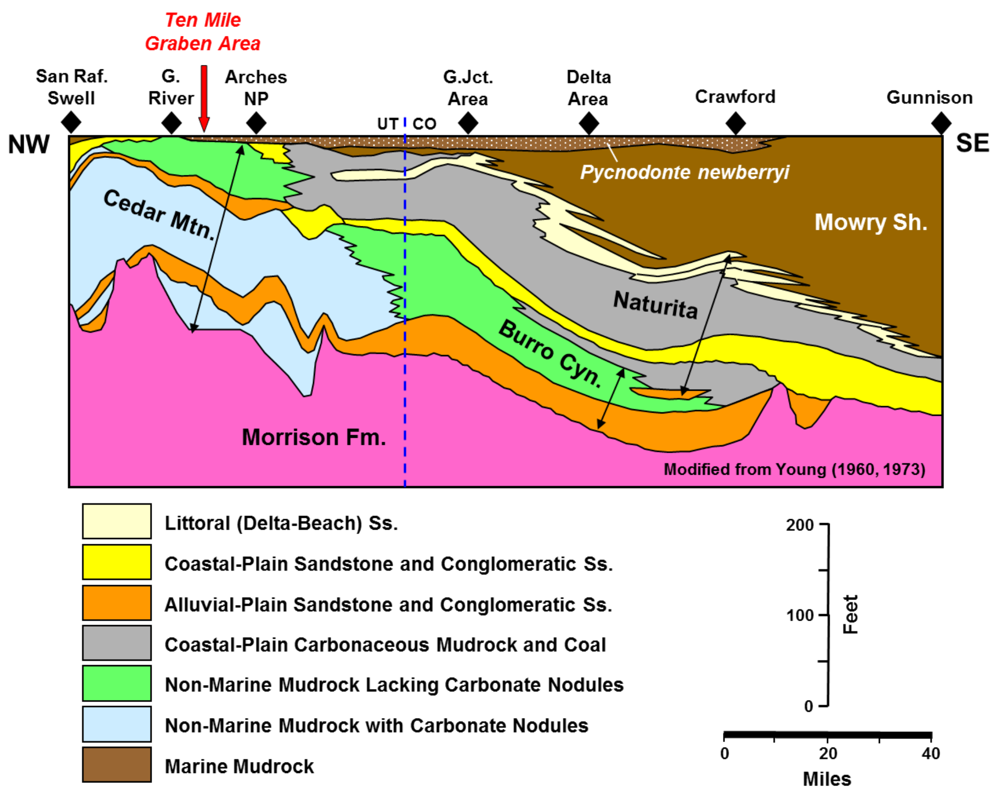


Figure BG-13. Stratigraphic cross section of the Cedar Mtn-Naturita-Mowry interval from central Utah to central Colorado depicting various depositional settings and lithologies. Modified from **Young (1960** and **1973)**.

As subsidence in the foreland basin continued into the Late Cretaceous, coupled with rising sea levels, the Western Interior Seaway began to form, first to the east (Denver area), then expanding to the west; i.e., a classic transgression. The Naturita (Dakota) Formation records this transition from continental to shallow-marine conditions (**Figure BG-13**). Eventually, as the Seaway expanded and deepened, the shoreline was near the eastern front of the Sevier Highlands about 92 million years ago. At maximum extent, the Seaway was approximately 2,000 miles long (N-S), 600 miles wide (E-W) and perhaps 1,000-2,500 feet deep. Over its 30-35-million-year duration, the seaway fluctuated in size and depth because of tectonism and climate change, which created numerous transgressive-regressive cycles (**Figure BG-14**). In western Colorado and eastern Utah, the seaway intermittently persisted been about 110 and 70 million years ago with a suggested maximum depth of 500-1,000 feet. The sea-bottom topography resembled an east-sloping ramp, although local basins existed in eastern Utah due to movement of the Paradox Salt.

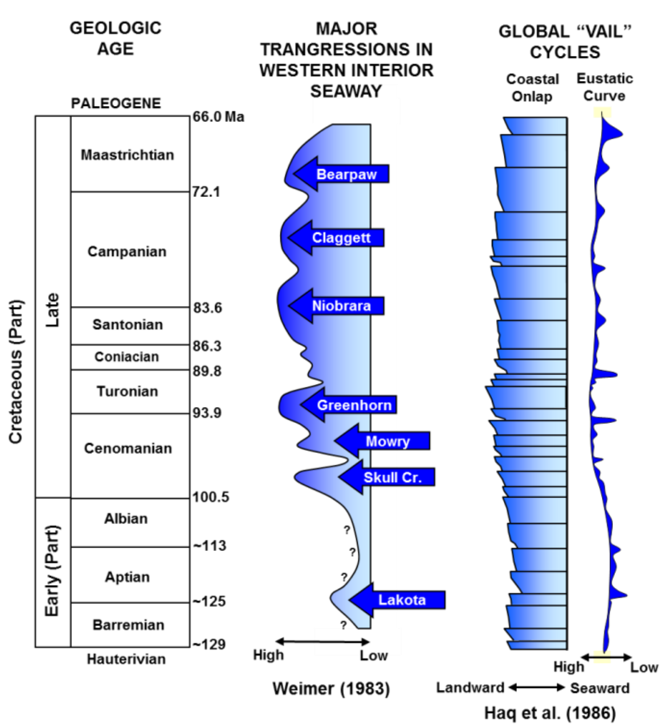


Figure BG-14. Chronostratigraphic chart showing transgressive-regressive variations in relative sea level in the Western Interior Seaway (**Weimer, 1983)** and global eustatic and relative sea-level fluctuations **(Haq et al. 1986)**. Note that the Haq curves have been slightly modified since the 1986 publication.

