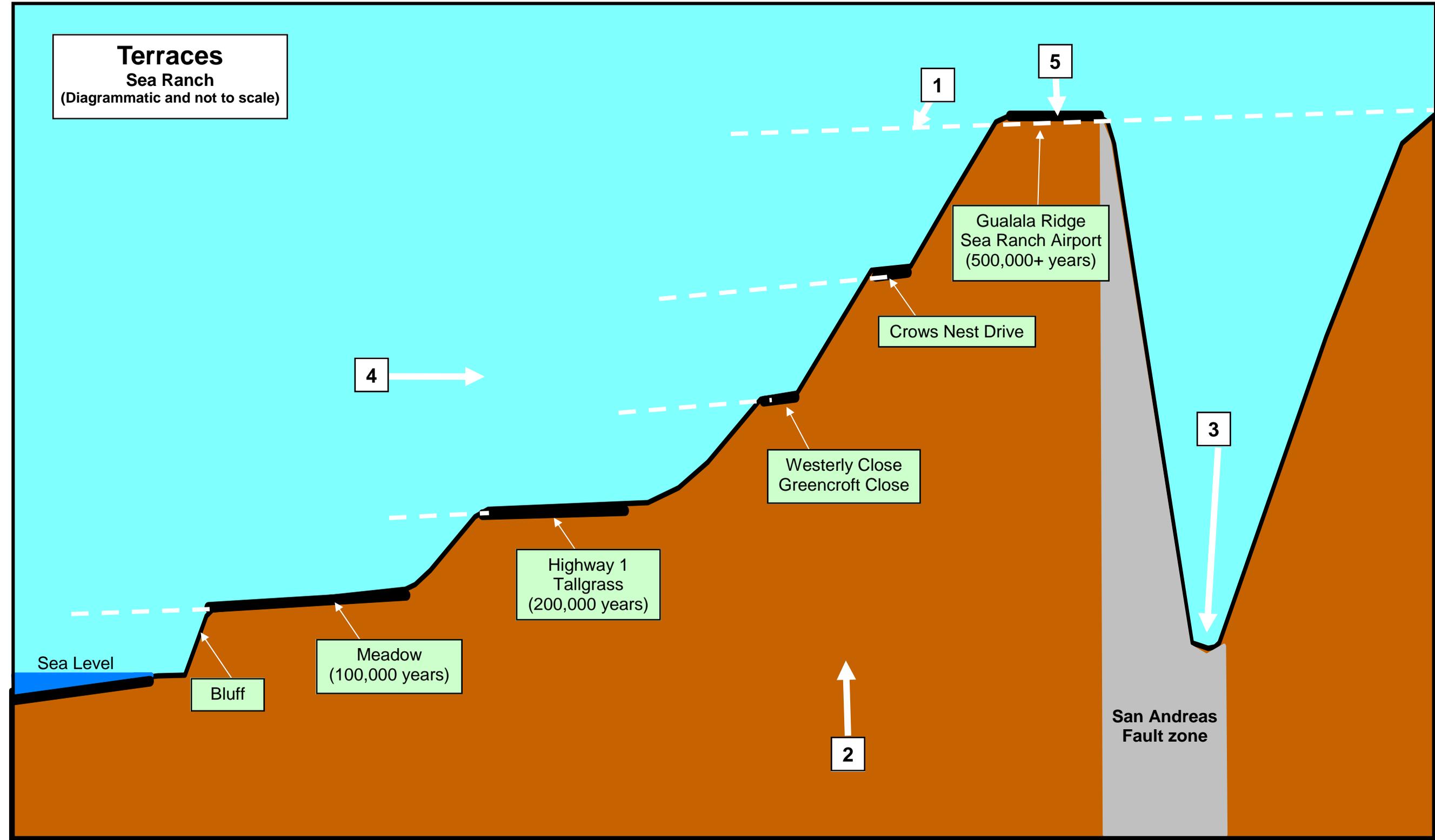


Terraces
Sea Ranch
 (Diagrammatic and not to scale)



