

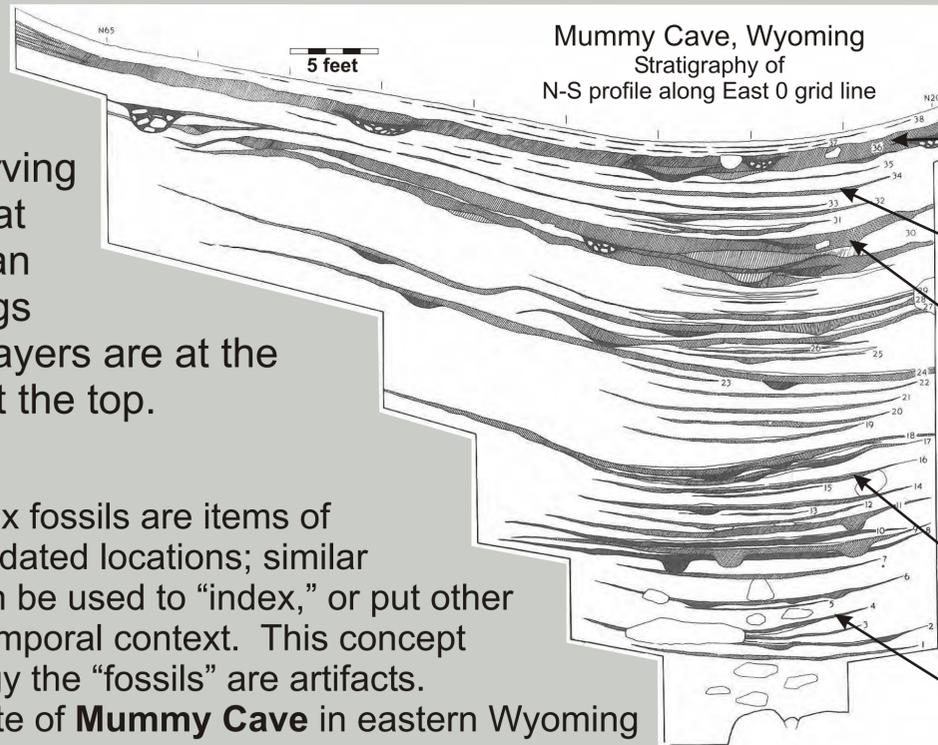


## Stratigraphy and Archeology

### What is Stratigraphy?

“Strata” means layers; the study of the earth’s layers is Stratigraphy. By carefully observing the form and contents of strata at archeological sites, scientists can interpret the order in which things happened – usually the oldest layers are at the bottom and younger ones are at the top.

**Index Fossils in Archeology.** Index fossils are items of distinctive form that come from well-dated locations; similar fossils from poorly-dated locales can be used to “index,” or put other items from the same location into temporal context. This concept originated in Geology – in Archeology the “fossils” are artifacts. Artifacts from the deeply stratified site of **Mummy Cave** in eastern Wyoming are used as index fossils for ordering archeological assemblages all over the Western U.S. Artifacts recovered from the Mummy Cave strata span over 9000 years.



**LAYER 36.** At least 30 fire pits, a burial, almost 500 stone points and tools, many artifacts of bone, shell, wood, cordage, hide, fur, etc. Dated to about AD 720.

**LAYER 34.** Three or more roasting pits, 20 stone points and point fragments, 24 stone tools, plus bone, shell and wood artifacts. Dated to about 25 BC.

**LAYER 30.** Many fire pits and artifacts within a thick accumulation of sediment. Dated to between 3138 and 3338 BC.

**LAYER 16.** Twelve stone points, 10 stone tools, one bone needle and three fire pits. Dated to 7832 BC.

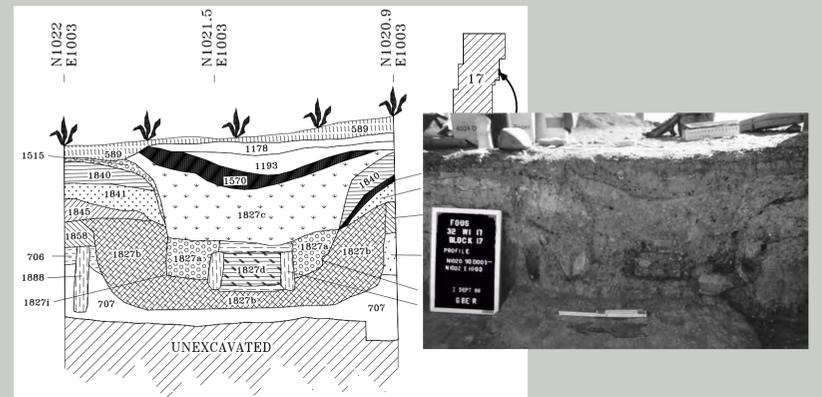
**LAYER 4.** A few artifacts associated with remains of a small fire. Dated to 10,072 BC.

**Stratigraphy in Action.** Sites like Mummy Cave, in which clear strata and long periods of occupation combine to provide index artifacts, are extremely rare. However, archeologists often use stratigraphy in other ways to help them understand the past.



Collecting samples from an 1800 year old trash pit at **Hopewell Culture National Historical Park**. Microscopic stratigraphic analyses will tell how long the pit was in use. This will help archeologists determine why and how people occupied one of the park’s earthworks.

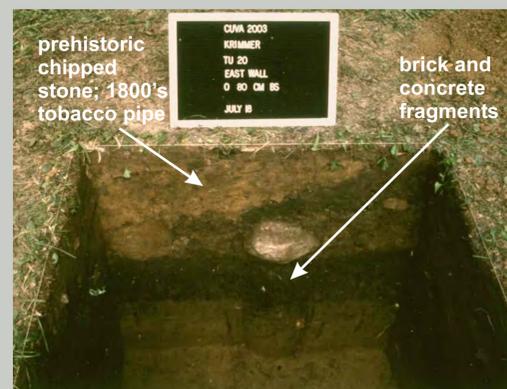
Careful examination of the position of ancient bison bones relative to stone tools at the Goetz site on the **National Elk Refuge** in Jackson Hole is helping researchers evaluate how important bison were to pre-contact peoples in the Rocky Mountains.



Line drawing and photograph of wooden box drain and drain trenches exposed during excavations at **Fort Union Trading Post National Historic Site**. Detailed stratigraphic analyses have shed light on the multiple periods of Fort Union history between 1828 and 1865.

**Context is Important.** While the oldest layers are usually nearest the bottom, this is not always the case. Archeologists have to pay close attention to context, or clues about how the strata observed in an excavation may have been impacted by processes other than time. Tree roots, burrowing animals and other sources of disturbance can make understanding stratigraphy a complicated job.

This excavation at **Cuyahoga Valley National Park** demonstrates “reversed stratigraphy,” in which large scale disturbance placed older sediments and artifacts on top of younger ones. Digging of a basement for a newer house within an historic site placed very old objects above modern debris.



An archeologist excavating at **Fort Laramie National Historic Site** had no idea that the historic deposits shown here were recently disturbed until the trowel left by a looter was exposed.