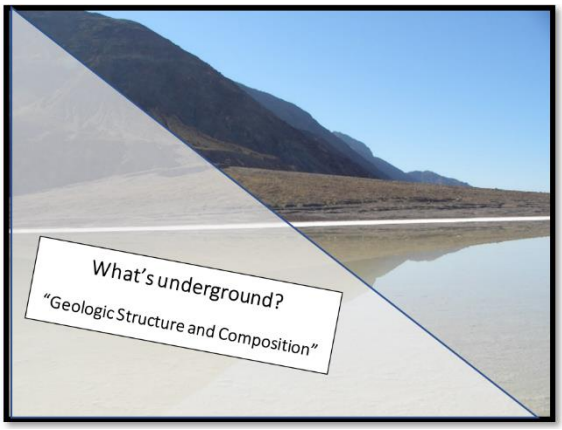
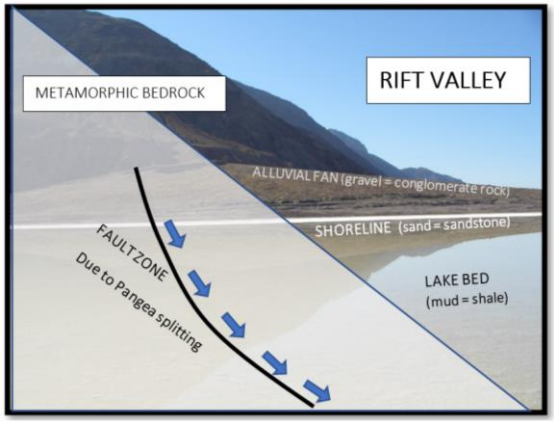
ORIGIN OF MASSACHUSETTS ARMORED MUD BALLS (RDLittle, 9.15.2021)

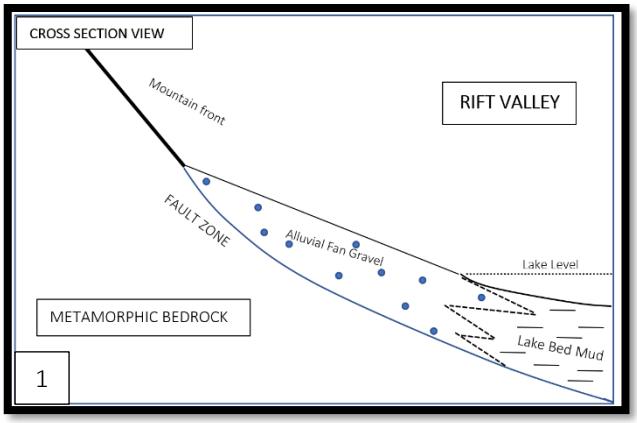
In the Mesozoic Era the present Connecticut River Valley area was a downfaulted rift valley due to the split of the Pangea Supercontinent. It would have been much like the landscape of Death Valley, seen here. (RDL photo, April 2005)

The landscape would have had prominent steep mountains on the "up" side of the rift fault and gravelly alluvial fan deposits leading down to floodplains and occasional lakes in the lowlands.

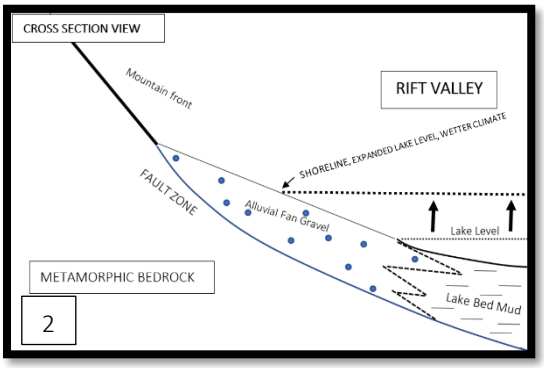


A geologic cross section view will reveal what is underground. See below diagrams.

