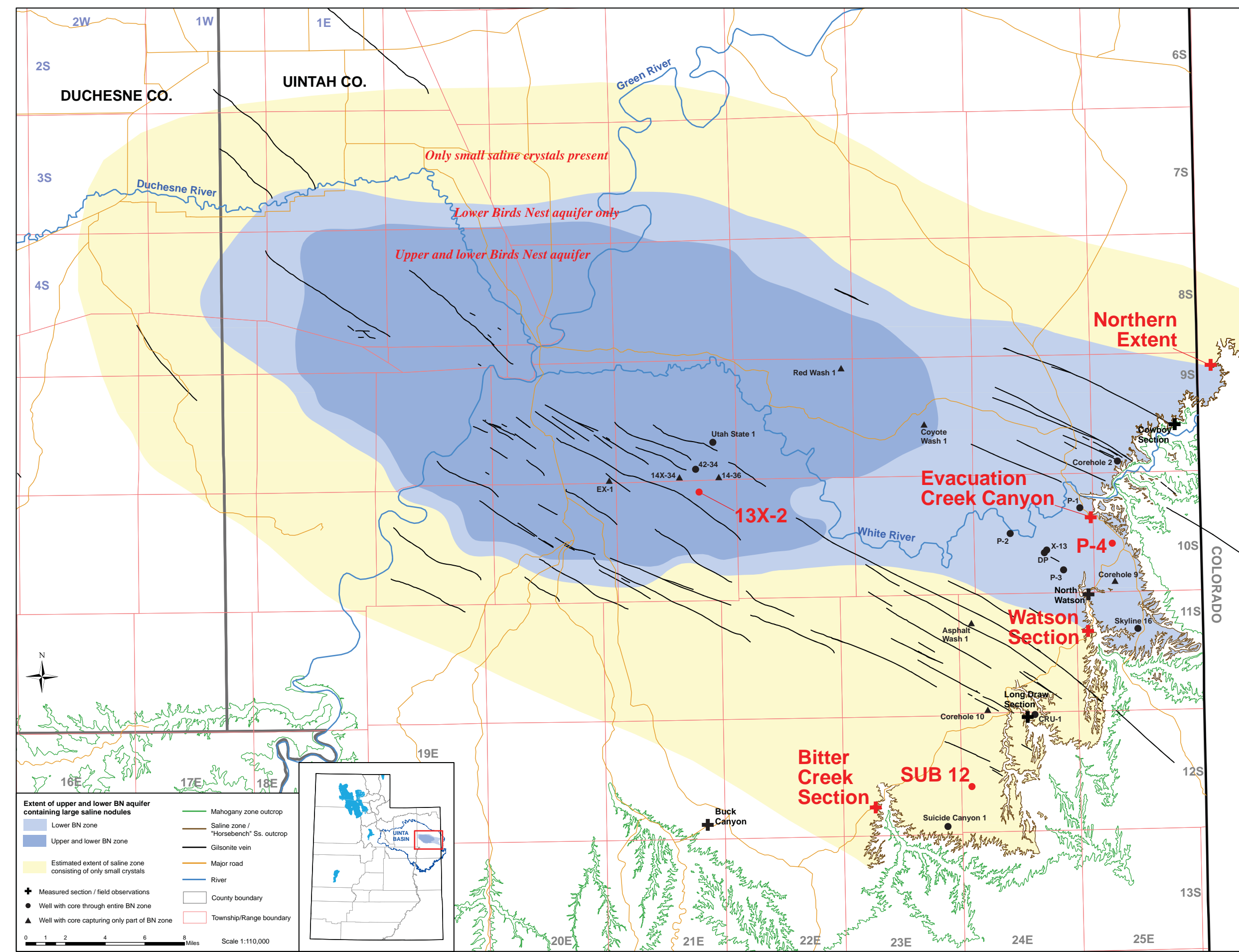


# RESULTS: CORE AND OUTCROP DESCRIPTIONS



## Paleo-Depocenter

### Utah State 13X-2

The Utah State 13X-2 core represents a typical section from the basin's paleo-depocenter. The Saline zone in this area is nearly 400 feet thick and contains two zones with large saline mineral nodules/beds. The upper Birds Nest zone is 94 feet thick (1476-1570 ft) and the lower zone is 99 feet thick (1690-1789 ft) - both zones contain significant saline mineral dissolution (see dissolution log). This well is very near Anadarko's saline water disposal wells.

Operator: Tosco Corp.  
Location: T10S, R21E, Sec. 2, UTM E 625850, UTM N 4426165 (NAD 83)  
Cored interval: 120 - 2191 ft (1200-2191 ft slubbed)  
Core location: Utah Core Research Center

