

## History and Geomorphology of Taiber Slough, 1897 through 2002

Taiber Slough, a side channel in the Quinault River system, is located on the north side of the Quinault River valley between RK 2.5 and RK 3.5 (Figure 1). It flows along a large alluvial-fan deposit (purple area in Figure 1) from Finley Creek, mainly, and Kestner Creek. Taiber Slough is downstream of a bedrock knob that extends into the valley (upstream) from the north near RK 5.2.

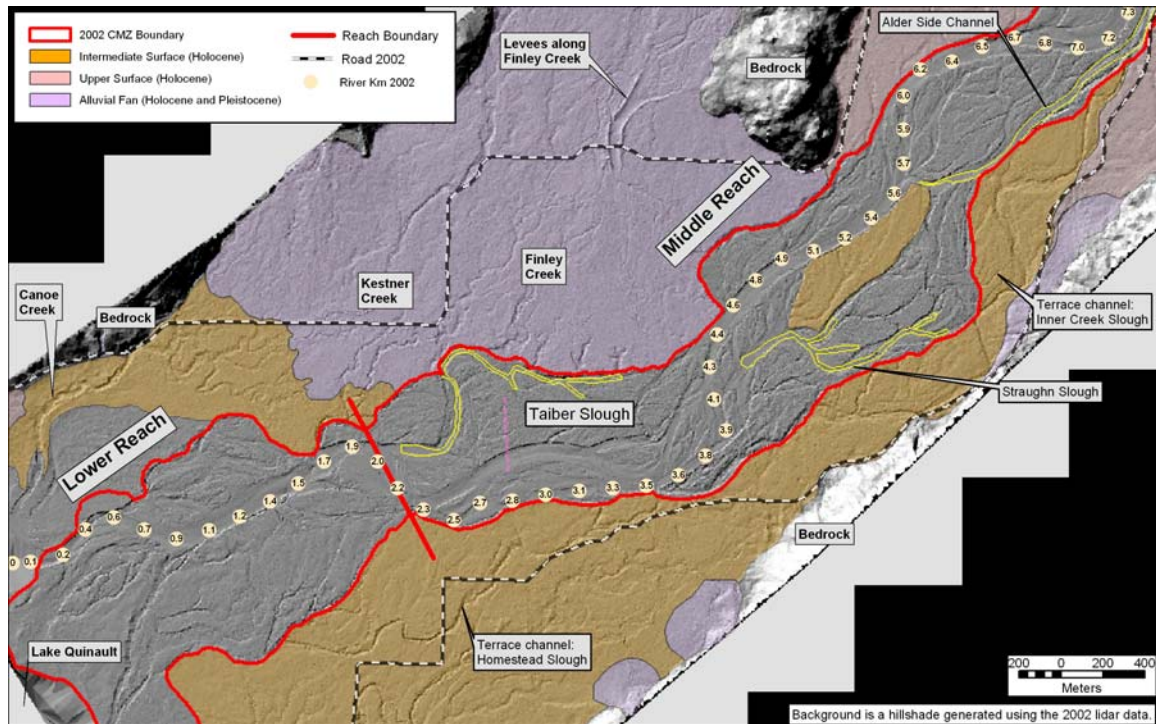


Figure 1. Taiber Slough is located along the north boundary of the historical channel migration zone (HCMZ) between RK 2.5 and RK 3.5 on the north side of the Quinault River valley. It flows along the large alluvial-fan deposit from Finley Creek, mainly, and Kestner Creek. Background is a hillshade created from 2002 LiDAR data. River kilometers are from the low-flow channel at the time of a river survey in 2002.

The following maps (Figures 2 through 11) show the history of formation of potential habitat in the area of Taiber Slough between 1897 and 2002.

