The Great Salt Lake is a unique lake. It is the largest surface water body in the western hemisphere which does not drain into an ocean. It is a remnant of Lake Bonneville which reached its highest level during the late Pleistocene time. At that time it covered about 20,000 square miles, before overflowing the rim of the basin at Red Rock Pass about 20 miles northwest of Preston, Idaho and discharging into the ocean through the Port Neuf, Snake and Columbia Rivers. With the return of warm and dry climate, evaporation of the lake surface exceeded inflow and the lake receded.

When the pioneers reached the Great Salt Lake in 1847 its water surface elevation was approximately 4200 feet above main sea level with a maximum depth about 35 feet. Since that time the lake has fluctuated greatly, rising to 4211.5 feet in 1872, declining to approximately 4,196 feet in late 1904, increasing to 4,205 in 1923, receding to 4,194 in 1934, increasing to 4,201 in 1952, receding to approximately 4191.5 in November 1963. The present stage of the lake is 4,194 feet.

The inclination of the shore in many locations is so gradual that a relatively small change in stage greatly increases or decreased the area. On the basis of a Geological Survey chart entitled "Area and Volume of Great Salt Lake, Utah" dated June 15, 1961 and starting with the present stage of the lake, our hydrologists calculate the average increase in area per foot of rise for the next five feet would be 68,000 acres. The area at the maximum stage of the lake (4211.6 feet) has been 1,570,000 acres; area for the minimum stage of 4191.35 feet has been 600,000 acres giving a difference of 160% in area from the minimum to the maximum.
Although the lake surface and hence the shoreline is level at any given time, study of lake deposits reveal that older shorelines are no longer level. Those "differential changes" include (1) regional tilting, (2) warping due to isostatic unloading, and (3) local changes due to earthquakes or ground subsidence. All three changes are evident near the Great Salt Lake. Differential changes have been reported along the northern edge of the Great Salt Lake following an earthquake in Hansel Valley in 1934. Changes between the land surveys of 1934 and those of 1850 amount to between 4 and 6 feet over an area of several square miles. About a foot of this is believed to have occurred rapidly at the 1934 earthquake; the remainder during the time between 1850 and the Hansel Valley earthquake of 1934. Our geologists believe that similar effects may be present at many other places on the lake shore where there are no old surveys to provide a means of recognizing them.

While all the various ramifications of the lake fluctuations may be intensely interesting to various students, the lack of a line between the holdings of the Federal Government and state government on this relicted bed of the Great Salt Lake is very frustrating for administrators. Legal precedent based on the common law of riparian rights, as satisfying as it may be as demonstration in logic, is not helpful to an administrator seeking to know with exactitude the limits of his responsibilities in a situation like the one I have just outlined.

Increasing commercial interest in the minerals in and around the Great Salt Lake in recent years converts the speculations, conjectures and spinning of theories to a hard, concrete, specific problem for administrators, both those representing the United States and those representing the State of Utah.
In discussing the mineral values which have aroused this interest I want to be specifically clear on the point that two classes of minerals, viewed legally, are involved. They are the minerals which attach to the relicted lands and those which are present in the water.

This bill and my discussion are confined solely to the minerals which attach to the land. The resources within navigable waters were confirmed to State of Utah by the Act of May 22, 1953 (43 U.S.C. 1311 (a)).

My concern as an administrator is to clear up an anomalous situation where I do not know and cannot predict from one year to the next the extent and location of the lands in the vicinity of the Great Salt Lake subject to the Department's responsibilities for mineral development. I have to keep in mind that the Department has responsibilities as the public land steward for the American people. It has as other responsibilities to assist in the development of our minerals as part of the growth of the national economy.

The paradox here is that adherence to academic legalisms countervails sound administration and effective development of mineral resources.

Fortunately, there is a way out of the paradox. The establishment of a definite line, wherever located, which would serve for all time as the demarcation of these relicted lands would make it possible for the Department to meet its responsibilities to foster mineral development on Federal lands as part of the general economic development.
Any line that the Congress would see fit to prescribe in its power "to dispose of or make all needful Rules and Regulations respecting the . . . property of the United States" would meet the needs of any administrator. The substitute bill makes a recommendation on this point. Our cadastral engineers tell us, however, that the recovery of any shoreline that existed before the Hansel Valley earthquake of 1934 could not be accomplished with any degree of accuracy. As a practical matter, then, any line which the Congress would decide upon based upon the level of the Great Salt Lake at any specific time up to the date of the enactment of this bill would give an administrator the line he needs, but such a line for a date before 1934 could not be as accurately fixed as for a date since.

The legal aspects of this problem have received a comprehensive review by the Department of the Interior. It is embodied in State of Utah, 70 I.D. 27 (1963).

Our Department report also discusses the legal and practical issues at some length and recommends a substitute bill which we think will give administrative certainty.