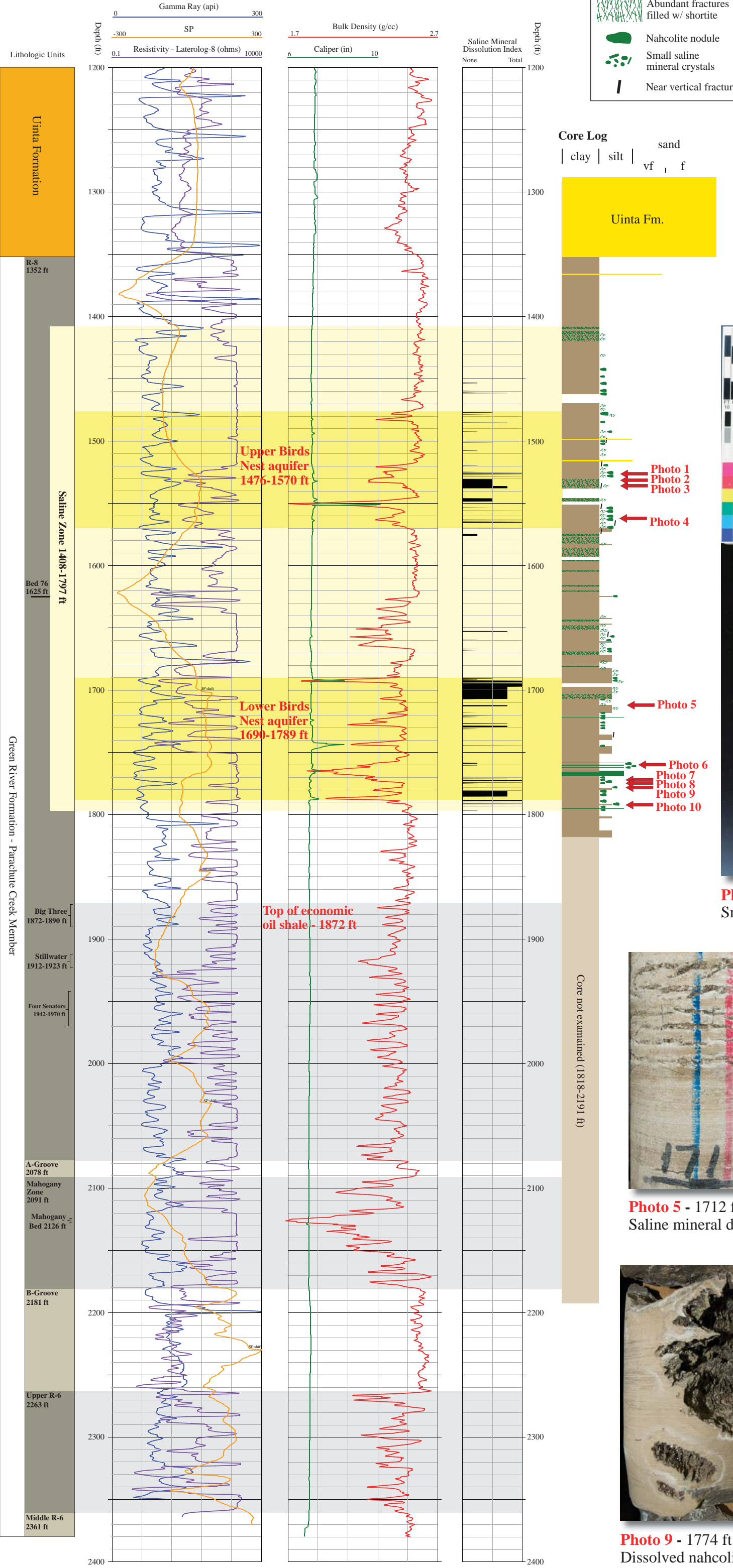


Photo 1 - 1528 ft  
Dissolved nahcolite nodule

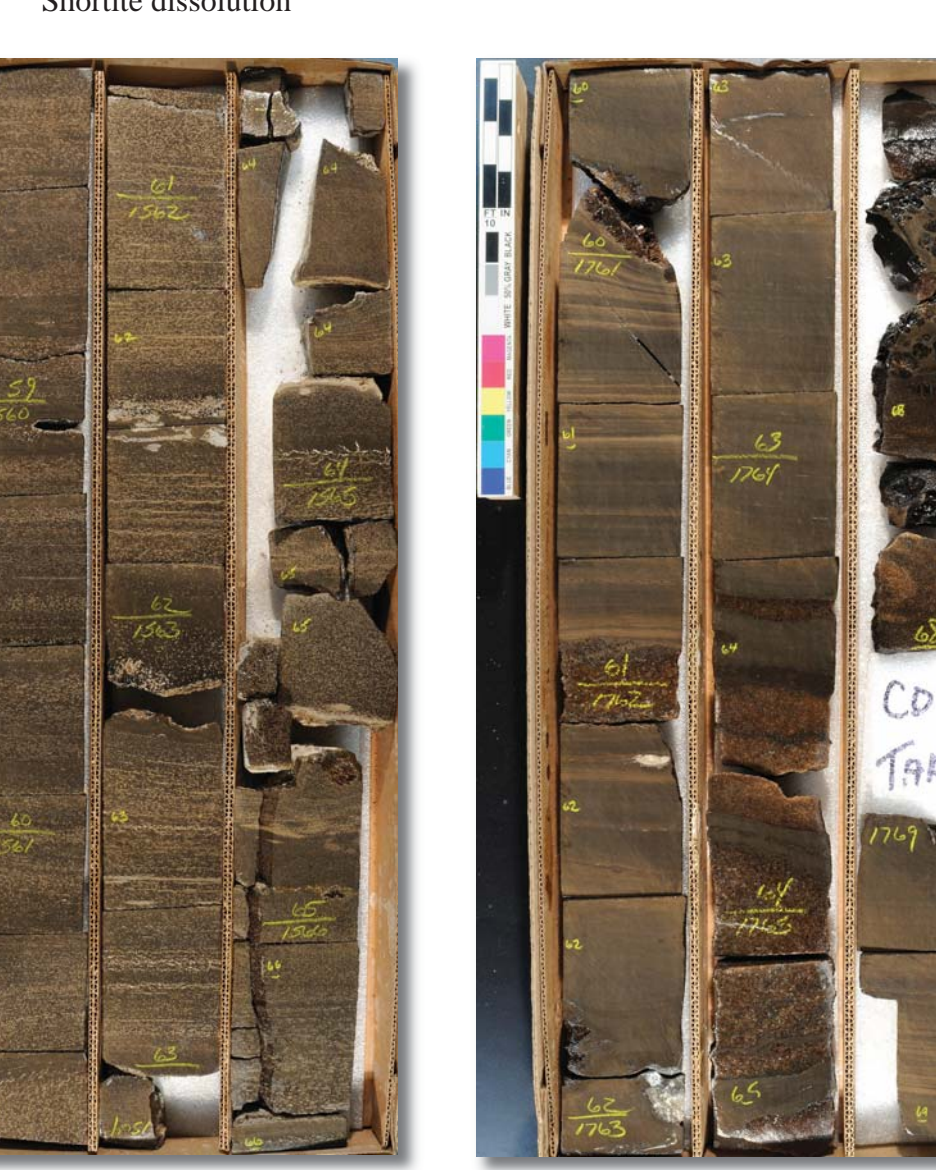


Photo 2 - 1532 ft  
Shortite dissolution

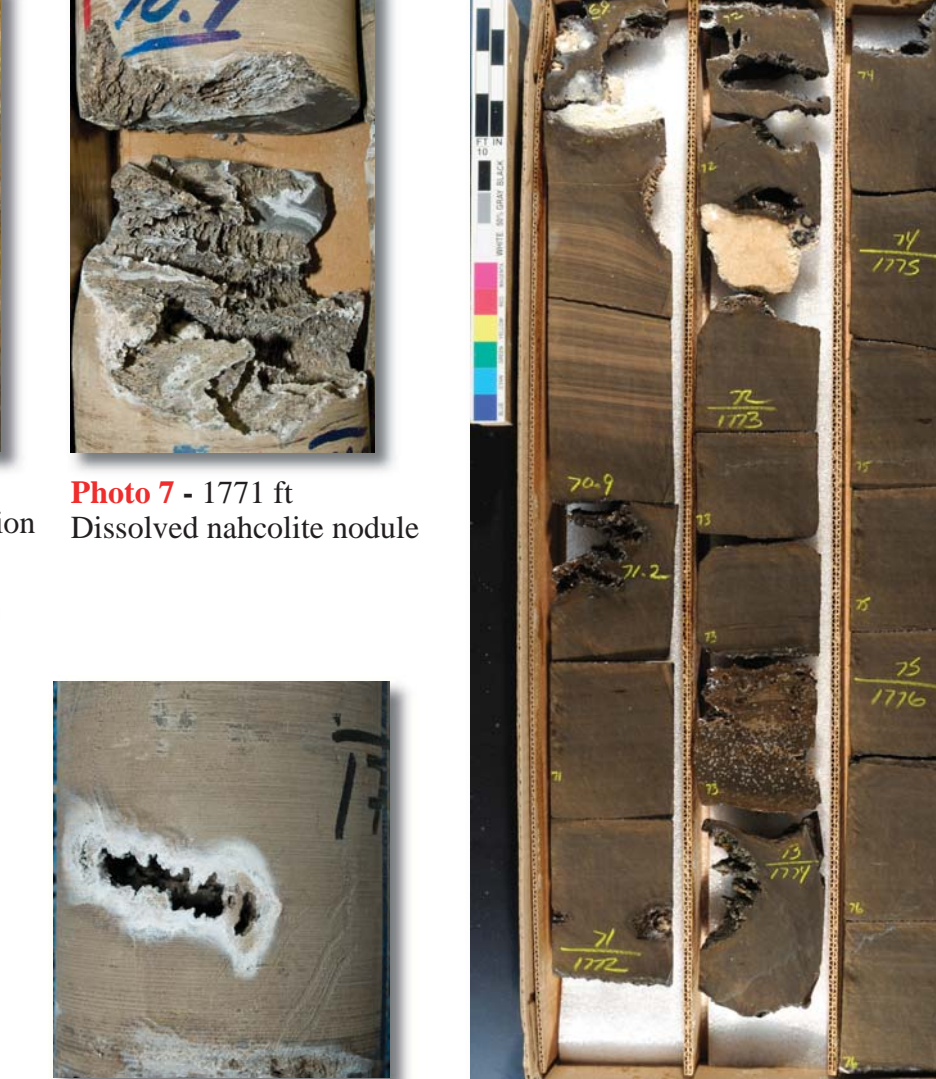


Photo 4 - 1559-1566 ft  
Small saline crystals and fractures



Photo 5 - 1712 ft  
Saline mineral dissolution

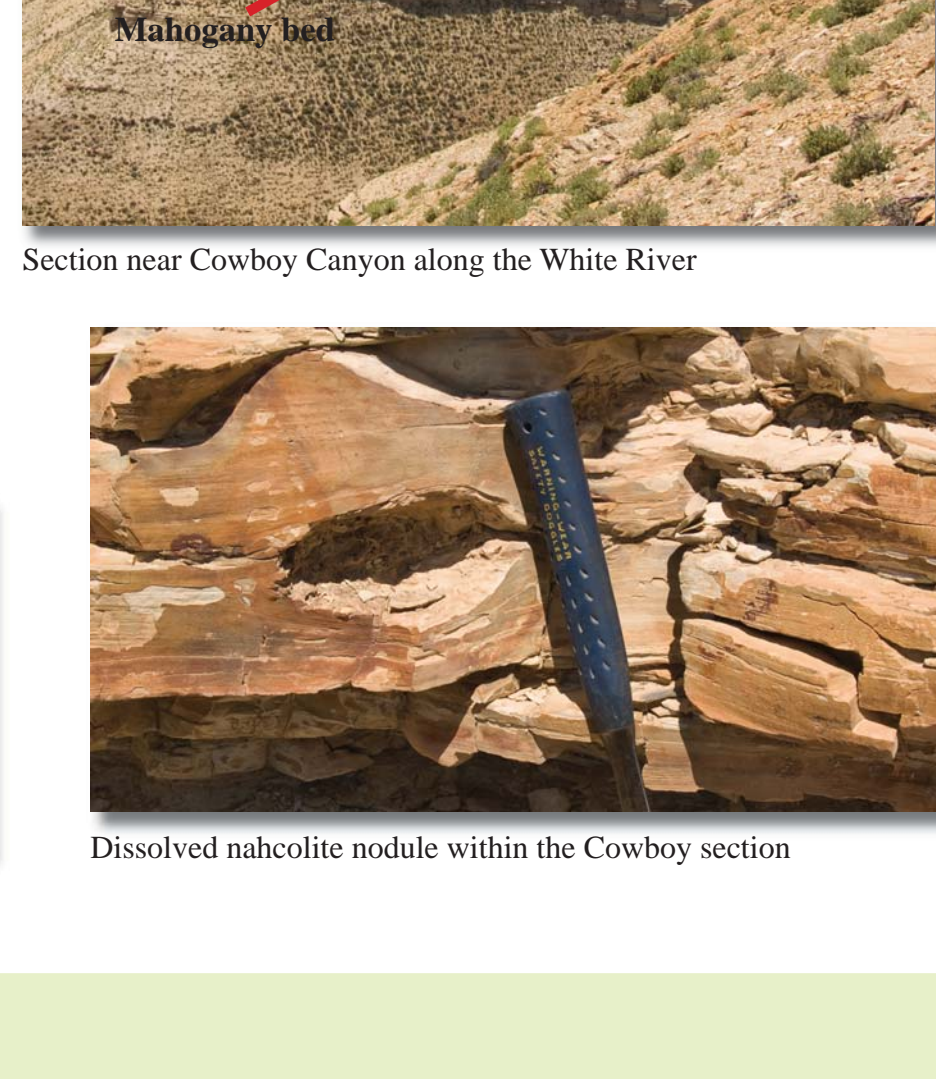


Photo 7 - 1771 ft  
Dissolved nahcolite nodule