Siliciclastic sediment shed eastward from the Sevier Highlands (**Figure BG-15**) eventually displaced the Western Interior Sea; thus, forming a series of large clastic wedges. A broad piedmont formed east of the Highlands, which transitioned downslope (east) into a broad alluvial plain, followed by a coastal plain, and strandline. Because the clastic wedge progressively prograded from the Sevier Highlands to the east, the shoreline of the Mancos Sea also moved east with time (**Figure BG-16**). This shift was cyclical, not gradual. The shoreline arrived in the Grand Junction area about 75 million years ago.

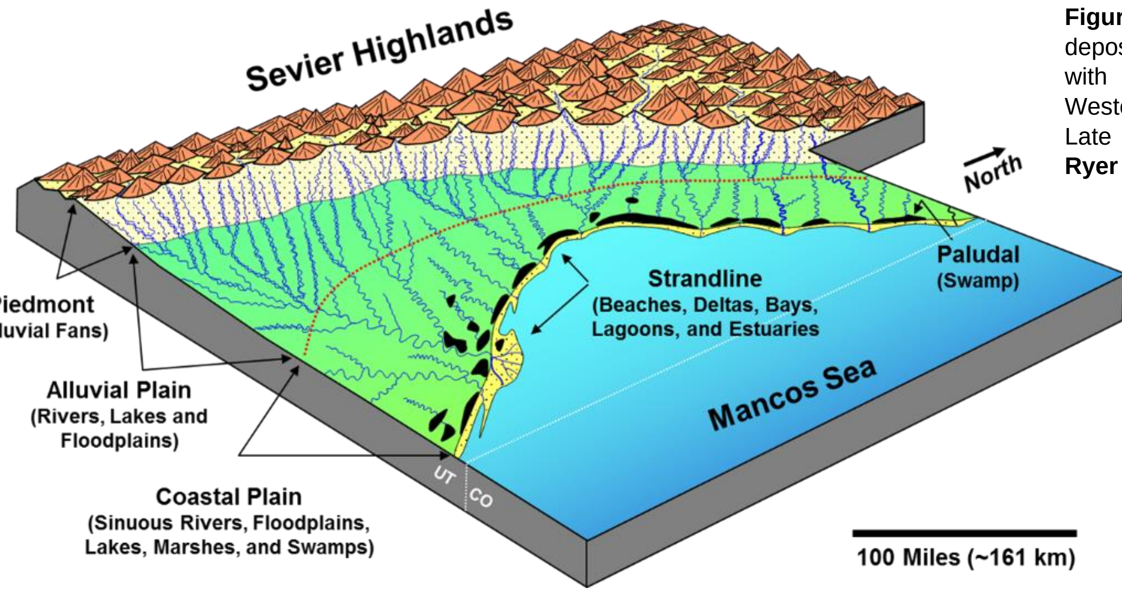


Figure BG-15. Summary of the depositional systems associated with the western side of the Western Interior Basin during the Late Cretaceous. Modified from **Ryer and McPhillips (1963)**.