## Changes in Taiber Slough Area by Year

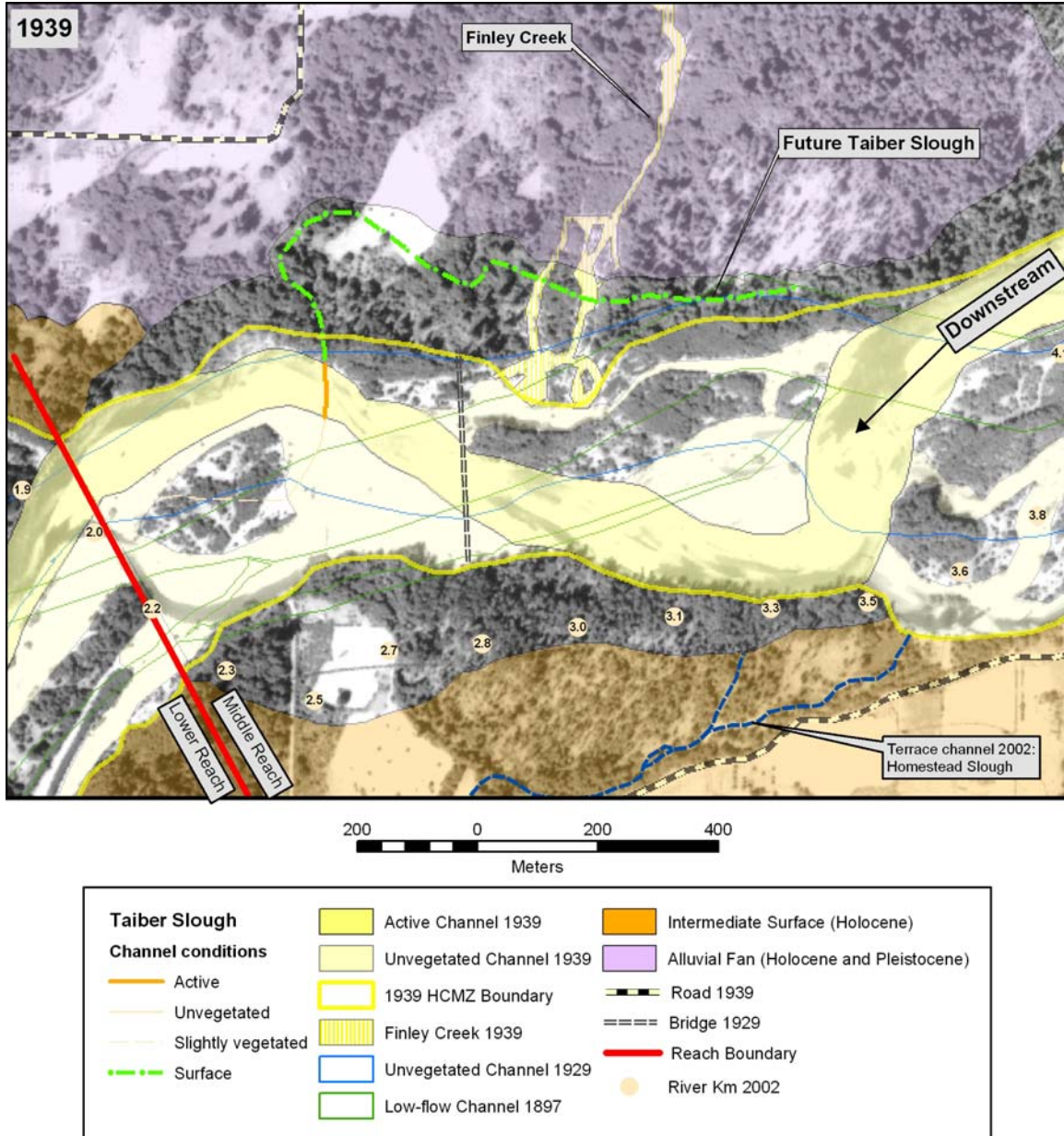


Figure 2. In 1897 (green outline) and 1929 (blue outline), the path of the future Taiber Slough was north of the low-flow and active channels, and the channel that became Taiber Slough is presumed to be not present at these times. The area was likely the surface of the alluvial-fan deposit from Finley Creek. In 1939, most of the path of the future Taiber Slough (dashed green line) is through the vegetated surface of the large alluvial-fan deposit from Finley Creek. Taiber Slough would have crossed perpendicular channels of Finley Creek. The downstream about 450 m of Taiber Slough flows in the unvegetated channel of the Quinault River, and probably was not potential habitat.



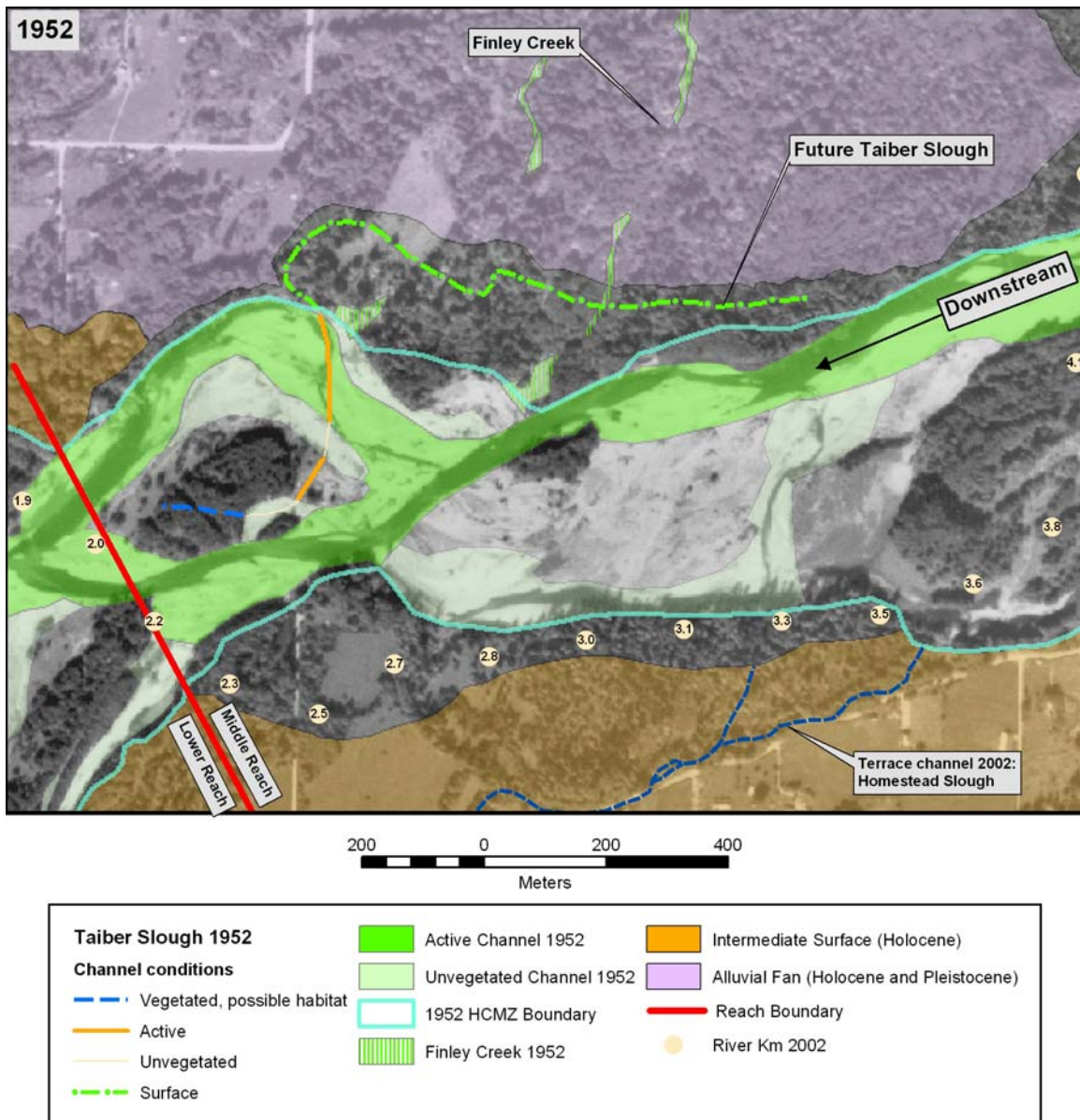


Figure 3. In 1952, the configuration of Taiber Slough was similar to its configuration in 1939. The downstream portion that was within the unvegetated channel of the Quinault River (about 560 m long) was slightly longer than it was in 1939 (about 450 m long).