## Eastern Margin

### P-4

Only the lower Birds Nest aquifer is present on the eastern side of the basin, as shown by core from the P-4 well. The aquifer is defined by very large nahcolite nodules (up to 1-foot in diameter, seen better in outcrop near the well) and almost total saline mineral dissolution. Significant, porous volcaniclastic beds ("Horsebench") overlay the Saline zone and could be part of the aquifer system. The volcaniclastic deposition might represent fresh water entering the lake which changed the local water chemistry, stopping saline mineral deposition in the area.

Operator: White River Shale Project  
Location: T10S, R23E, Sec. 19, UTM E 659365, UTM N 4418979 (NAD 83)  
Cored interval: 214 - 1173 ft  
Core location: Utah Core Research Center

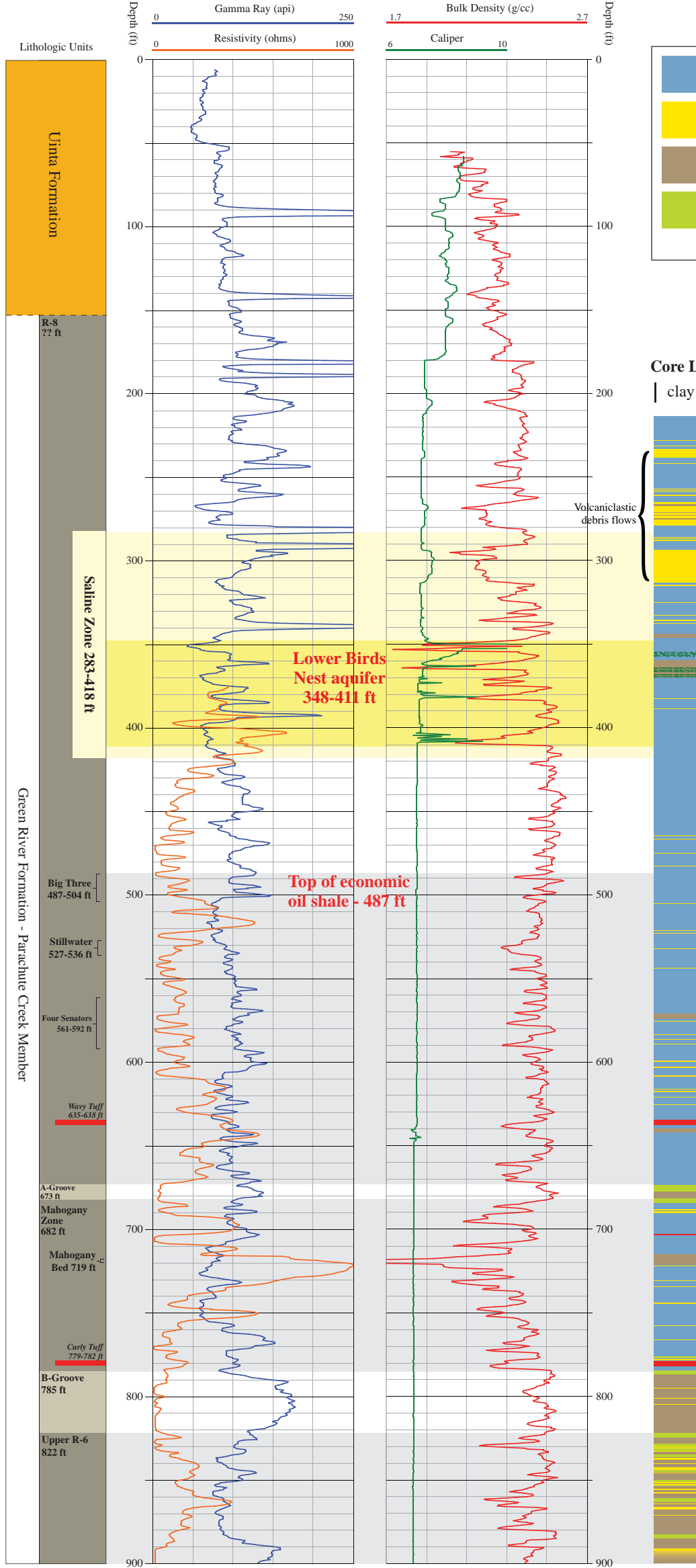


Photo 1 - 300-306 ft  
Highly porous volcaniclastic debris flow with mud rip-up clasts