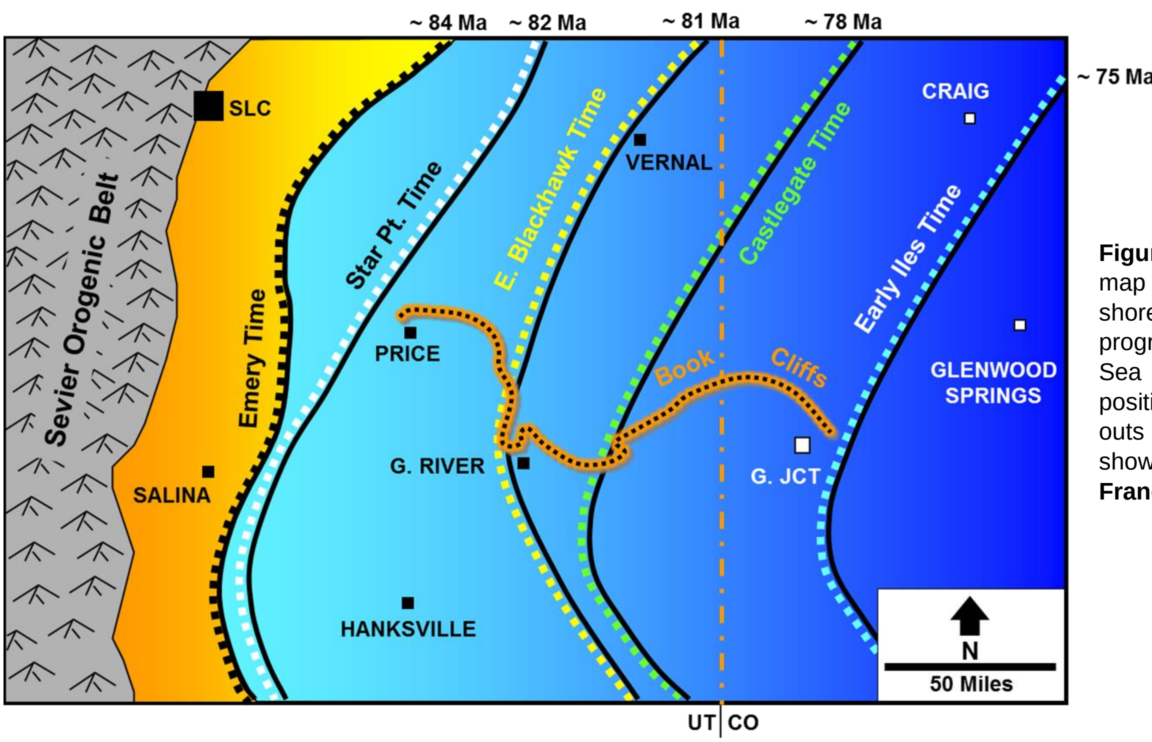


Figure BG-16. Paleo-geographic map showing the approximate shoreline positions for major progradations into the Mancos Sea (e.g., Castlegate). Shoreline positions are defined by the pinch-outs of the stratigraphic units shown. Sources: **Cole (1987)** and **Franczyk et al. (1992)**.

By the Early Paleogene (Paleocene Epoch), the Western Interior foreland basin had been filled with thousands of feet of mud, sand, and gravel (**Figure BG-17**). After more than 100 years of field and laboratory study, these deposits have led to a complex stratigraphic nomenclature, which changes from east to west across the field trip area, as shown in **Figure BG-18**. Additional confusion arises because different government (USGS, CGS, UGS), academic, and industry groups may have their own spin on things.

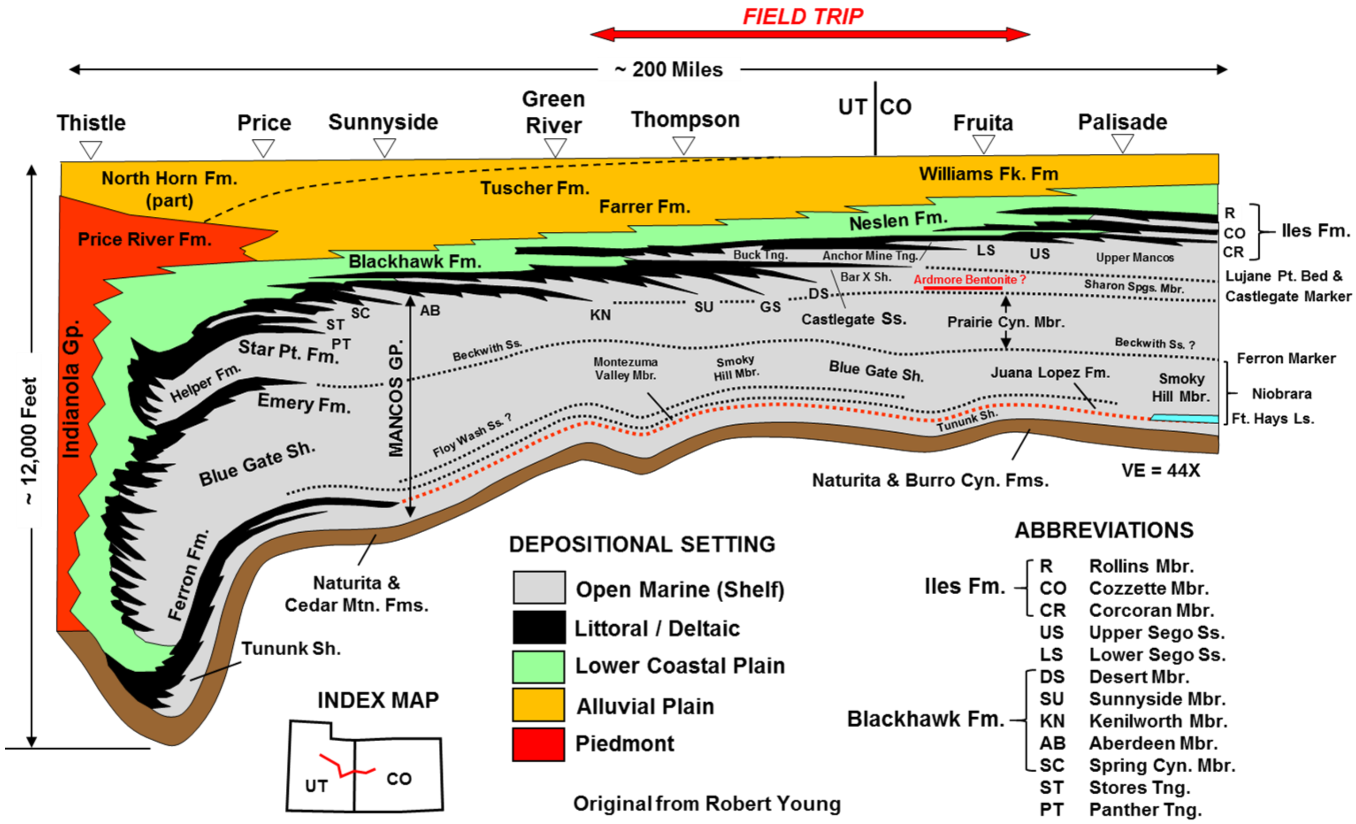


Figure BG-17. General cross section of Cretaceous strata from central Utah to western Colorado. Cross-section line is shown on the map insert. Source: **Young (1955)**; modified by **Cole (1987),** and **Kirkland et al. (2025)**. A more detailed cross section of the Blackhawk, Castlegate, Neslen, and Iles Fms. between Green River (Tusher Canyon) and Palisade is provided in **Road Log 1**.

