as much as 8 or 10 miles. Also, there are older salt flats farther inland with a width of as much as 60 miles. At one time they were nearer to the sea, but the production of carbonate sediments by the corals and other calcium-secreting marine organisms has now added some miles of width to the shore. The present rate of this horizontal seaward movement ("regression") of the shoreline is from 3 to 6 feet per year. The sabkhas which are presently next to the coast are thus believed to have been formed within the past 4,000 to 5,000 years.[28]

A typical coastal sabkha (salt flat) contains several kinds of sediments and minerals which have been modified by the brine which saturates the sediments just beneath the surface. This brine is produced and concentrated down among the sand grains as evaporation occurs from the surface of the sabkha. The brine is kept from sinking to any great depth by the layer of hard rock which lies beneath, all along the coast, in this part of Arabia. Since the brine can not escape to lower depths, it keeps the main body of sediments of the sabkha saturated. The upper level of the brine is usually only a few inches beneath the surface. It becomes more concentrated as the hot sun and wind continue to "draw" water out of the sediments and evaporate it. As a result, the brine becomes concentrated enough to do two primary things, (a) form crystals and nodules of the calcium sulfate minerals gypsum and anhydrite (evaporites), and (b) slowly convert the calcium carbonate sediments to calcium-magnesium carbonate (dolomite) in the lower zone.[29]

Thus the sabkha becomes a sort of "layer-cake" composed primarily of layers of gypsum crystals and various sizes of anhydrite nodules, with a deeper layer of rather fine-grained dolomite. The anhydrite nodules are sometimes as much as two and one-half inches in diameter. The entire sabkha series of layers is usually only a few feet in thickness.[30] The lower zones contain a high proportion of sand-sized particles of carbonate skeletal materials from the marine animals and plants which grew in the lagoon. A very distinctive characteristic of these lower zones is that they contain left-over, algal-mat layers which retain their identity even after the sea regresses from them and they become converted to dolomite. Thus a bed of dolostone, with what are called "algal laminations," can eventually be formed at the bottom of the salt flat.

One must realize that all of the flat area of the sabkha, as it lies a short way back from the coast, was once at the water's edge, with an abundance of fine, filamentous strands of algae growing over the surface of the wet sand. These filaments of algae produce a protective slime for themselves, that later becomes mixed with the finer beach sand which washes up over it as the tide comes in. Thus a thin, rather durable layer is produced, and a thickening series of successive layers (called a "laminated algal mat") is formed as the algal filaments continue to grow. Since these mats have a high percentage of carbonate sand, they are eventually converted to a layer of laminated dolostone, if they are exposed to strong brines on the sabkha for a considerable period of time. Much of the algal, laminated dolostone which is found so commonly in the