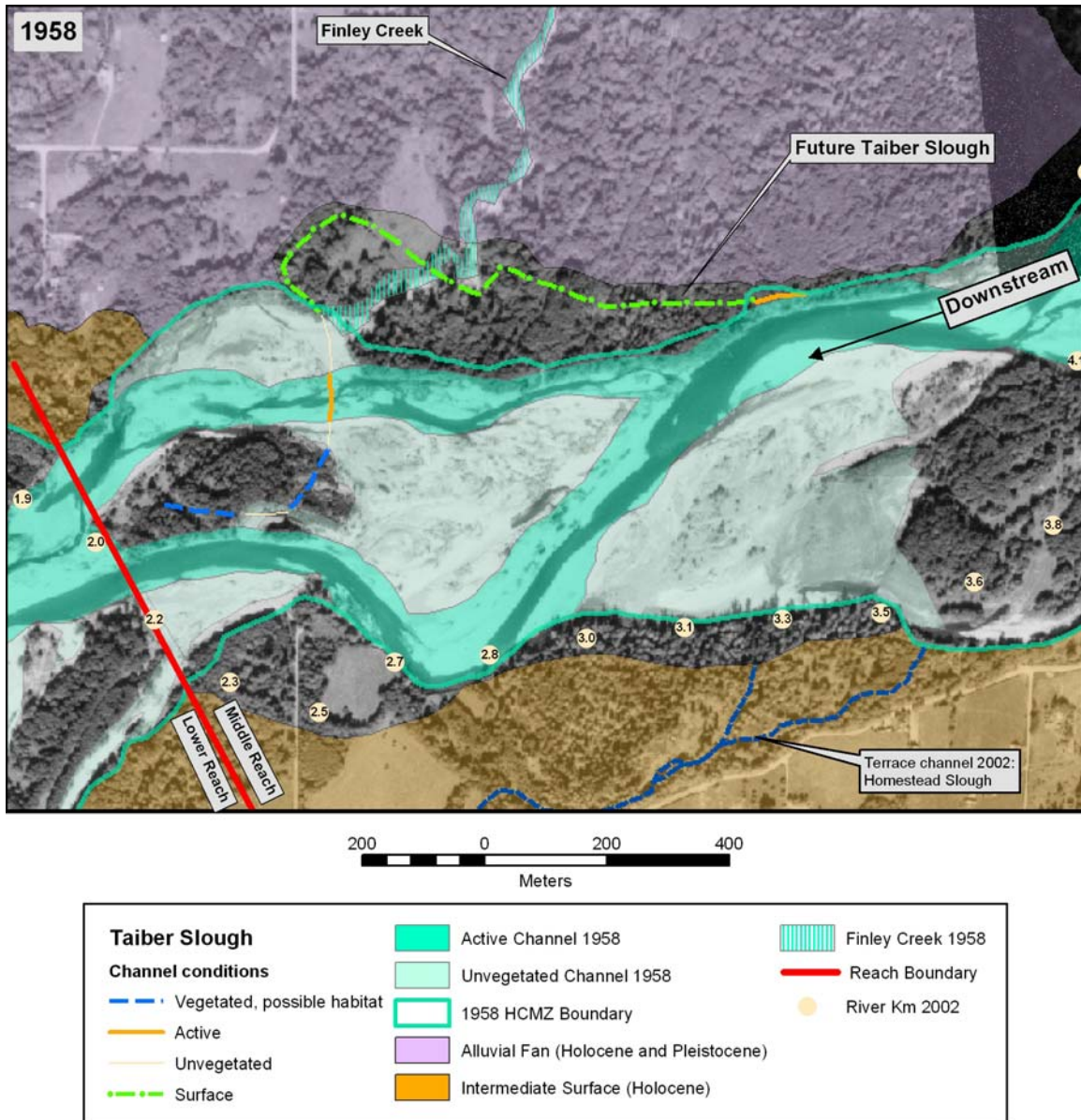


Figure 4. The configuration of Taiber Slough in 1958 was similar to what it was in 1952. One change was that the active channel of the Quinault River had moved northward (laterally) into the alluvial-fan surface of Finley Creek near RK 3.3, so that about 85 m of the future Taiber Slough had been excavated. This slight bend in the active channel of the Quinault River will become progressively more pronounced and will migrate downstream by eroding into the alluvial-fan deposit and eventually result in cutting of the channel that will become Taiber Slough. The split flow path in the active channel of the Quinault River between RK 2.0 and RK 3.1 had lengthened since 1952, and the north flow path of the Quinault River had straightened and eroded laterally into the large alluvial-fan deposit from Finley Creek.



