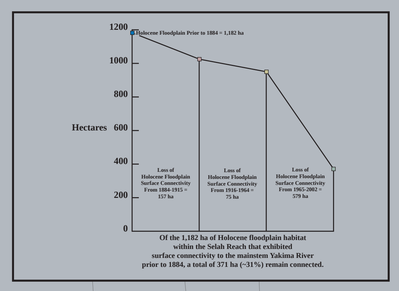
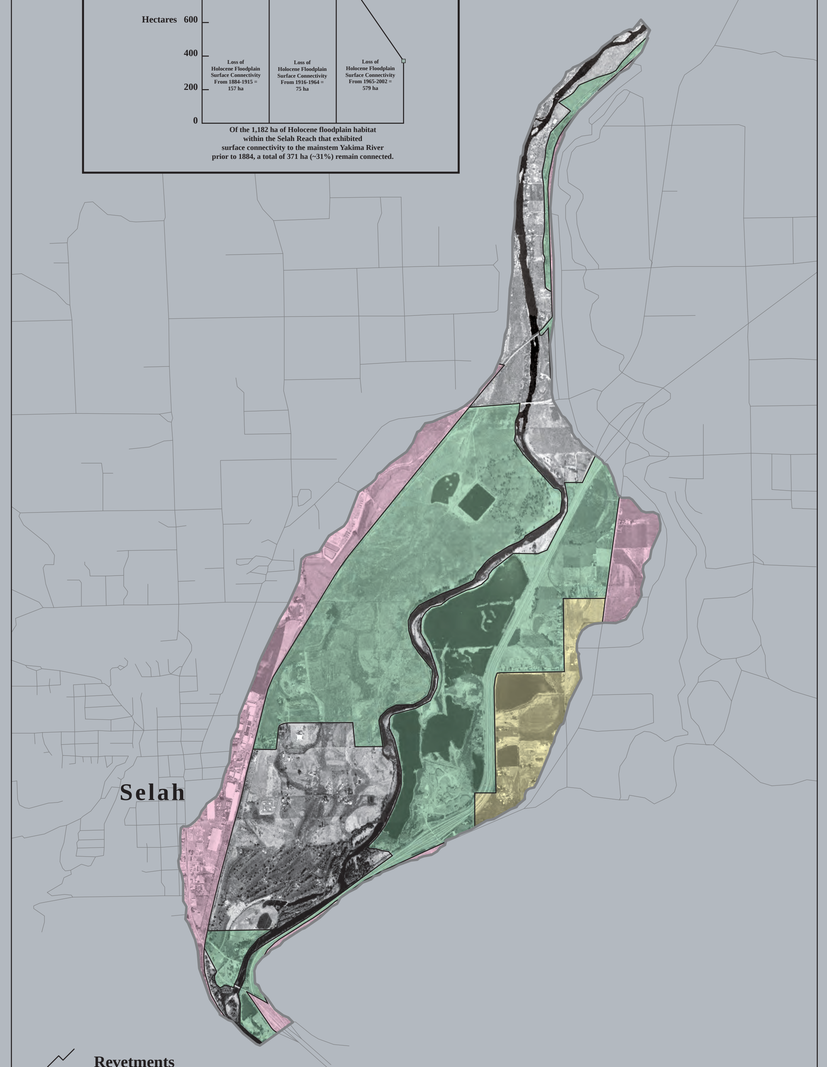
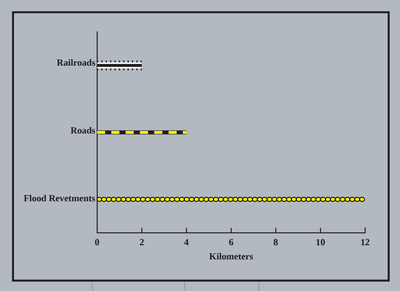
Loss Of Lateral Connectivity
To The Selah Holocene Floodplain From 1884 To 2002