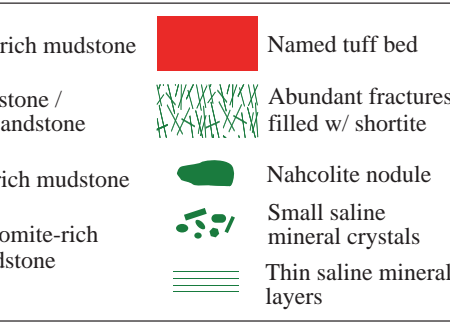


Photo 2 - 354 ft  
Dissolved nahcolite nodule

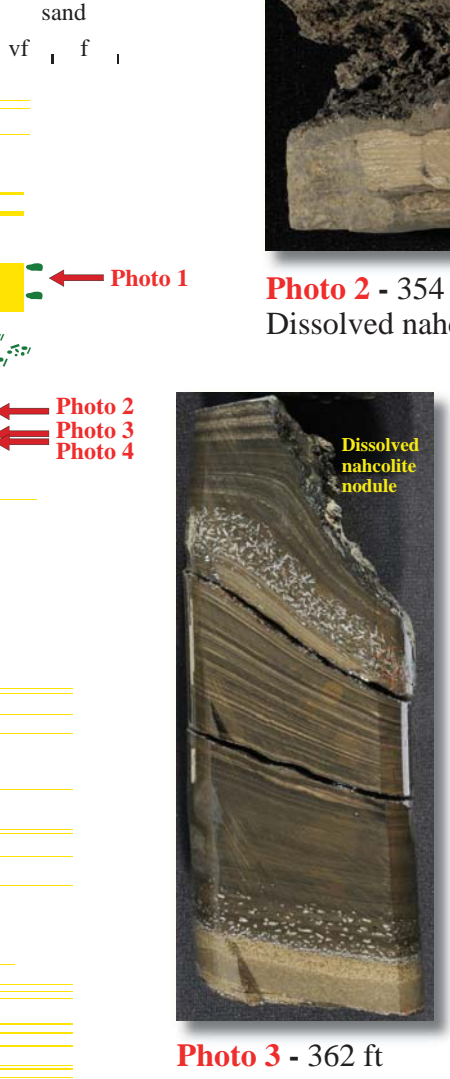


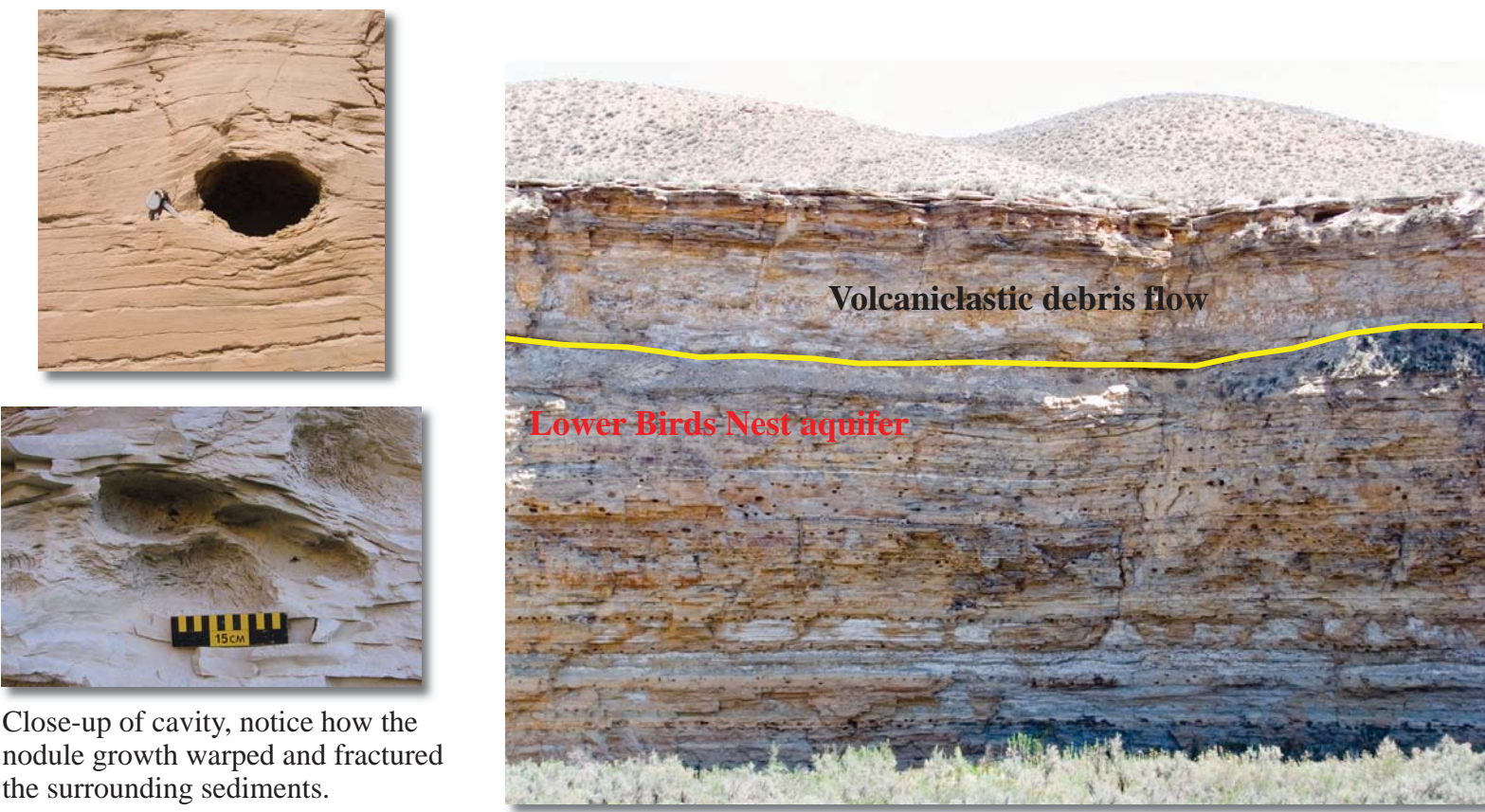
Photo 3 - 362 ft  
Dissolved nahcolite nodule and warped bedding



Photo 4 - 365 ft  
Shortite dissolution

## Evacuation Creek Outcrop

Outcrops along Evacuation Creek near its confluence with the White River provide excellent exposures of the lower Birds Nest aquifer and the overlying volcaniclastic material. Abundant large saline mineral nodules are present in a roughly 60 foot interval.