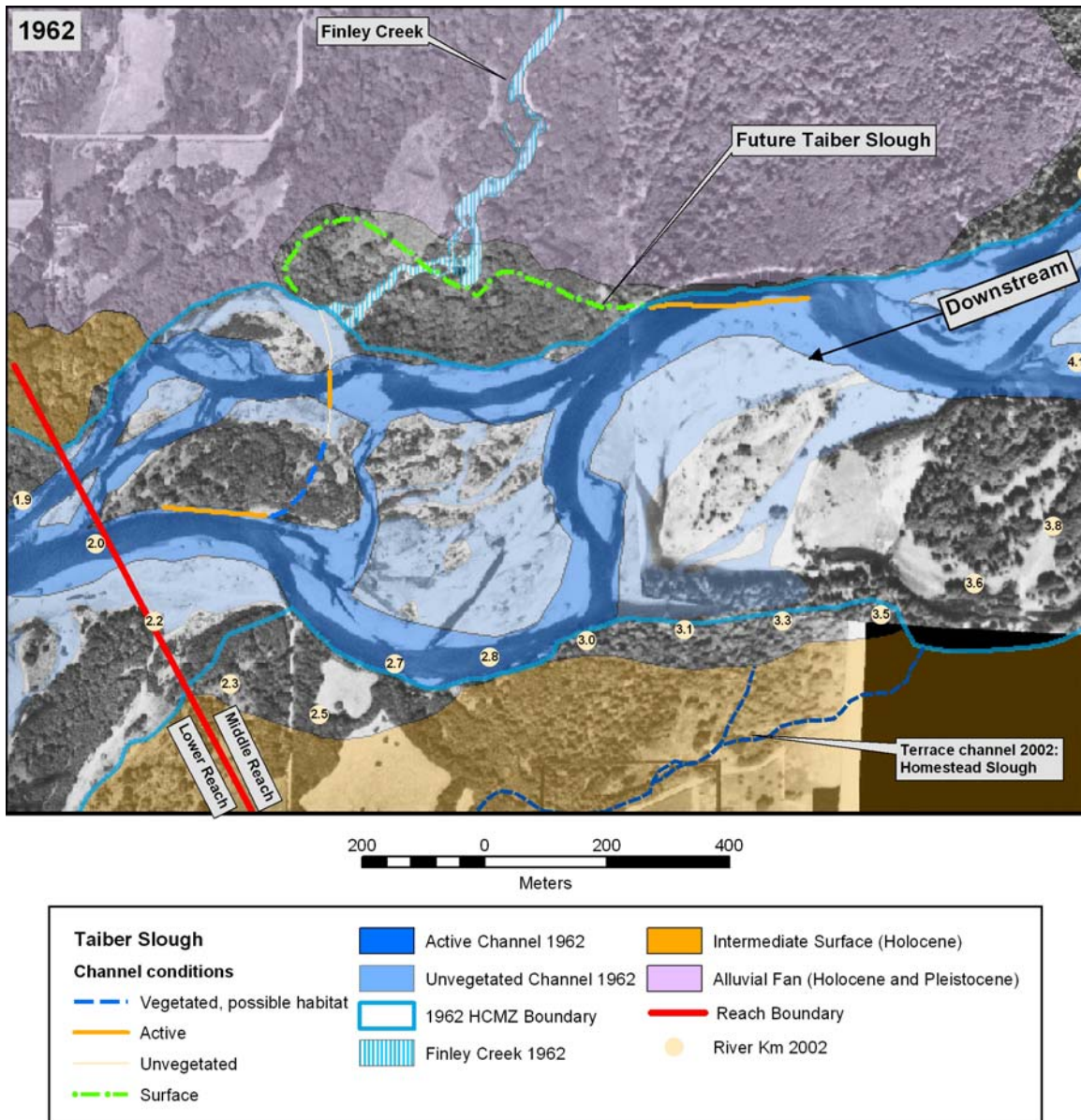


Figure 5. The upstream end of the future Taiber Slough that formed as part of the active channel of the Quinault River had lengthened to about 250 m in 1962. (In 1958, it was about 85 m long.) This was because the meander between RK 3.1 and RK 3.5 moved outward (to the north) and downstream by eroding the alluvial-fan deposit. The downstream portion of the future Taiber Slough that was within or near the unvegetated channel of the Quinault River also had lengthened to nearly 600 m. Consequently, the section of Taiber Slough that traversed the vegetated surface of the alluvial-fan deposit was shorter than it had been in previous years. The active and unvegetated channels of the Quinault River were more branching between RK 1.9 and RK 3.1 than they were in previous years, when only two flow paths were present.

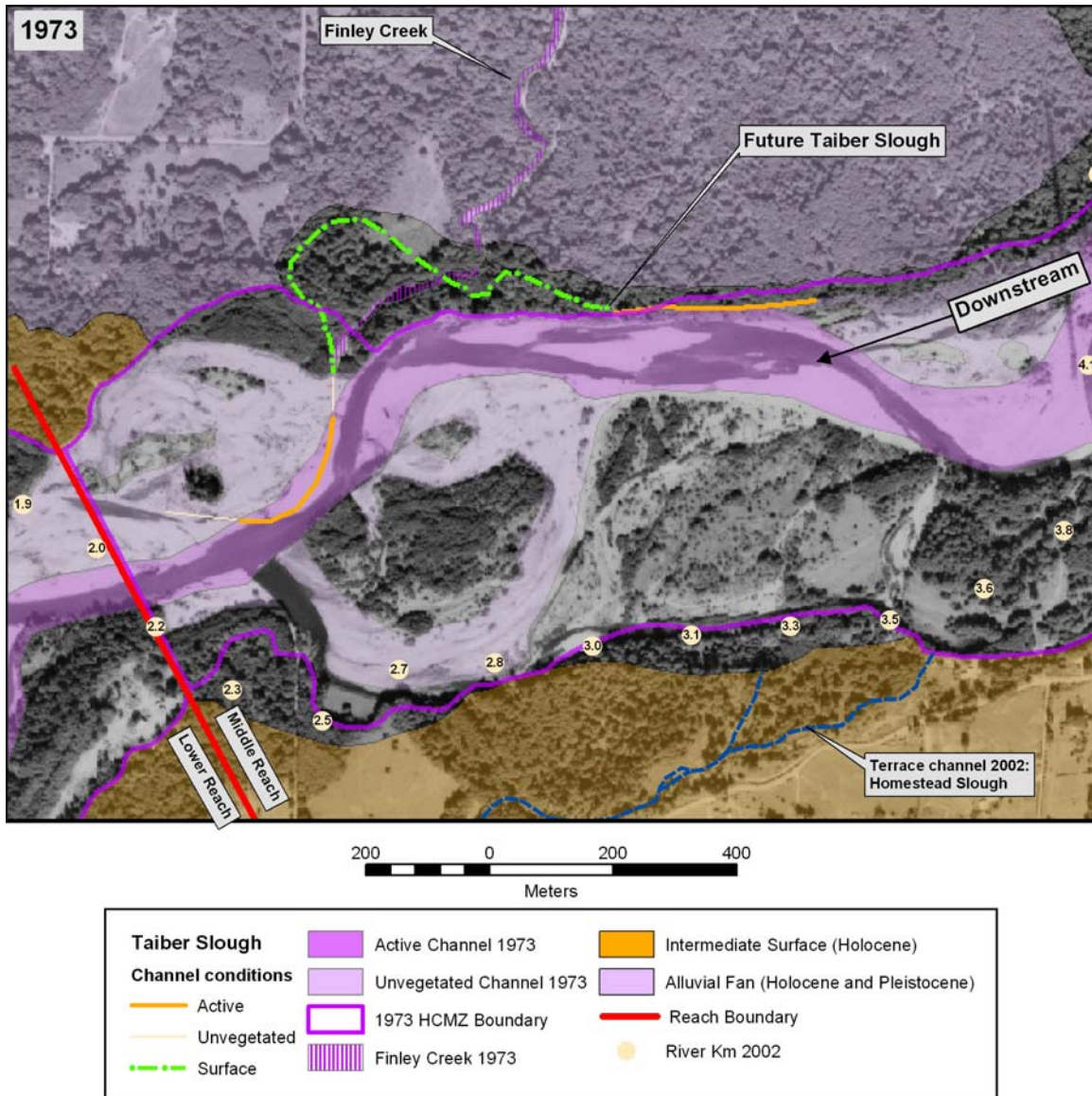


Figure 6. The upstream end of the future Taiber Slough that was part of the active channel of the Quinault River had lengthened to about 330 m by 1973. (It was about 250 m long in 1962.). This was because the meander had again moved downstream, to about RK 2.7 by 1973, by eroding more of the large alluvial-fan deposit from Finley Creek. The downstream portion of the future Taiber Slough that was within or near the unvegetated channel of the Quinault River was about the same length (600 m) as it was in 1962. Consequently, the section that traversed the vegetated surface was about the same as it was in 1962. The active channel of the Quinault River was a single flow path in 1973, which was along the north edge of the alluvial-fan deposit in this section of the river.