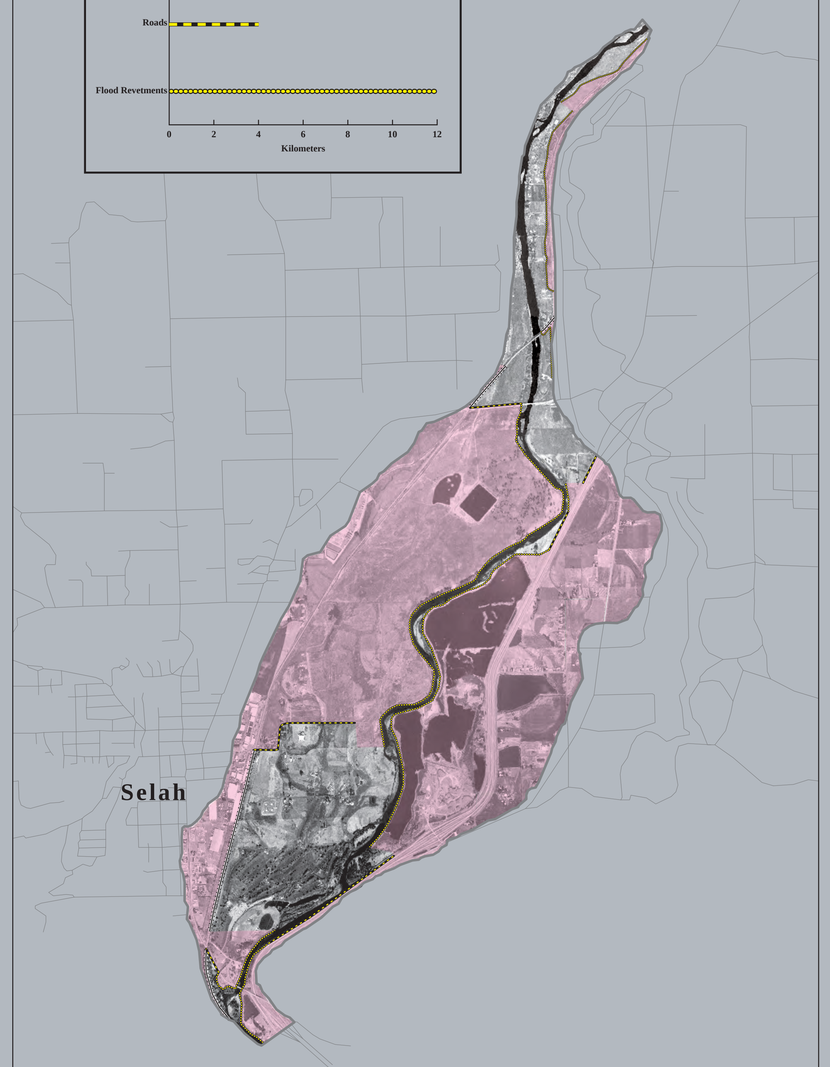




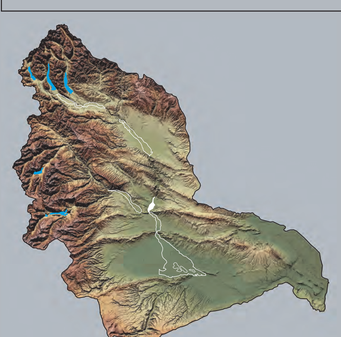
Revetments
Roads
Alterations 1884-1915
Alterations 1916-1964
Alterations 1965-2002

Anthropogenic Features
Responsible For The Loss Of Lateral Connectivity To The Selah Holocene Floodplain





Flood Revetments
Roads
Railroads
Alterations 1884-2002



Position of the Selah Reach within the Yakima Basin.

N
W
E
S

0 .4 .8 1.2 1.6 km
0 1 mi

Cartography By
Douglas J. Eitemiller

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The Selah Reach

By

Morris L. Uebelacker, Clay P. Arango, and Douglas J. Eitemiller

Located on the mainstem Yakima River within the Ridge and Canyon landscape (plate II), the Selah Holocene floodplain encompasses a land area of 1,182 hectares. The Selah floodplain lies in a structural syncline north of the Yakima Ridge anticline. Expressed within the larger geologic context of the Yakima Folds Belt, the Selah Holocene floodplain is linked with the Kittitas, Naches, Union Gap, and Wapato Holocene floodplains at the landscape scale (Thornbury 1965). The Selah floodplain begins at the lower end of the Yakima Canyon where the mainstem river has incised through Quaternary fill and Columbia River basalt flows. Here, the floodplain is only 0.4 km wide and is occupied by a single channel. This narrow floodplain neck, unique to this reach, gradually widens along a distance of 3 km. The primary tributary stream of the Selah floodplain, Wenas Creek, enters the floodplain in this sector. The bottom end of this neck opens onto a broad floodplain that was historically over 2.5 km wide. The Yakima River exits this floodplain through a classic water gap cut into the Yakima Ridge anticline.