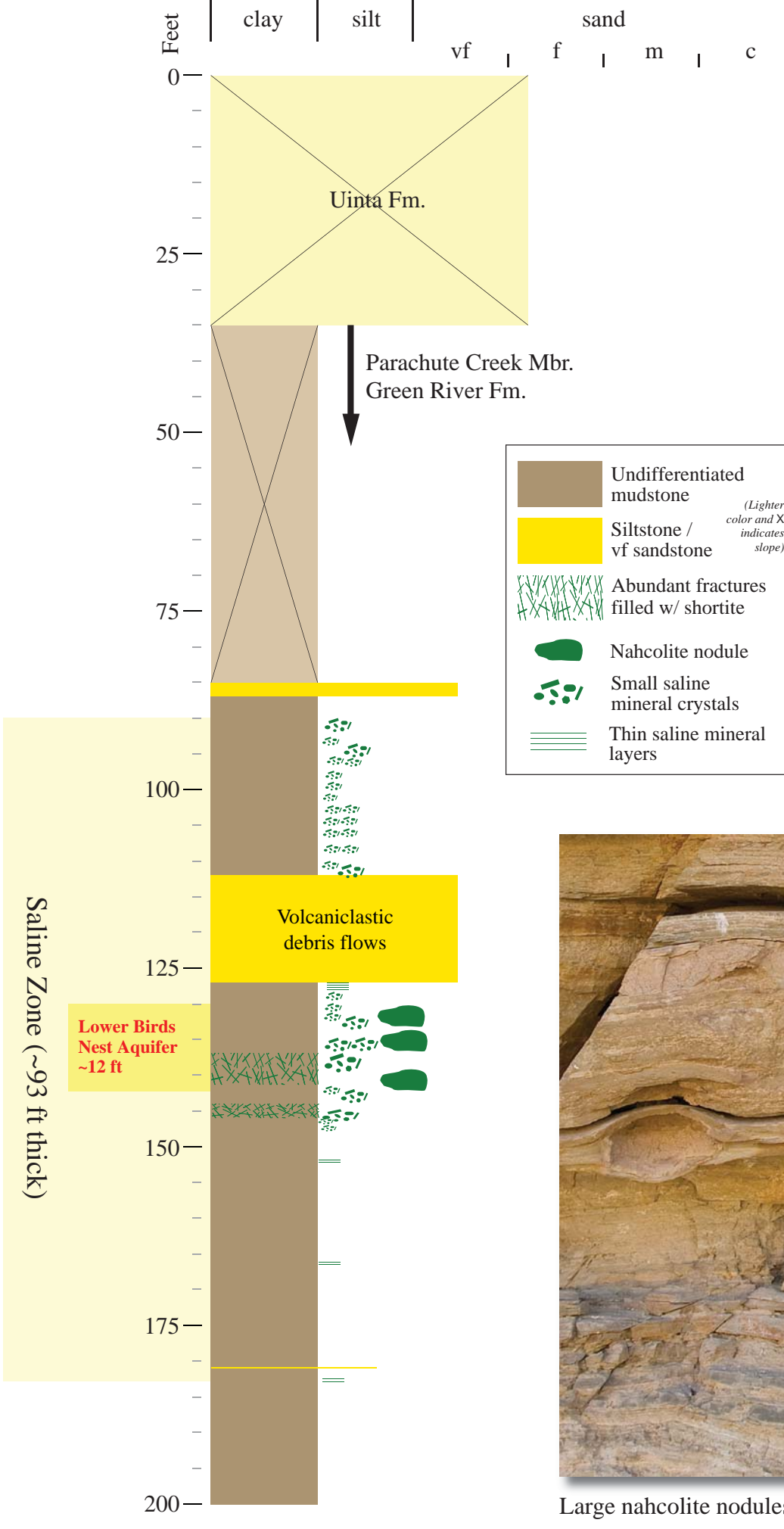


## Eastern Margin / Southern Margin Transition

### Watson Section

The Watson section captures the southern transition from abundant large saline nodules in the lower Birds Nest zone to only small saline mineral crystals. Only three isolated beds of large saline nodules are present in this outcrop compared with the 60+ feet seen near Evacuation Creek to the north.

Location: T11S, R25E, Sec. 7, UTM E 657393, UTM N 4414955 (NAD 83)



Large nahcolite nodules associated with high-angle fractures



Partially dissolved shortite crystals

## Southern Margin

The South Uinta Basin 12 (SUB 12) core and nearby outcrop sections (Long Draw and Bitter Creek) display how the saline mineral crystals within the Saline zone are much smaller to the south, closer to the basin margin; no large saline nodules are present. The SUB 12 core displays a 39-foot zone (202-241 ft) where the <1-inch nahcolite crystals show significant dissolution indicating that water passes through this section despite the small crystal size. However, only where the large nodules exist farther to the north, is there the possibility of large volume saline water disposal. The smaller saline mineral crystals are not recognized by geophysical log measurements, making core and outcrop the only way to characterize the Birds Nest zone in this area.