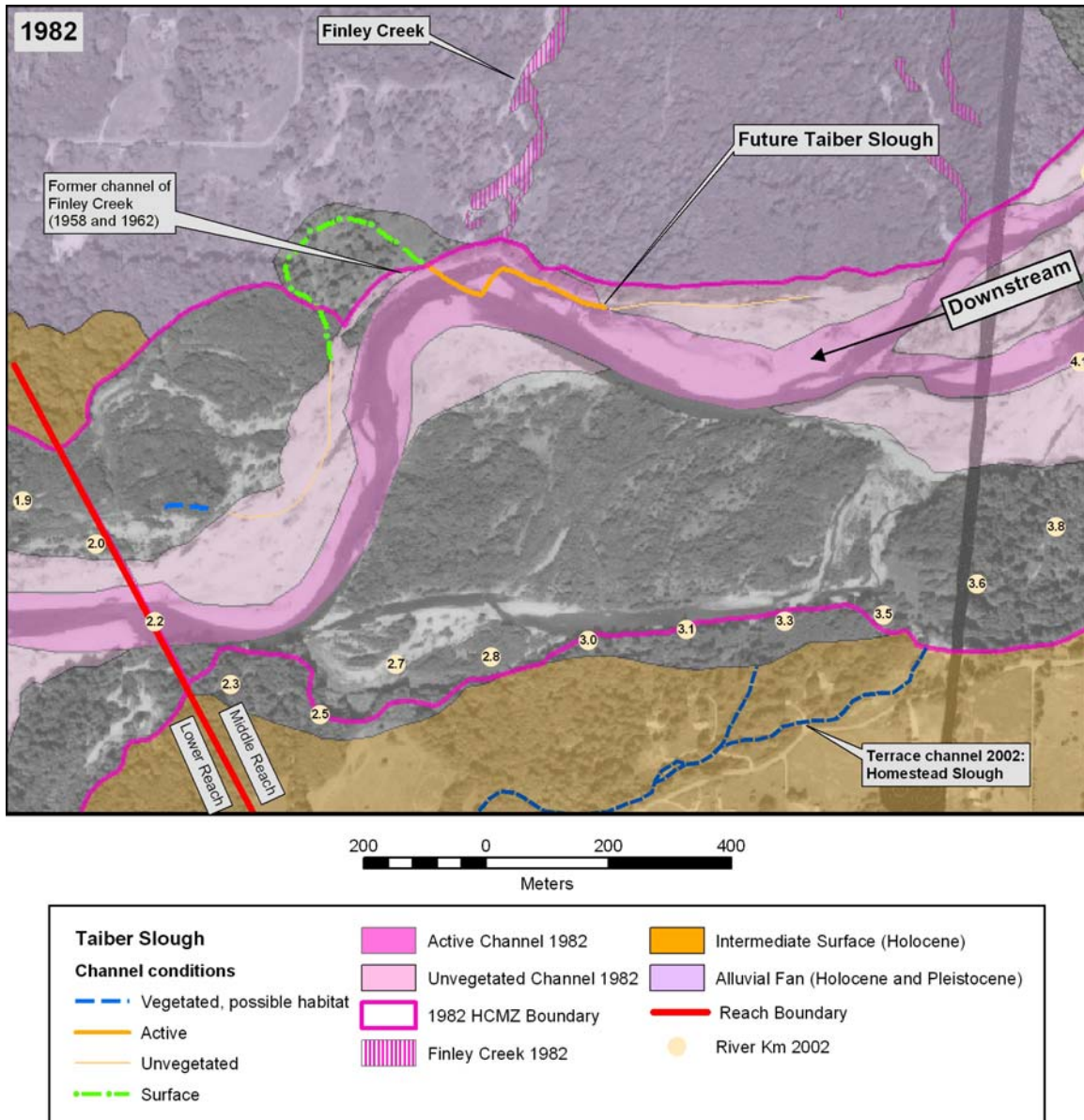


Figure 7. By 1982, the upstream section of the future Taiber Slough that had formed as part of the active and unvegetated channels of the Quinault River had lengthened to about 670 m. (It was about 330 m long in 1973.) As a result, the section of the future slough that had not yet formed was still part of the vegetated surface of the large alluvial-fan deposit from Finley Creek was only about 400 m long. The meander in the active channel of the Quinault River between RK 2.7 and RK 3.1 had become more sinuous and had migrated outward and downstream since 1973 by eroding farther into the alluvial-fan deposit. The active channel had overtaken an old path of Finley Creek that had been present since at least 1958 (fig. 4). The downstream portion of Taiber Slough that was within an unvegetated channel of the Quinault River was about as long as it was in 1962 and 1973 (about 600 m).