Surficial disconnection of the Selah Holocene floodplain first occurred along its western boundary with construction of the NPRR in 1886. Settlement intensified as the irrigation potential of lands above the floodplain was realized. A mix of floodplain farming and domestic stock grazing dominated land use on the Holocene floodplain during the latter part of the 1800s. In 1902 the Cascade Mill (located on the Union Gap floodplain) began log drives from the upper Yakima River basin. These log drives necessitated the construction of a dam at the top end of the confined neck on the upper floodplain. This dam precluded the migration of spawning salmon during the fall of 1905 (Lince 1984). Associated structures that facilitated the movement of logs through the floodplain simplified its complex channel structure. For example, river barbs plainly visible on 1927 aerial photography indicate early attempts to control the avulsive power of the river. The location of the NPRR near its western boundary, in combination with road construction along its eastern margin, reduced the area available to cut and fill alluvial processes to 1,025 hectares by 1915.

Between 1916 and 1964 the city of Selah continued to grow as land use activities associated with fruit processing intensified along the railroad corridor. Waste disposal from the city and the processing of fruit was delivered to a major springbrook system located along the western margins of the Holocene floodplain. The development of a golf course near the lower end of the floodplain replaced some farms, although farming continued on the eastern portions of the floodplain. Evidence of gravel mining is visible on 1927 aerial photography and indicative of a pattern that would continue to spread and eventually dominate land use activity throughout the southeast sector of the floodplain. As a result of an expanding county road system that served agricultural land use, the area of surficially connected Holocene floodplain within the Selah reach decreased to 950 hectares by 1964.

Between 1965 and today, the river was confined to a single channel by the addition of Interstate 82 (I-82) and the extensive network of flood revetments necessary to protect floodplain gravel mining operations. Waste disposal systems associated with fruit processing, cattle grazing, subdivisions, and gravel mining expanded the effects of land use activities on the disconnected portions of the floodplain. Today, only 31% (371 hectares) of the Selah Holocene floodplain remains surficially connected to the Yakima River.

Results from the GIS analysis of the hydrologically active portion of the Selah Holocene floodplain show a reduction from 356 hectares in 1927 to 126 hectares today. Currently, 65% of the active floodplain habitat present in 1927 has been lost (plate XVIII).

The difference in discharge of the mainstem Yakima River at the Umtanum gauging station (UMTW) between 1927 and 1992 aerial photography negates a comparison of all channel types and lengths for this floodplain. However, comparisons of the mainstem river length can be made (appendix I). Today, the length of the mainstem river is 38% shorter than in 1927. This considerable difference is the direct result of channel simplification associated with gravel mining operations. Gravel mining and the levees that protect them have reduced this formerly complex and interactive floodplain to a single thread channel. Although direct comparisons cannot be made across all channel types, the evidence suggests that overall channel complexity and, therefore, habitat diversity, has been severely reduced through the temporal scale of this analysis.

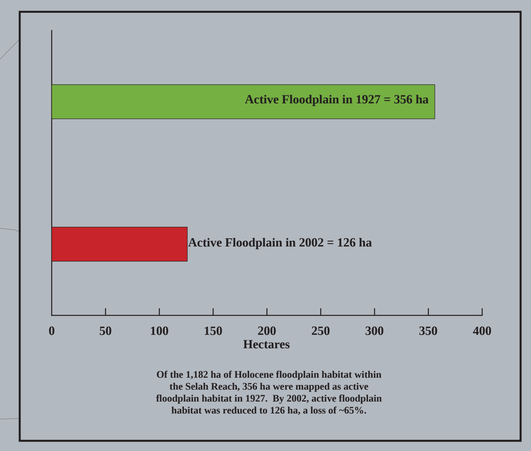
References

Thornbury, W. D. 1965. *Regional Geomorphology of the United States.* John Wiley & Sons Inc. New York, London, Sydney.

Lince, R. S. 1984. *The Selah Story: History of the Selah, East Selah and Wenas Valley in Yakima County, Washington.* Selah Valley Optimist Printing.

Plate XVII. Loss of lateral connectivity to the Selah Holocene floodplain and the anthropogenic features responsible for that loss.

Loss Of Active Floodplain
Within The Selah Reach From 1927 To 2002



Of the 1,182 ha of Holocene floodplain habitat within the Selah Reach, 356 ha were mapped as active floodplain habitat in 1927. By 2002, active floodplain habitat was reduced to 126 ha, a loss of ~65%.

Active Floodplain-1927
Active Floodplain-2002

Position of the Selah Reach within the Yakima Basin.

Conversion Constants

Multiply Hectares by 2.47 to obtain Acres

Multiply Kilometers by 0.621 to obtain Miles

N
W
E
S

0 .4 .8 1.2 1.6 km

0 1 mi

Cartography By
Douglas J. Eitemiller

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Plate XVIII. Loss of active floodplain within the Selah reach from 1927 to 2002.