### Bitter Creek Section

Location: T12S, R23E, Sec. 29, UTM E 640194, UTM N 4400583 (NAD 83)

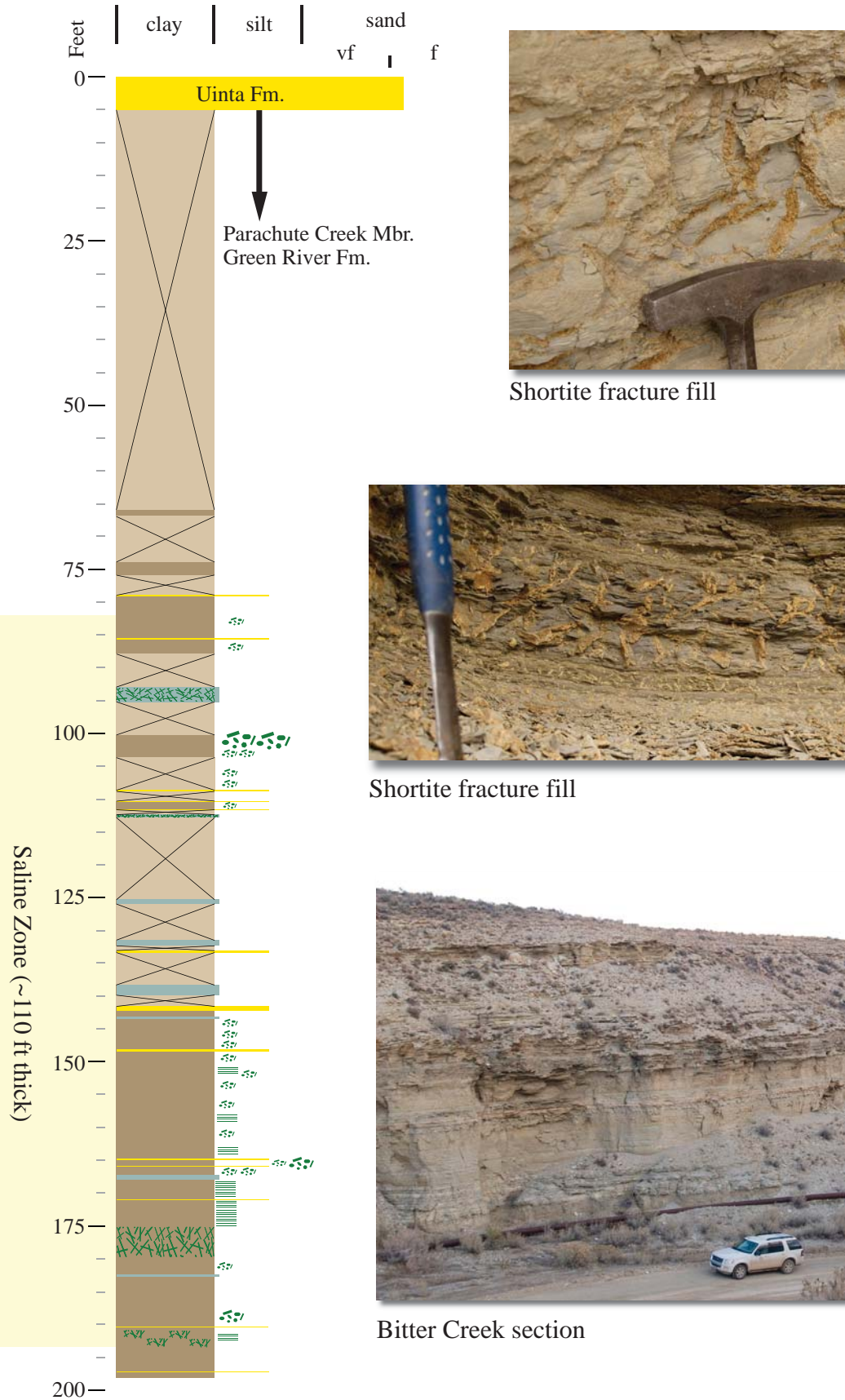


Photo 1 - 221-231 ft  
Nahcolite/shortite crystals - partially dissolved

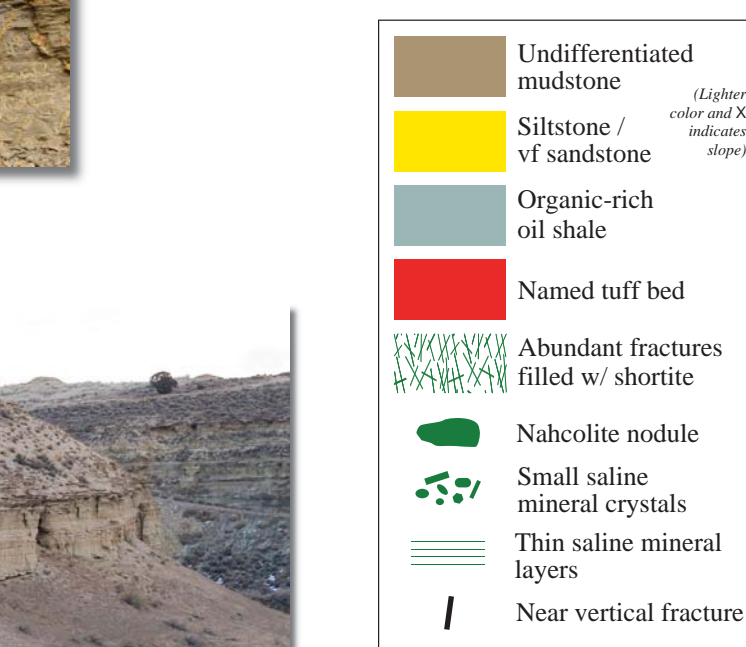


Photo 2 - 221-231 ft  
Shortite fracture fill

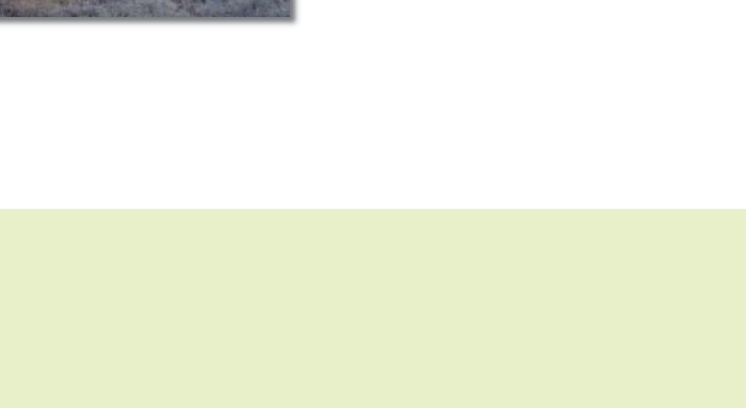
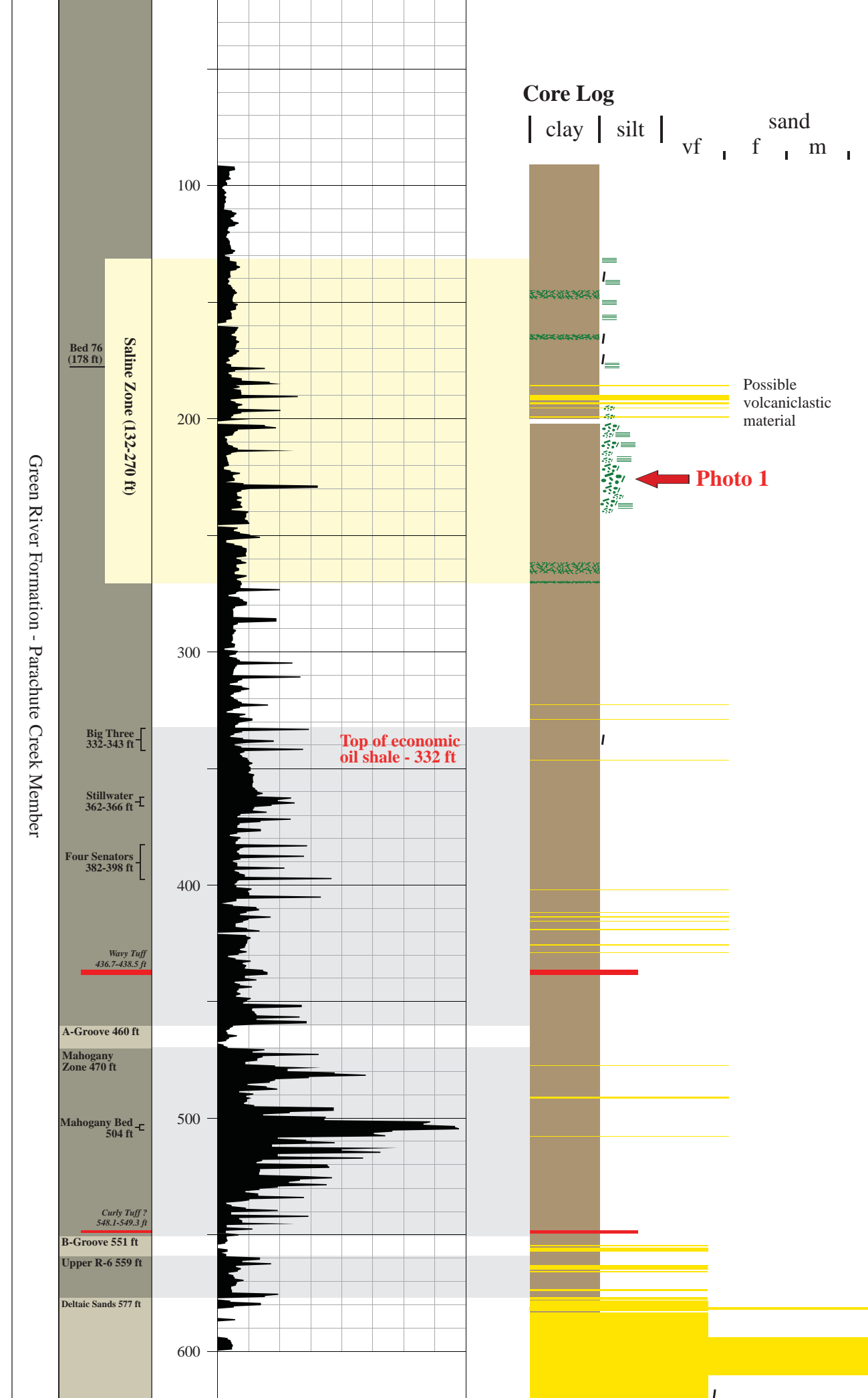


Photo 3 - 221-231 ft  
Shortite fracture fill

### South Uinta Basin 12

Operator: U.S. ERDA-LERC  
Location: T12S, R24E, Sec. 19, UTM E 647985 UTM N 4402283 (NAD 83)  
Cored interval: 91 - 621 ft  