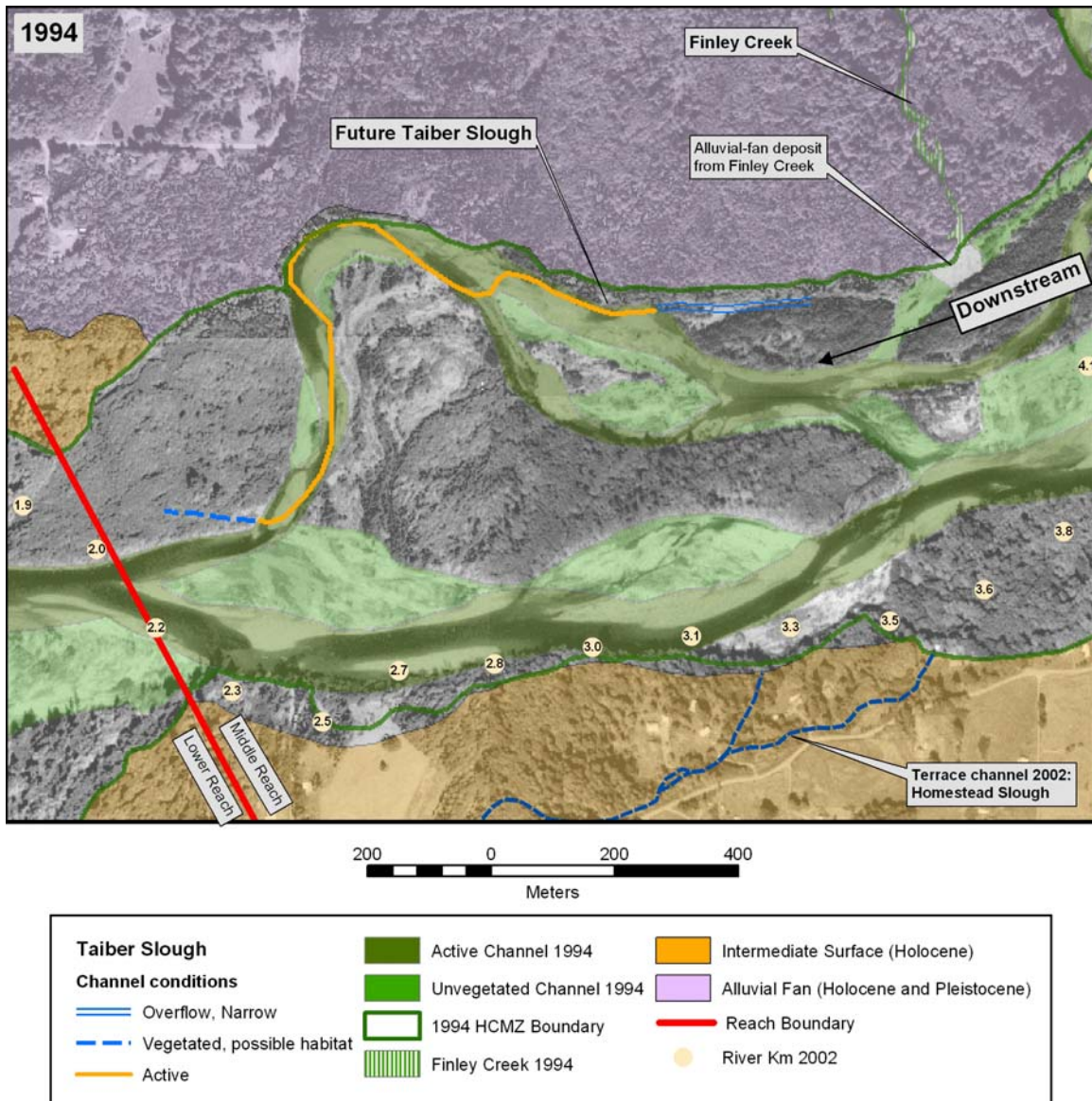


Figure 8. By 1994, the entire path of the future Taiber Slough had been cut by outward and downstream migration of the meander in the active channel of the Quinault to about RK 2.5. Nearly all of the future Taiber Slough was part of the active channel of the Quinault River in 1994. The exceptions were the very upstream end (about 250 m) and very downstream end (about 200 m), which were narrow channels through vegetation and may already have been potential habitat. The active channel of the Quinault River had split flow between RK 2.5 and RK 3.6. Finley Creek in 1994 entered the Quinault River channel upstream of Taiber Slough. This may have been at least in part to redirection of the flow paths of Finley Creek by levees constructed and maintained about 600 m upstream of Taiber Slough (fig. 1).



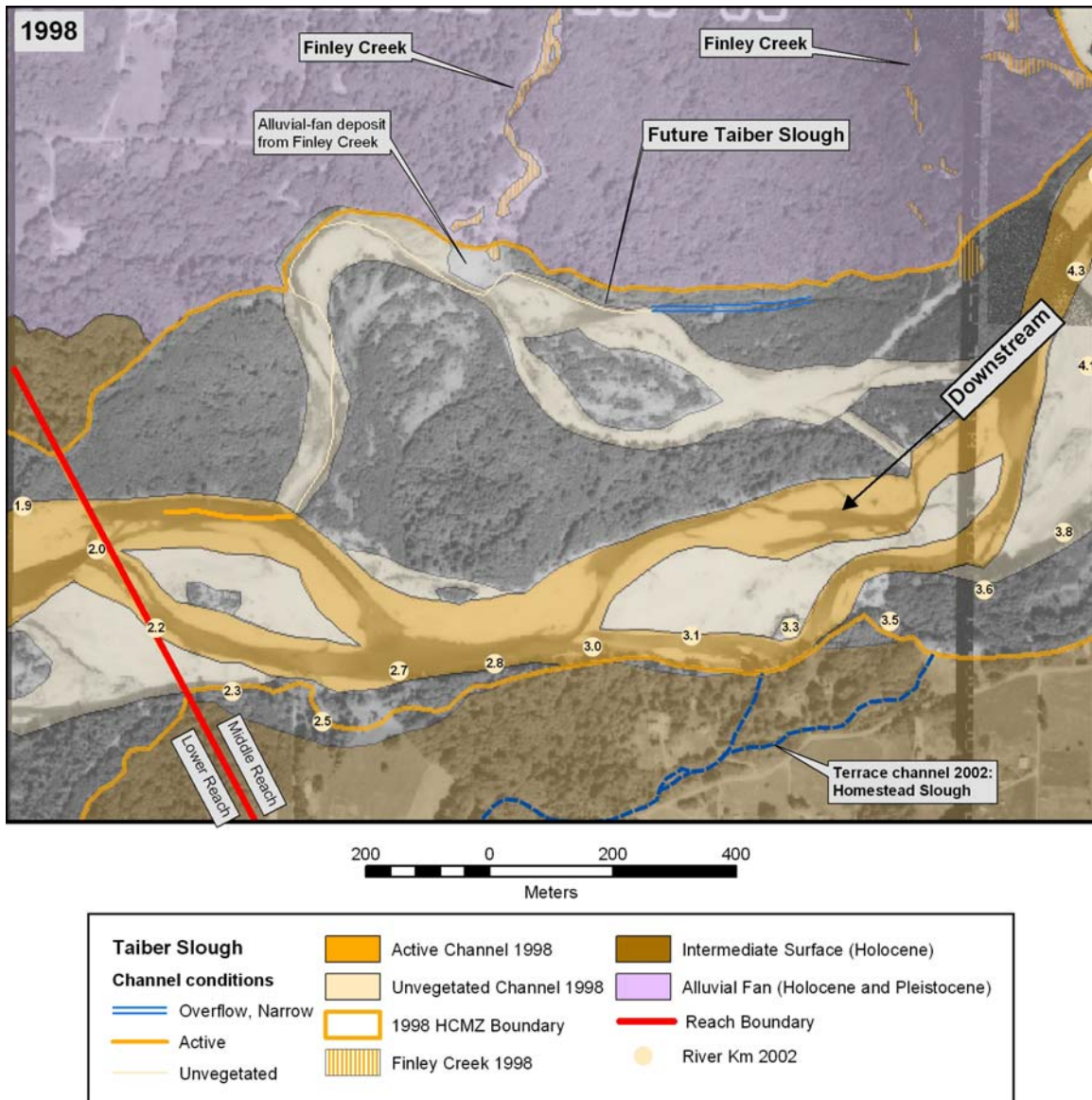


Figure 9. By 1998, the north path of the active channel of the Quinault River (future Taiber Slough) had been abandoned except during highest flows. It was now an unvegetated overflow channel, which will eventually become Taiber Slough (a side channel). The active channel was limited to the south path, and had straightened since 1994. Most of the future Taiber Slough was within the unvegetated overflow channel of the Quinault River. The exceptions were the upstream end (about 250 m), which was a narrow channel through riparian vegetation and may have been potential habitat, and the downstream end (about 250 m), which was within the active channel of the Quinault River.