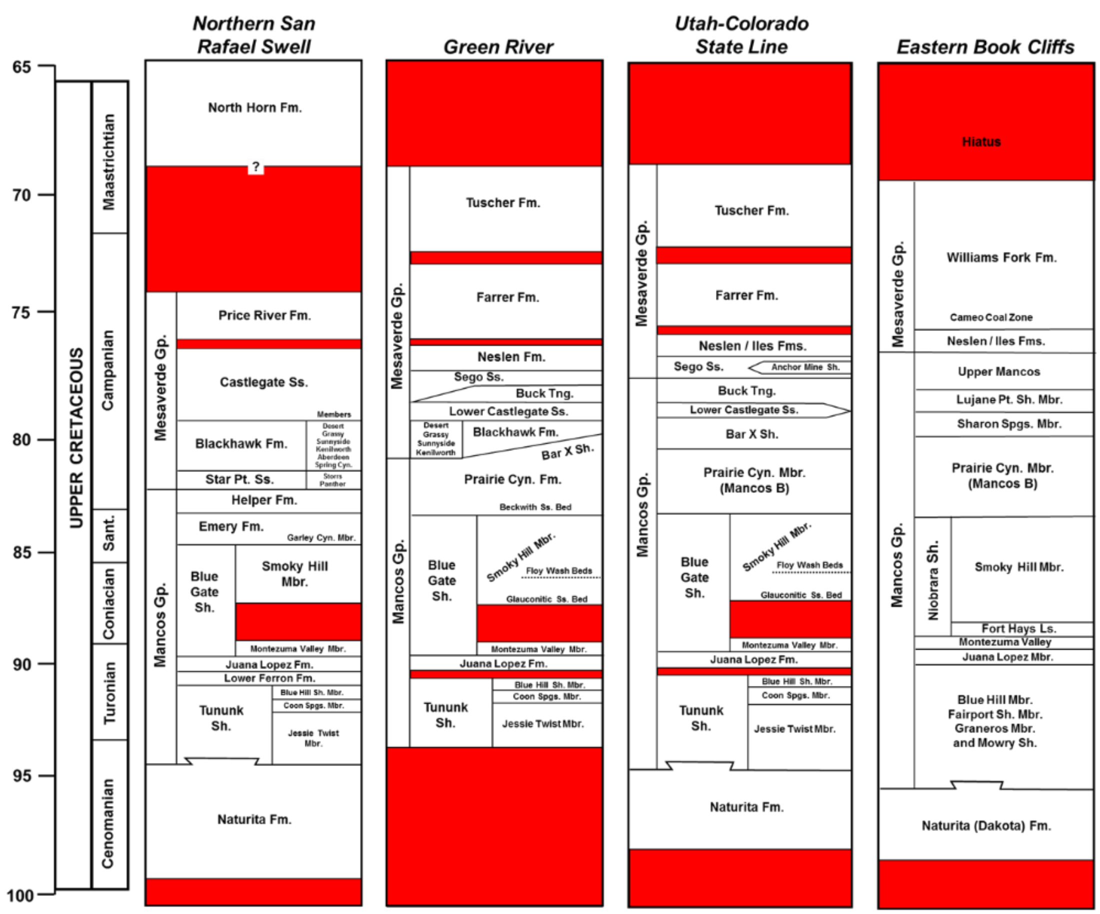


Figure BG-18. Chart showing the stratigraphic nomenclature for Upper Cretaceous units in the general field-trip area. Most of these terms are posted on the previous figure. Modified from **Molenaar and Cobban (1991), Anderson and Harris (2006), Noe (2010),** and **Kirkland et al. (2025)**.

The field-trip route will probably not visit any of the Upper Cretaceous shoreline and non-marine units; however, they will be discussed at several of the stops. These lithostratigraphic units have been studied extensively, beginning with the seminal research by the late Dr. Robert Young. From northwest to southeast, the Book Cliffs strata consist of the Blackhawk Formation (6 members), Castlegate Sandstone, Sego Sandstone (2 tongues), and Iles Formation (3 members). These units were deposited in a series of prograding wave-dominated deltas and associated strandlines that intertongued with coastal-plain deposits (**Figure BG-15**). Seaward, these units intertongue with the Mancos Shale (**Figure BG-17**). Above the marginal-marine packages are thick intervals of non-marine deposits (e.g., Farrer, Tuscher, Williams Fork), produced by fluvial, floodplain, and paludal (coal) processes. The non-marine units form impressive outcrops in the drainages transecting the Book Cliffs and are major reservoir intervals for natural gas in the Uinta and Piceance Basins (see later discussion).

