In the four quad area, coastal landforms are preserved geomorphically between elevations of 26 and 34 meters. The toe of the Surry paleoshoreface is at about 28 m; this is a significant shore parallel feature occurring at ~26 to 27 m. This particular geomorphic boundary occurs in the current map area. The sea bed is composed of thixotropic marine units, and cemented zones and large lenses of wackestone in the lower part of the Cretaceous Middendorf Fm. Outstanding correlation issues are significant in the most southern cores spaced at intervals of 365 to 1211 m.

By analyzing the facies on the cross section, it can be determined that the Surry Scarp, a Pleistocene paleoshoreline complex, trends north through Fountain quad (Figs. 1, 4A). Regional-scale conceptual models (Mixon and others, 2013) are based on the fact that its low-relief, flat, eastward-dipping marine terraces (ramps) are separated by incised valleys with terraced borders. Over the past 5 Ma, glacio-eustatic changes allowed the development of stages of marine flooding and recession.

In Virginia (Mixon and others, 1989) these are the Moorings Unit and the Bacons Castle, Windsor, and Charles City Formations. The Quaternary section is composed of multiple shoreface and shelf facies that have been reworked by storms and waves into the modern day coastal plain. The stability of this coastline is due to the long-term balance of depositional and erosional processes, which are influenced by climatic cycles.

The goal is to describe facies and establish units in a sequence stratigraphic context, and to determine the stratigraphy's relationship to surficial landforms. Sequence stratigraphy is a framework for understanding the evolution of coastal plains, which is critical for predicting future coastal changes and managing coastal resources.

Sequence stratigraphy is used to describe the repetition of rock units that are easily mappable; these are allo-units that are mapped by establishing bounding surfaces, their terminations, and the geologic facies above them. Our aim is to use these units to understand the history of the coastal plain and to predict future changes. This requires a detailed understanding of the geology and geomorphology of the coastal plain, which can be achieved through careful mapping and analysis.

In summary, the coastal plain is a dynamic system that is influenced by a variety of processes, including tectonics, sea-level changes, and climatic cycles. By understanding these processes, we can better predict future changes and manage coastal resources effectively.