Core location: Utah Core Research Center

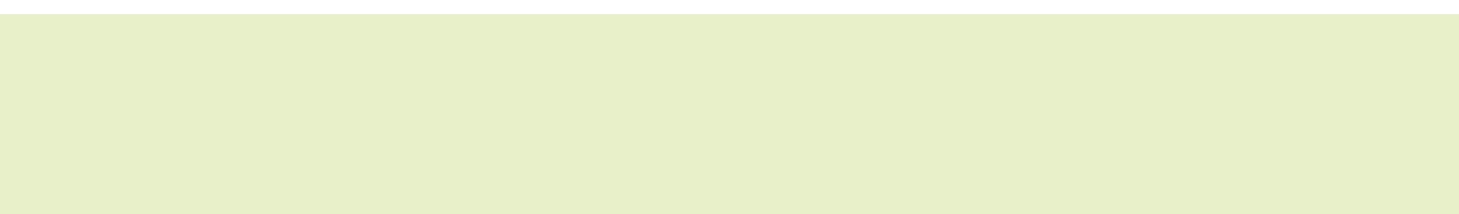


## Northern Outcrop Extent

The northernmost complete outcrop section is near Cowboy Canyon along the White River. The Saline zone contains large saline nodules, but not in the abundance seen at Evacuation Creek. Further north, outcrop exposures are not as good. The Saline zone seems to transition to only smaller saline crystals just over the border in Colorado.



Section near Cowboy Canyon along the White River



Dissolved nahcolite nodule within the Cowboy section