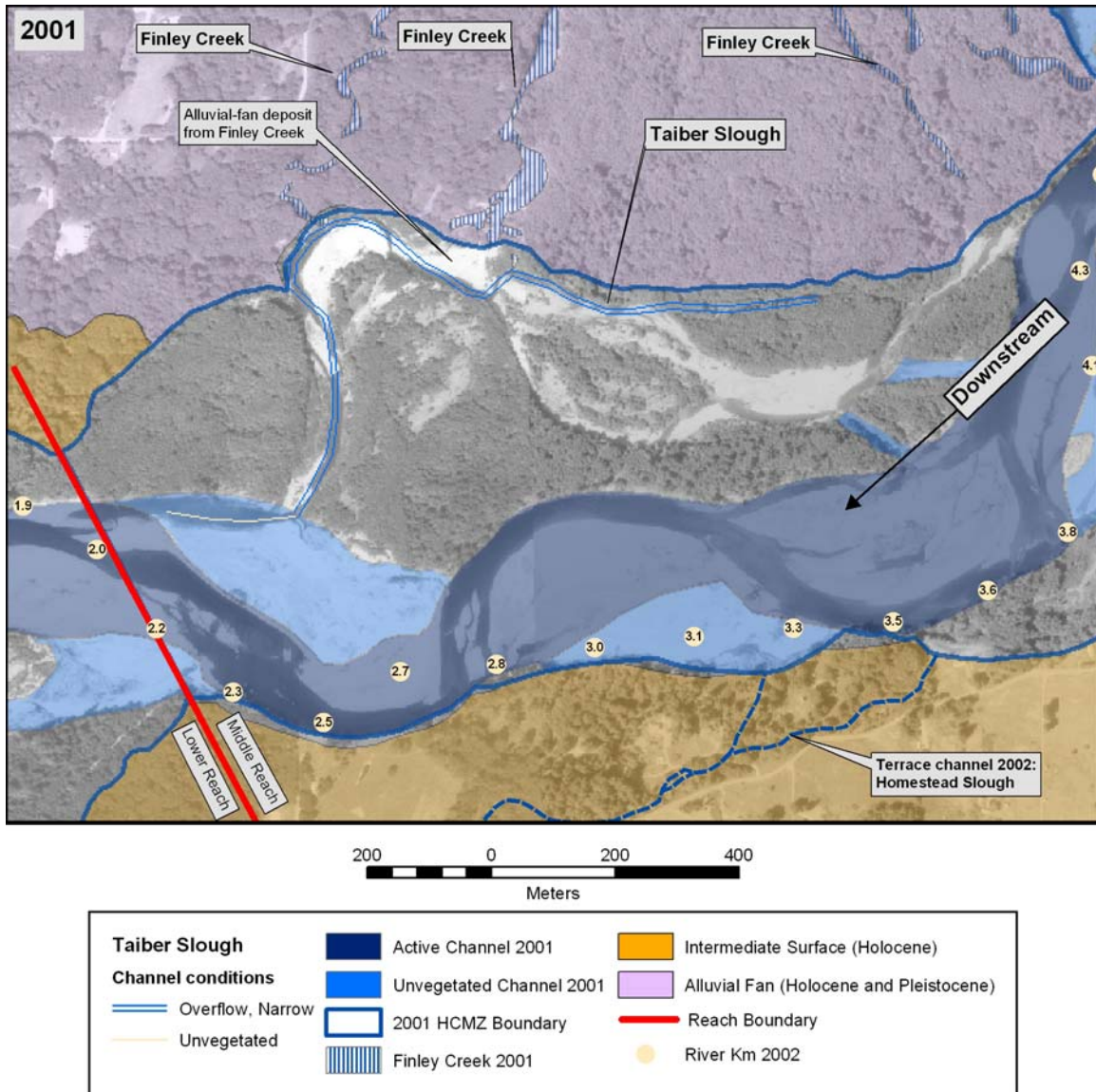


Figure 10. By 2001, most of Taiber Slough was present as potential habitat, a relatively narrow channel through areas with dense to sparse vegetation. B. Armstrong of QIN (written commun., 2003) suggested that this newly formed habitat replaced some of the habitat that was lost at Merriman Creek on the opposite side of the valley. Flows strong enough to disrupt vegetation apparently did not reach this channel or reached it infrequently. Deposition at the head of the channel, near RK 3.5, may have been responsible. The active channel of the Quinault River maintained a path to the south. Finley Creek had established several paths to the Quinault River, two of which entered Taiber Slough.