Cenozoic Era

The geo-history of the general field-trip area continued into the Paleogene Period as the Laramide Orogeny (**Figure BG-3**) created the modern-day Uncompahgre Uplift, Uinta Mountains, White River Uplift, Gunnison Uplift, Douglas Creek Arch, Piceance Basin, and Uinta Basin (**Figure BG-19**). The basins filled with thousands of feet of lacustrine, fluvial, mudflat, and paludal sediment during the Paleocene and Eocene, which are included the North Horn, Wasatch, Colton, Ft. Union, Green River, Uinta, and Duschesne River Formations (**Figure BG-20**). None of these units will be visited during the field trip.

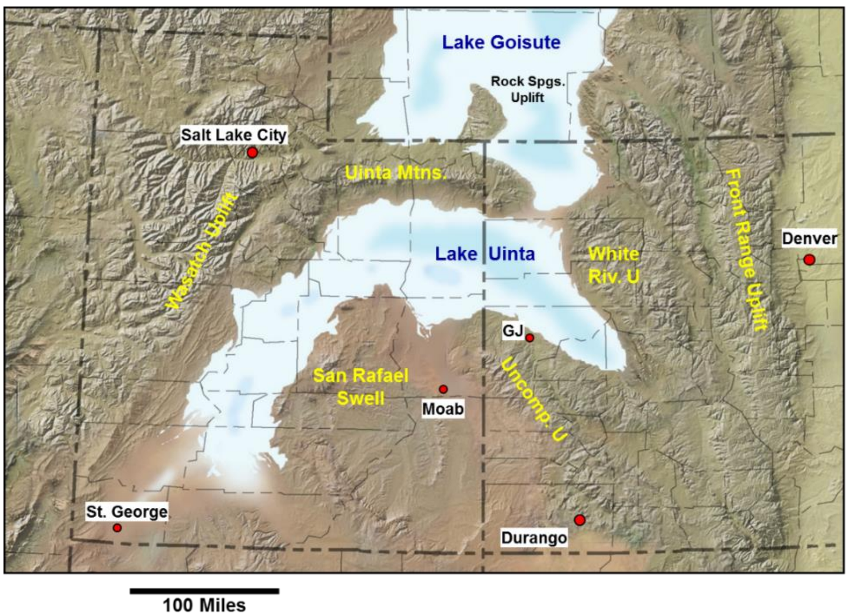


Figure BG-19. Paleogeographic map of Utah, western Colorado and adjacent states depicting the extent of lacustrine deposition during the late Eocene, about 45 million years ago (source: **Blakey and Ranney, 2008**) The Green River Formation strata indicate that two enormous lakes were present: Lake Goisute in the Greater Green River and Washakie Basins of Wyoming, and Lake Uinta in the Piceance and Uinta Basins of Colorado and Utah. These lakes occupied structural depressions between large uplifts that developed during the Laramide Orogeny. As the basins slowly subsided, thousands of feet of non-marine sediment (fluvial, paludal, lacustrine, mudflat) filled the basins. The sediment was derived from the surrounding uplifts.

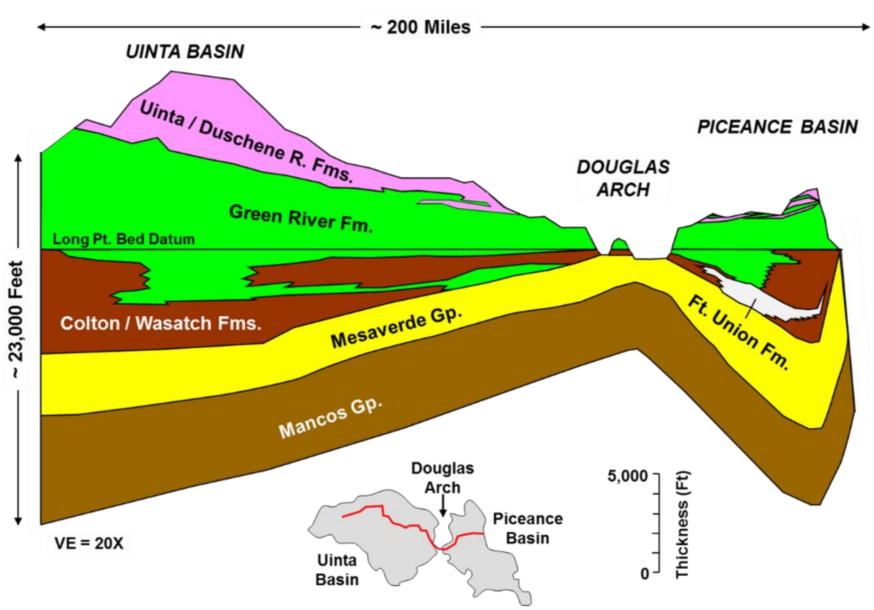


Figure BG-20. General cross section transecting the northern Piceance Basin, Douglas Arch, and northern Uinta Basin showing stratigraphic relationships of Late Cretaceous through Oligocene strata. Modified from **Johnson (1989)**.