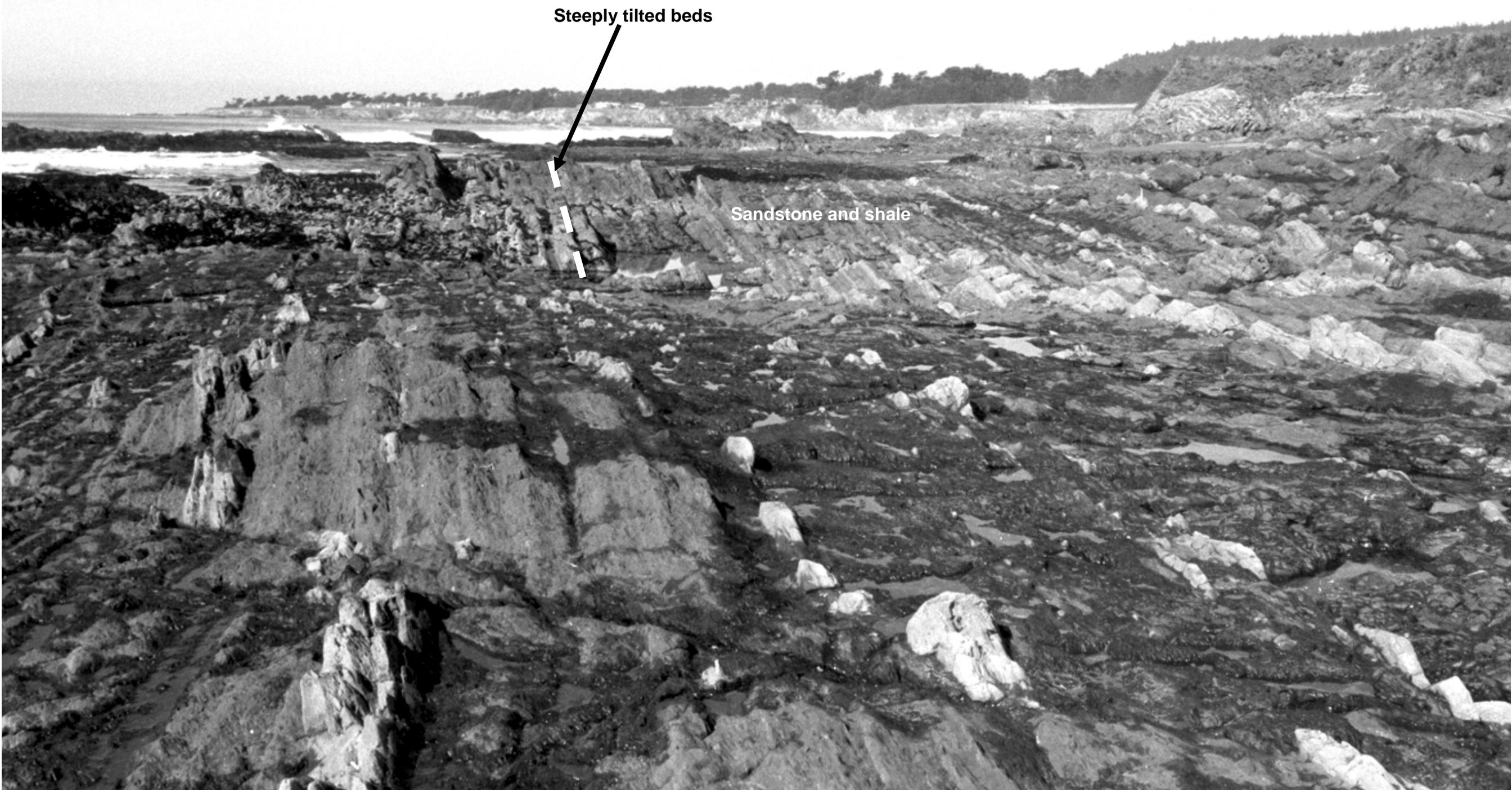
Diagrammatic Cross Section

This diagram summarizes how some of the main topographic features of the Sea Ranch formed:

1. During Pliocene time this part of the northern California coast was eroded to a low-relief landscape that was near sea level.
2. During Pleistocene time, this coastal area began to be uplifted—several hundred feet in the Sea Ranch and over 1000 feet further north. Uplift is still going on.
3. The uplift increased the gradient of the Gualala River, and the river eroded a steep valley into the old Pliocene land surface.
4. At the same time, wave action along the Pacific coast formed a succession of marine terraces. Many of these terraces were preserved as uplift continued.
5. The Gualala Ridge is remnant of the old Pliocene land surface that has not yet been eroded by the Gualala River valley or by coastal erosion from the Pacific.
6. Erosion continues along the present bluff. With further uplift the current shoreline will become another marine terrace on the hillside.

Uplift probably began about 500,000 years ago during the Pleistocene glacial episodes, so that sea level was also changing during uplift. Most of the terraces were formed during interglacial periods when sea level was higher. The diagram shows some guesses when the various terraces may have been formed.

TSRA Marine Preserve
Wave-cut Platform



Steeply tilted beds

Sandstone and shale

Photo: TSRA Marine Preserve at low tide (near post 39)

This broad “wave-cut platform” is exposed only at very low tide and was formed by wave erosion. During storms, most of the wave energy is concentrated at the base of the bluff, undermining the bluff and causing the bluff to retreat. As the bluff retreats, the rocks below the wave action are left behind, forming a wave-cut platform. The rocks at this locality consist of thin beds of light gray sandstone and dark gray shale of the Gualala Formation. These beds were steeply tilted to the northeast when they were uplifted along the Black Point Anticline. The tilted beds were then truncated by the wave erosion. The sand beds are more resistant to erosion than the shale, resulting in this “grooved” surface. There are many other wave-cut platforms along the Sea Ranch coast. If this platform were lifted above wave level, it would be preserved as a marine terrace, and the storm waves would start cutting a new platform at the new lower wave level. The Sea Ranch Meadow is marine terrace that was formed about 100,000 years ago when sea level was higher during an interglacial period.

Cove North of Post 44
Sea Ranch Meadow

Wave-cut platform formed 100,000 years ago

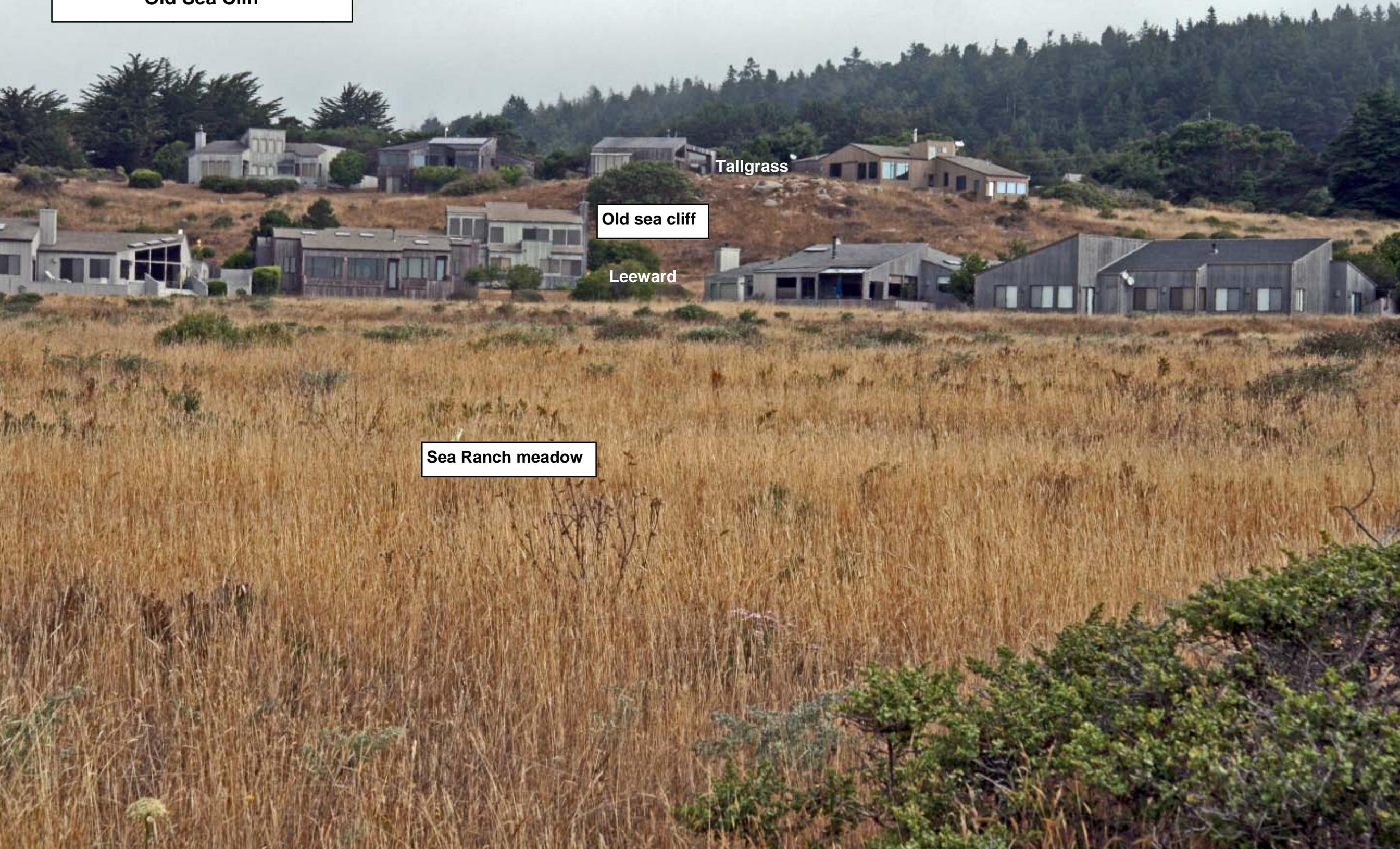
Sea Ranch meadow
(Marine terrace)