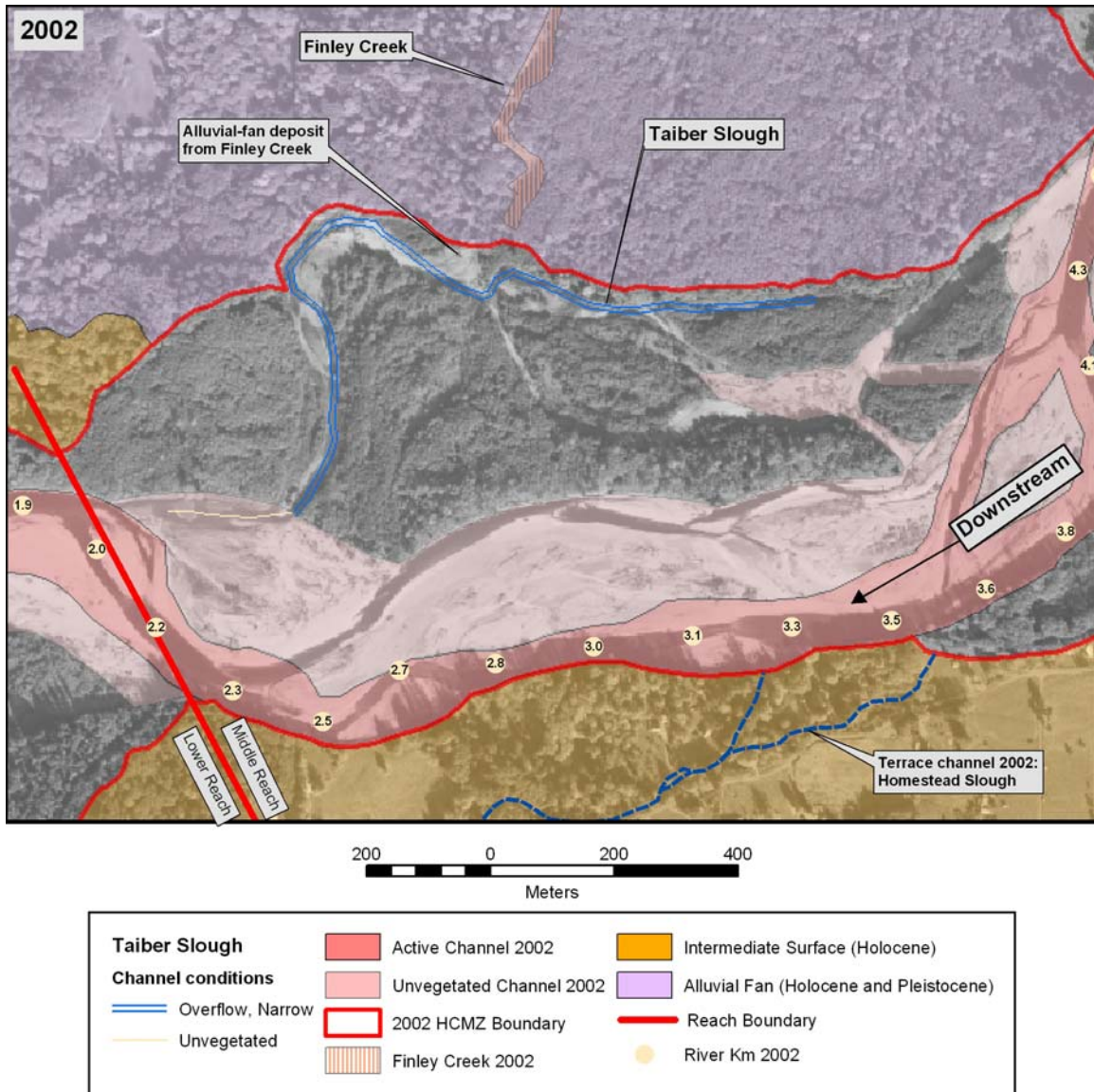


Figure 11. In 2002, the area around Taiber Slough had not changed much since 2001. The active channel of the Quinault River had become straighter, and had moved to the south, farther away from Taiber Slough. Some flow still may have reached Taiber Slough, but the vegetation appears to have increased in density along most of the slough. B. Armstrong (QIN, written commun., 2003) suggested that Taiber Slough was gradually becoming more isolated from the Quinault River, so that sockeye habitat was improving in the slough. The downstream section (about 200 m) was still part of the unvegetated channel of the Quinault River and was not likely to be potential habitat.

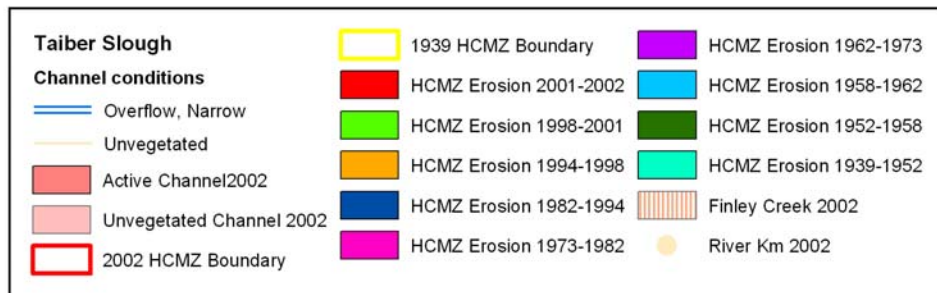
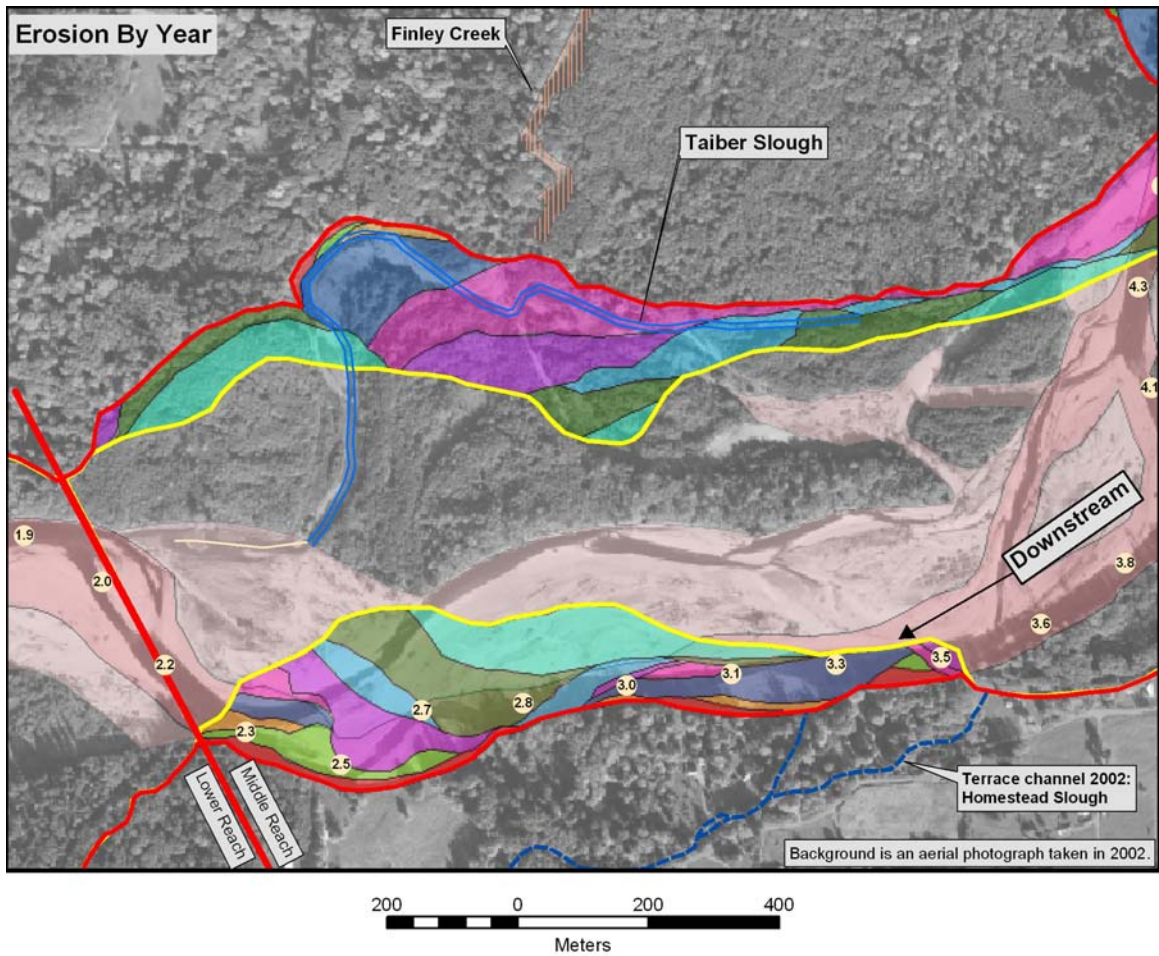


Figure 12. Bank erosion between 1939 and 1994 allowed Taiber Slough to form. A small amount of bank erosion continued until 2002. Erosion also occurred between 1939 and 2002 on the left bank opposite from Taiber Slough.