The preceding discussion illustrates that the geo-history of eastern Utah and western Colorado is strongly dominated by tectonism and sediment deposition. However, minor igneous intrusions of intermediate-composition (e.g., dioritic) magma occurred in eastern Utah during the Oligocene. This phase created numerous laccoliths, plugs, dikes, and sills in the La Sal, Abajo, and Henry Mountains in Utah (**Figure BG-21**), as well as the West Elk and San Juan Mountains in Colorado. Age dates (fission-track and K/Ar) for the Abajo Mountains range from 22.6 to 28.6 Ma, while dates from the Henry Mountains are from 20.0 to 29.2 Ma, and a single date from the La Sal Mountains is 28.7 Ma (**Sullivan, 1997**). Late Cenozoic erosion of the Colorado Plateau has removed huge amounts of sedimentary rock, which allows these plutons to be exposed as mountain ranges. The erosional rate increased about 10 million years ago.

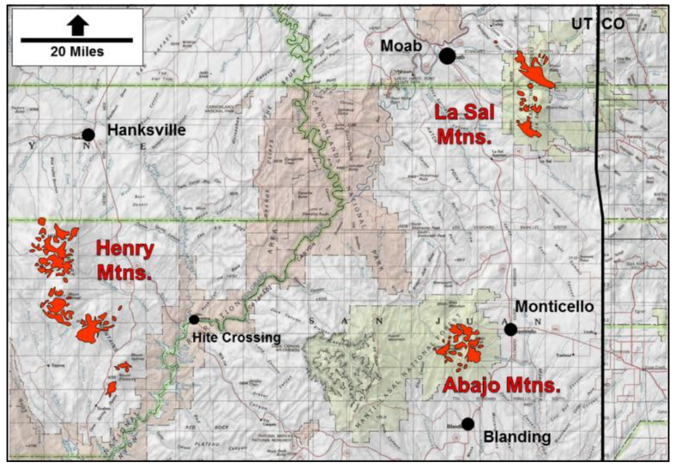


Figure BG-21. Map of eastern Utah and westernmost Colorado showing the locations of the Henry, Abajo, and La Sal plutons Source: **Utah Geological Survey** interactive geologic map.

RESOURCES

Eastern Utah and western Colorado have a broad spectrum of important natural resources, including oil, natural gas, coal, tar sand, uranium, manganese, and potash. Petroleum is the most exploited resource and occurs in numerous stratigraphic units (**Figure BG-22**) and fields (**Figure BG-23**). Based on **Figure BG-23**, it is clear that the Naturita (Dakota) is the most common hydrocarbon target, followed by the Cedar Mountain, Morrison, Entrada, and Mancos. Helium and CO_2 have been produced at Harley Dome Field, as will be discussed at **Stop 1**.

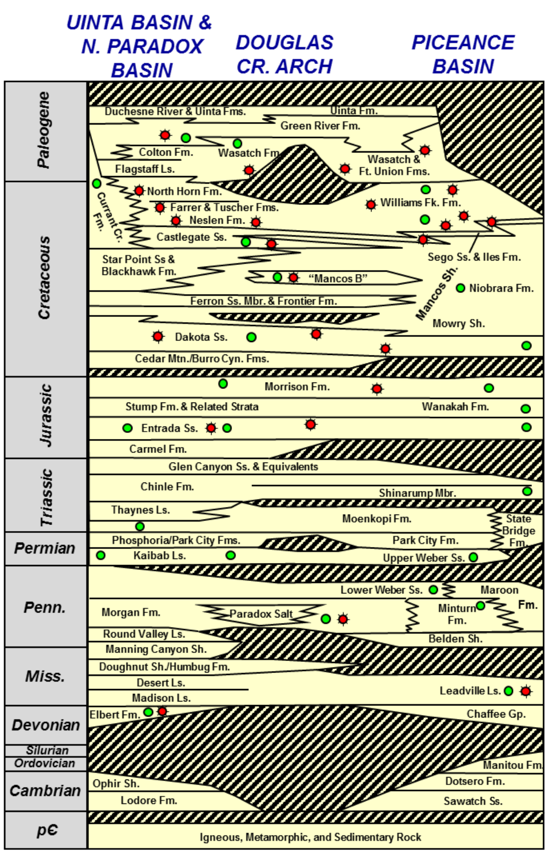
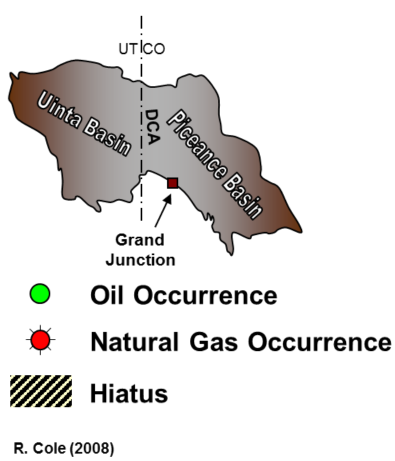


Figure BG-22. Stratigraphic chart showing the occurrence of oil and gas in the Piceance Basin, Douglas Creek Arch, Uinta Basin, and northern Paradox Basin: Source: **Sanborn (1977).**