Photo: Sea Ranch Bluff north of Walk-On Beach (near post 44)

One hundred thousand years ago, this part of the northern California coast was at sea level and the flat surface that underlies the Sea Ranch meadow was a wave-cut platform that extended many miles further west. Since that time, this coastal area has been uplifted several tens of feet. When the land was uplifted, the shoreline moved to the west and began cutting the present bluff, which is still being eroded landward.

**Tallgrass and Leeward
Old Sea Cliff**



Tallgrass

Old sea cliff

Leeward

Sea Ranch meadow

Photo: Looking from the Sea Ranch meadow toward the south end of Tallgrass (near Tallgrass and Leeward)
The houses on Tallgrass are lined up along the top of an old sea cliff and the houses on Leeward are on the Sea Ranch meadow. The old sea cliff was formed about 100,000 years ago when the meadow was at sea level and being formed as wave-cut platform. The old sea cliff has the same relationship to the meadow as the present-day bluff does to the wave-cut platforms that are now being formed offshore. Many of the houses along Equinox, Backpack, Bosons and Sea Watch are also on the top of the old sea cliff.

Whaler's Reach near Sea Gate Road
Old Sea Stack



Old sea stack

Basalt

Sea Ranch meadow

Photo: From trail post on Whaler's Reach looking southeast
This small hill of basalt is in the meadow southeast of Whaler's Reach. The trail on the left side of the photo passes the hill and continues to Sea Meadow Drive. This hill was a sea stack 100,000 years ago when the meadow was formed as a wave cut terrace.

Sea Ranch Airstrip
Gualala Ridge



Photo: Looking southeast from Spring Meadow toward Sea Ranch Airstrip

The Sea Ranch Airstrip and Business Center are on the Gualala Ridge at an elevation of about 360 feet. The top of the Gualala Ridge is a remnant of an old erosion surface that was formed during Pliocene time. The surface is typically fairly flat with low rolling hills, as seen in this photo. The ridge extends northwest for about ten miles and rises in elevation to over 1000 feet in that direction. The northeast side of the ridge descends abruptly to the Gualala River and the southwest side descends steeply to the Sea Ranch meadow.