

Dating Upper Basin-fill Deposits in Las Vegas Valley

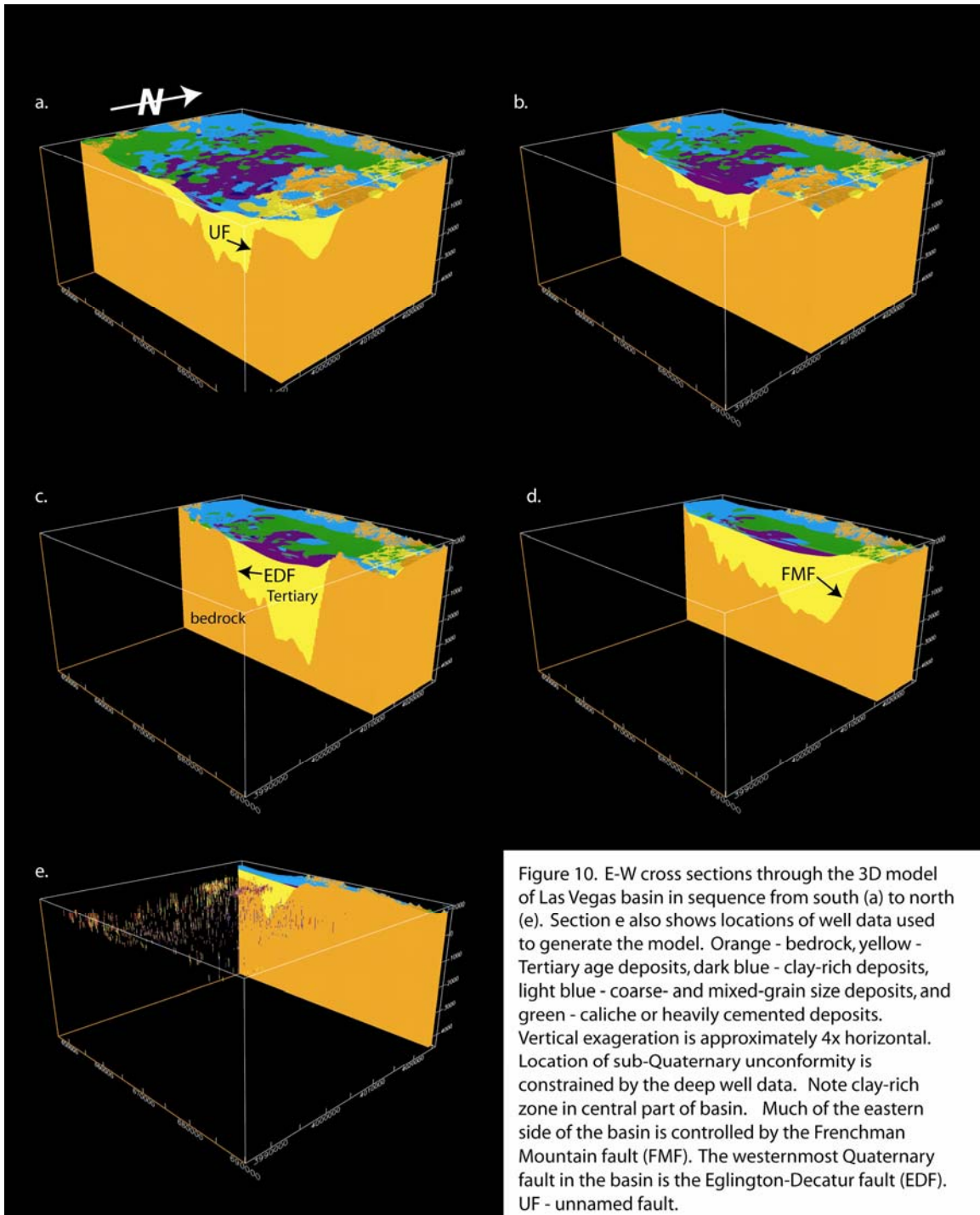
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In Las Vegas Valley, an established upper basin-fill stratigraphy with known ages will allow better estimation of neotectonic fault offsets, correlation of events along faults and analysis of the relative timing of paleo-earthquakes along different faults in the basin. The goal of this project was to provide a series of ages from at least four sites in LVV to aid in to correlate units across parts of the basin and use the ages to document times of paleo-ruptures along faults such as the Eglinton - Decatur, Cashman-Whitney Mesa, Valley View, and the fault exposed at the excavation site in North Las Vegas (NLV), among others, where or when offset strata are exposed along the faults. Also the dates, combined with work by Taylor (funded by DOE), which establishes a 3-D stratigraphy of the upper basin-fill and the influence of the young faults on it provide valuable information in unit correlation across the basin.

Taylor used well logs and surface exposures to document the lithologic types and distribution of upper basin-fill strata (Figs 10 & 11). These data along with surface exposures were used to identify sites for geochronologic sample collection. The selected sites include: Owens Road near the Frenchman Mountain fault, Las Vegas Wash near the northernmost extent of Decatur Avenue, 5th St near Cheyenne Avenue and the Valley View fault, and a site near Whitney Mesa. Eight samples were collected for single-aliquot- regenerative-dose (SAR) Photo Stimulated Luminescence (PSL) dating. These samples are currently being processed in Glenn Berger's lab at DRI. Because of its precision and capacity for internal discrimination of relict-age grains from true-age grains, SAR-quartz dating should allow recognition of true deposition ages in alluvial deposits. Two samples near the Valley View fault and the North Las Vegas site were collected for ¹⁴C dating. These samples have been submitted to Beta Analytic for analysis.