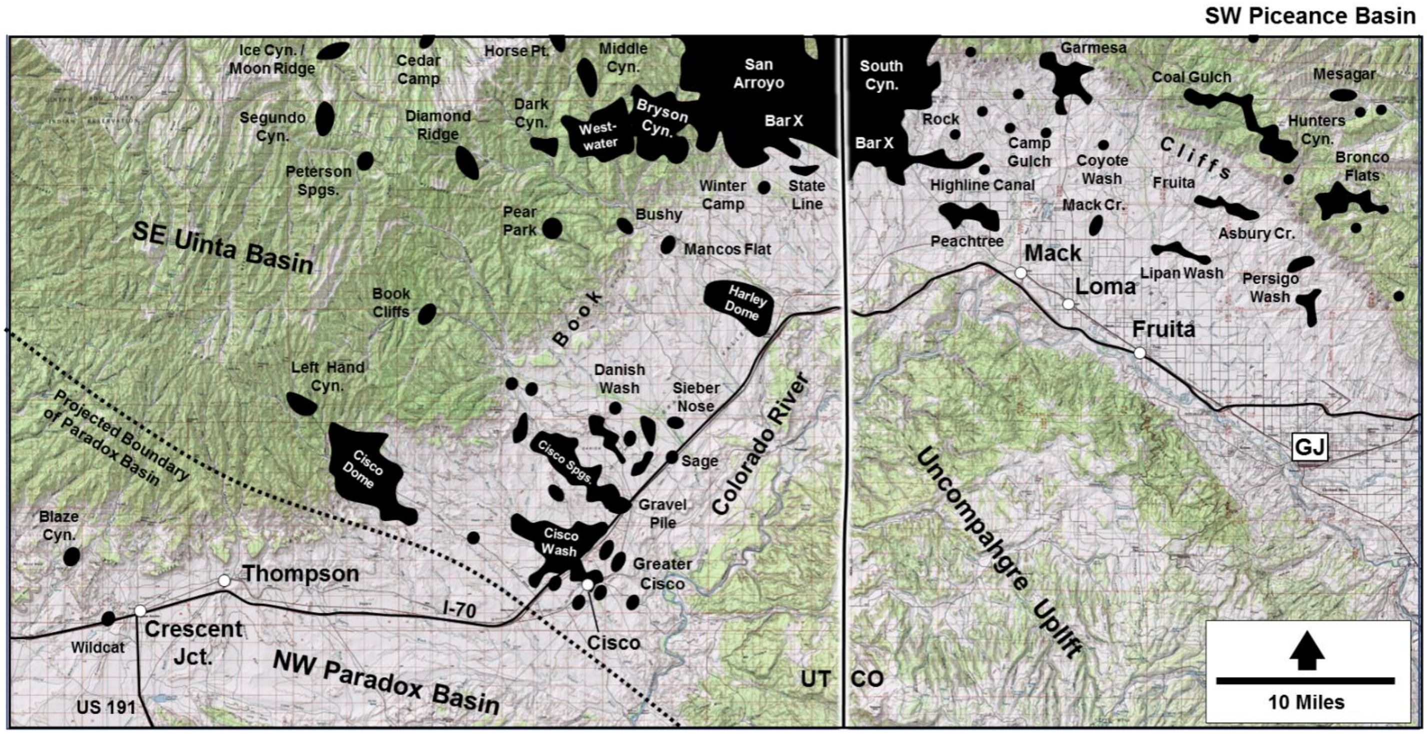


Figure BG-23. Map of the field-trip route, showing the numerous oil and gas fields. Table on right provides basic information on the stratigraphic units involved in the production at the fields. Actual production values are not implied. Sources: **Utah Division of Oil, Gas and Mining** and the **Colorado Oil and Gas Conservation Commission (ECMC)**. Compiled by R. Cole.

Utah Field	Resource				Stratigraphic Unit								
	Gas	Oil	CO2	He	Wingate	Kayenta	Navajo	Entrada	Morrison	Cedar Mtn	Naturita	Mancos	Mesaverde
Agate		■							■	■			
Bar X	■							■	■	■	■		
Blaze Cyn.		■					■						
Book Cliffs	■										■		
Bryson Cyn.	■							■	■	■	■		■
Bushy		■									■	■	
Cedar Camp	■									■	■		
Cisco Dome	■	■						■	■	■	■	■	
Cisco Spgs.	■	■		■					■	■	■	■	
Cisco Wash		■							■	■	■		
Danish Wash	■								■		■		
Dark Cyn.	■									■	■		
Diamond Ridge	■								■		■		
Gravel Pile		■							■		■		
Greater Cisco	■							■	■	■	■	■	
Harley Dome			■	■				■	■		■		
Horse Pt.	■								■	■	■		
Left Hand Cyn.	■							■			■		
Mancos Flat		■										■	
Middle Cyn.	■									■	■		
Pear Park	■									■	■		
Pear Park	■									■	■		
Peterson Spgs.	■									■	■		
Sage		■									■		
San Arroyo	■							■	■	■	■	■	
Sieber Nose		■							■	■			
State Line	■							■	■	■	■		
Westwater	■							■	■	■	■		■
Winter Camp	■										■		
Wildcat		■			■	■							

