

White Bluffs at Hanford Reach

(46.642855, -119.403263)

Instead of the nearly ubiquitous basalt cliffs and boulders of central Washington, the White Bluffs area features a series of 50-170 m tall bluffs and badlands underlain by Columbia River basalts. These are outcropping layers of the Ringold Formation comprising most of a 600-ft high escarpment exposed along the north and east banks of the Columbia River in south-central Washington. These ancient river and lakebed sediments were laid down by the Columbia and Snake River systems 8.5 to 3.4 million years ago.

However, a section of the White Bluffs are much younger stack of slackwater rhythmite deposits that filled a paleochannel eroded into the Ringold Formation, These late Ice Age rhythmites are only 17,550-12,500 years old. They were laid down as each of the 40 or more Ice Age Floods backed up behind the narrow constriction at Wallula Gap, submerging the entire White Bluffs area under temporary Lake Lewis.

Up to about a dozen rhythmites, composed mostly of sand from as many floods, occur within the channel fill. At the top of most rhythmites is a layer of wind-blown sand suggesting a period of dryness separated each flood. Sediment thicknesses and sedimentary structures in each of the beds give a sense of the tremendous sediment load and the relatively calm conditions of the ponded flood waters.



[Learn more from Nick Zentner's 2-Minute Geology video - The White Bluffs at Hanford Reach](#)

The White Bluffs are located along the east side of the Columbia River, across from the former towns of Hanford and Whitebluffs, on the Hanford Reach National Monument where the atomic age was born. The bluffs have been exposed by the Columbia River down cutting and moving laterally against the deep silts and sands and old soil horizons that make up the bluffs. These towering white bluffs, massive sand dunes, and the last free flowing nontidal section of the Columbia River all help make the Hanford Reach one of the most dramatic natural areas in the state.

White Bluffs - Hanford Reach National Monument

Rhythmites and Overlook



Best Observation Points By Automobile

Follow an unpaved road off State Route (SR) 24, approximately 17 highway miles southwest of Othello, Washington or 53 miles north Richland. At milepost (MP) 63 turn south on the unpaved road and pass through a gated entrance to the Wahluke Unit of the Hanford Reach National Monument. Drive 8 miles to the White Bluffs Overlook, located at N 46.631787°; W 119.396108° (#47 in Figure 1).

Warning: This is a day use area only. The gated entrance automatically closes and remains closed between two hours after sunset and two hours before sunrise.

White Bluffs Rhythmites Trail: From the former White Bluffs Ferry Landing climb onto the White Bluffs with spectacular overviews of the Columbia River, landslides, recent tall sand dunes and a rhythmite-filled paleochannel (#48 in Figure 1).

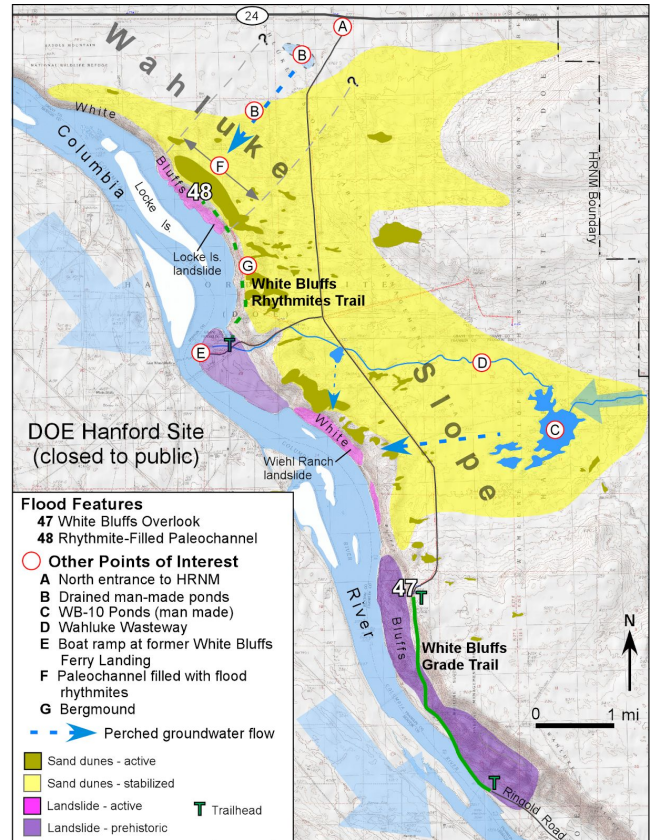
Trailhead Location: N 46.67713°; W 119.44462° (Figure 1).

Take the route described above, but after entering the Wahluke Unit of the Hanford Reach National Monument, drive 4 miles then turn right toward the old White Bluffs Ferry Landing (unmarked). After descending the grade, at 1.2 miles from the intersection, park next to a large grove of trees in the flat area to the right at the base of the bluff.

Warnings: The trail follows the margin of some steep, unstable slopes. Beware of steep cliffs and dropoffs, which can be unstable and prone to slumping. Avoid walking immediately above or below any of the steep unstable slopes. There is no shade or potable water along the trail.

Trail Length / Difficulty: 1.7 to 3.0 miles one-way / Moderate

Trail Description: Follow a single-track trail to the northeast toward the bluffs. After 0.2 miles the trail begins its diagonal ascent up the bluffs. At 0.5 miles from the trailhead, you will arrive at the top of the White Bluffs escarpment where the trail levels off onto a bench that marks the contact between the red-brown Pliocene-age Ringold Formation and the grey slackwater flood deposits located above and to the right.



rhythmites were forming.

You can see up to 15 regularly spaced, banded slackwater flood rhythmites ahead in the distance, which fill a paleochannel carved into the Ringold Formation (Figure 2). Underfoot, on the other hand, only a few thin rhythmites are present here at the margin of the paleochannel. Most rhythmites are covered with a thick pile of younger windblown sand. As you go northward, the rhythmites will become more obvious. Lots of ice-rafted erratics are visible at or above the contact between the Ringold Formation (below) and the rhythmites (above). The Ringold Formation here consists of only fine-grained clay, silt and sand. Any gravel you see here must have rafted in on icebergs during Ice Age flooding at the same time the

At approximately 1.1 miles from the trailhead, notice the domed pile of gravel above the trail to the right, near the lip of the bluffs (at N 46.69183; W 199.44145). This is a bergmound that formed when an iceberg became grounded against the edge of the bluffs. After the ice melted, it left behind this pile of multisized, foreign rocks, which came from hundreds of miles away either north or east of the Columbia Plateau.

The thickness and number of rhythmites increases as you approach the axis of the paleochannel, which trends perpendicular to the bluff face. Continue on another 0.6 miles (1.7 miles from the trailhead) and you will arrive at an area of tall active sand-dune development. These dunes are forming from strong winds that blow the loosened sediments up from the Locke Island landslide below.

Carefully continue north along the top of the bluffs for better views of the rhythmites up close, or turn around and retrace your steps back to the trailhead.