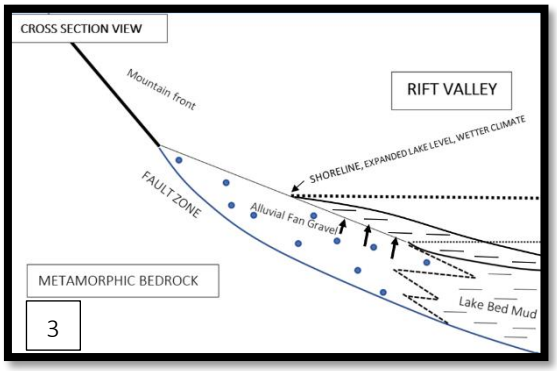




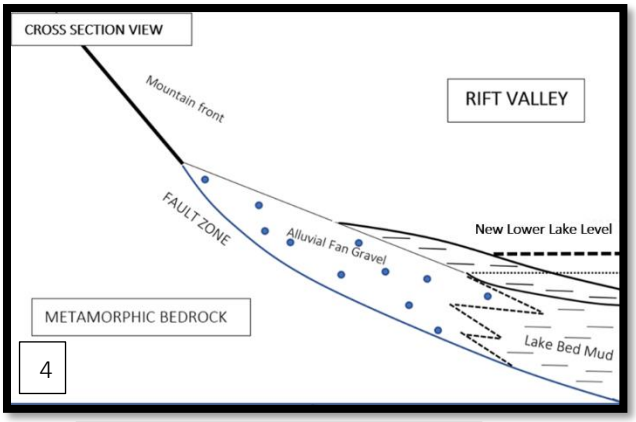
1. Note that the zig-zag dashed line represents previous shoreline movements and changes in deposition. For example, when lake levels fall, gravel advances over mud.



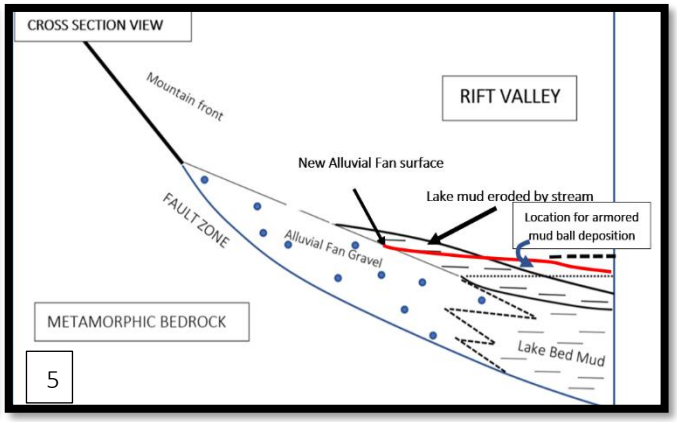
2. With wetter conditions, the lake level rises and floods over the outer edge of the alluvial fan.



3. Lake bed mud is deposited over alluvial fan gravel (arrows).

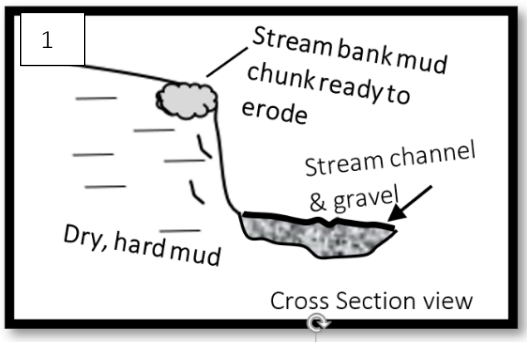


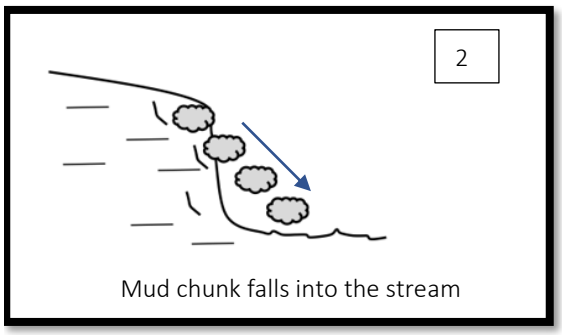
4. New, lower lake level position.

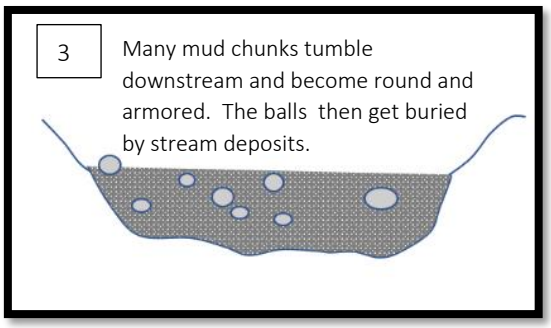


5. Streams erode the dry, hard mud and mud chunks tumble downstream and may become armored mud balls. See following diagrams for illustrations.

The Process of Armored Mud Ball Formation







4. Picture of armored mud balls in stream bed, Utah. Photo by Will Sillin.

5. Picture of lithified Jurassic age armored mud balls in stream gravel conglomerate, from Turners Falls, MA. This rock was formed on the outer part of an alluvial fan as the previous diagrams illustrate. Photo from Geology Path, Greenfield Community College. RDL Photo.