Costs = \$16,186; 29.7% overhead = 4087.24; Requested Subtotal = 20,993.24
Match of salary, overhead, equipment, and data collection wares = 23,371.84; total with in-kind match = 44,365.08



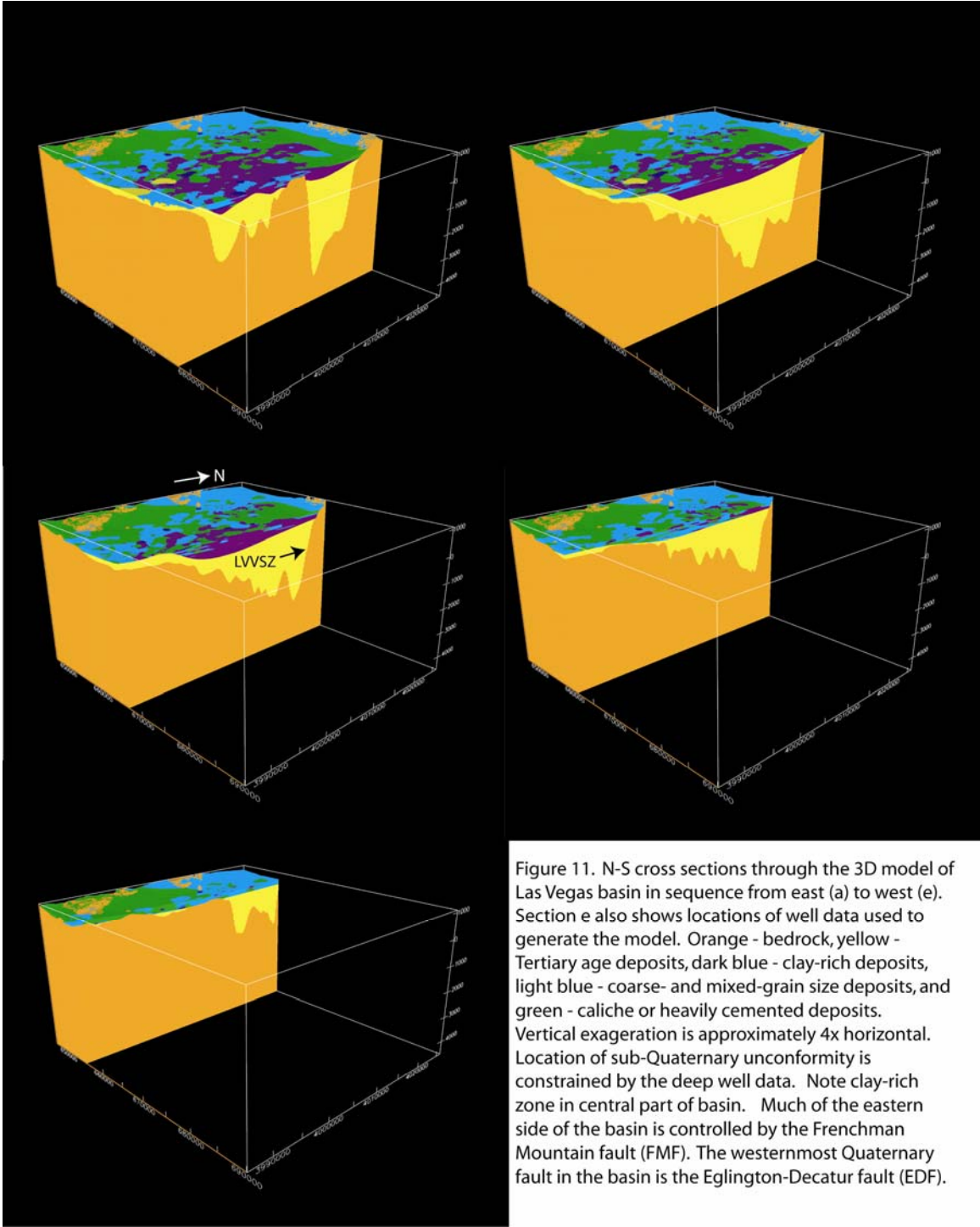


Figure 11. N-S cross sections through the 3D model of Las Vegas basin in sequence from east (a) to west (e). Section e also shows locations of well data used to generate the model. Orange - bedrock, yellow - Tertiary age deposits, dark blue - clay-rich deposits, light blue - coarse- and mixed-grain size deposits, and green - caliche or heavily cemented deposits. Vertical exaggeration is approximately 4x horizontal. Location of sub-Quaternary unconformity is constrained by the deep well data. Note clay-rich zone in central part of basin. Much of the eastern side of the basin is controlled by the Frenchman Mountain fault (FMF). The westernmost Quaternary fault in the basin is the Eglington-Decatur fault (EDF).