Colorado Field	Resource				Stratigraphic Unit								
	Gas	Oil	CO2	He	Wingate	Kayenta	Navajo	Entrada	Morrison	Burro Cyn.	Naturita	Mancos	Mesaverde
Asbury Cr.	■									■	■		
Bar X	■							■	■	■	■		
Bronco Flats	■								■		■		■
Camp Gulch	■								■		■		
Coal Gulch	■								■	■	■		■
Coyote Wash	■								■		■		
Fruita	■										■		
Garmesa	■	■						■	■		■	■	
Highline Canal	■								■		■		
Hunters Cyn.	■									■	■		■
Lipan Wash	■								■		■		
Mack Cr.	■								■	■			
Mesagar	■	■							■		■	■	■
Peachtree	■							■	■		■		
Persigo Wash	■								■	■	■		
Rock	■								■				
South Cyn.	■							■	■	■	■		

Additional oil-and-gas fields are present in the northern Paradox Basin. Production is mainly from the Elbert Fm. (Devonian), Leadville Ls. (Mississippian), Hermosa Gp. (Pennsylvanian), Paradox Fm. (Pennsylvanian). Numerous uranium mining districts in the Cutler Fm. (Permian) and Morrison Fm. (Jurassic) also occur in the northern Paradox Bain, plus a large area favorable for solution mining of saline-minerals (potash) in the Paradox Formation (**Figure BG-24**). Tar-sand deposits are also present, as visited at **Stop 6**.

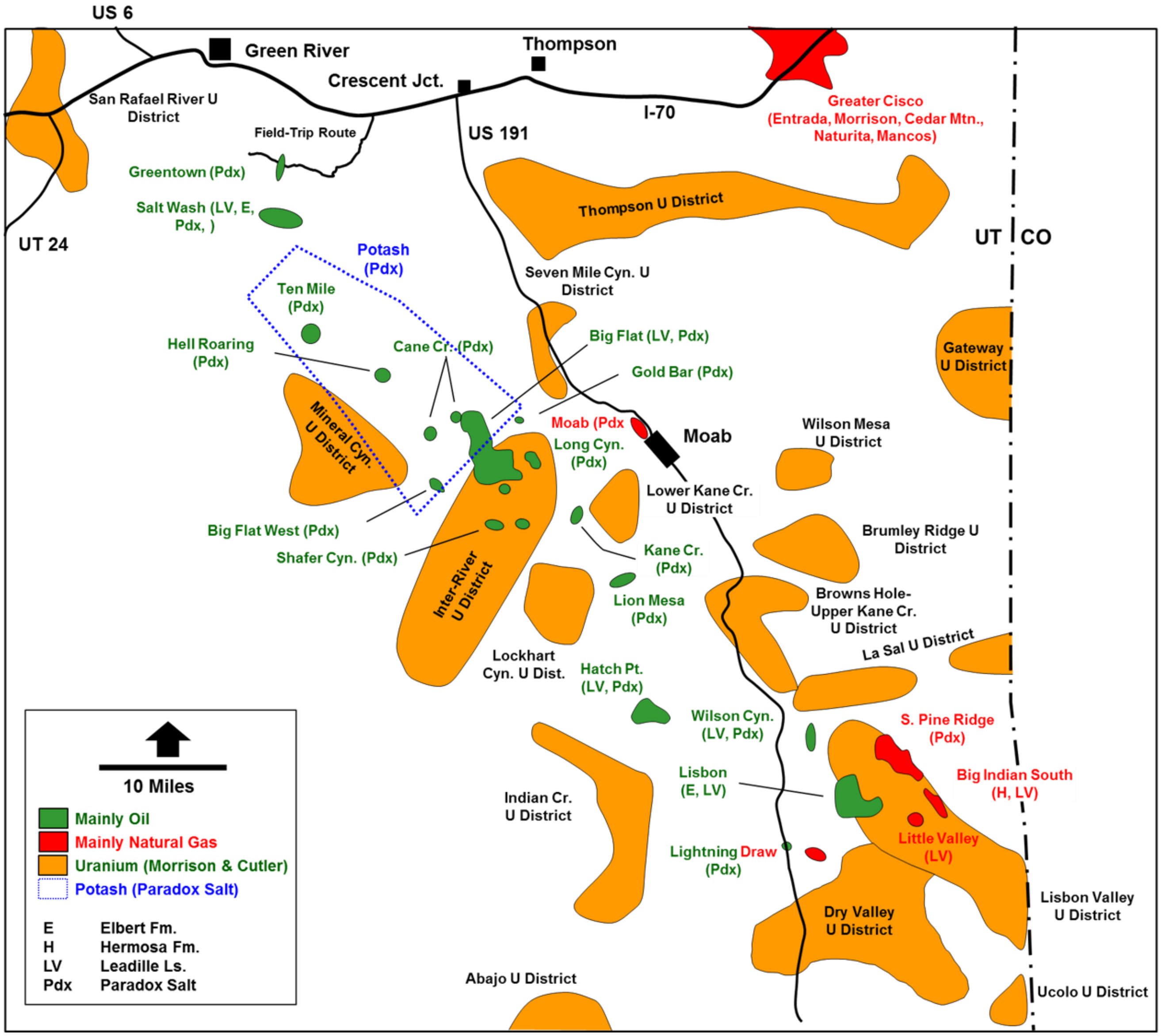


Figure BG-24. Map of the northern Paradox Basin showing oil and gas fields, uranium districts, and the area favorable for solution mining of potash (KCl): Source: **Utah Geological Survey interactive map**.

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