Source:
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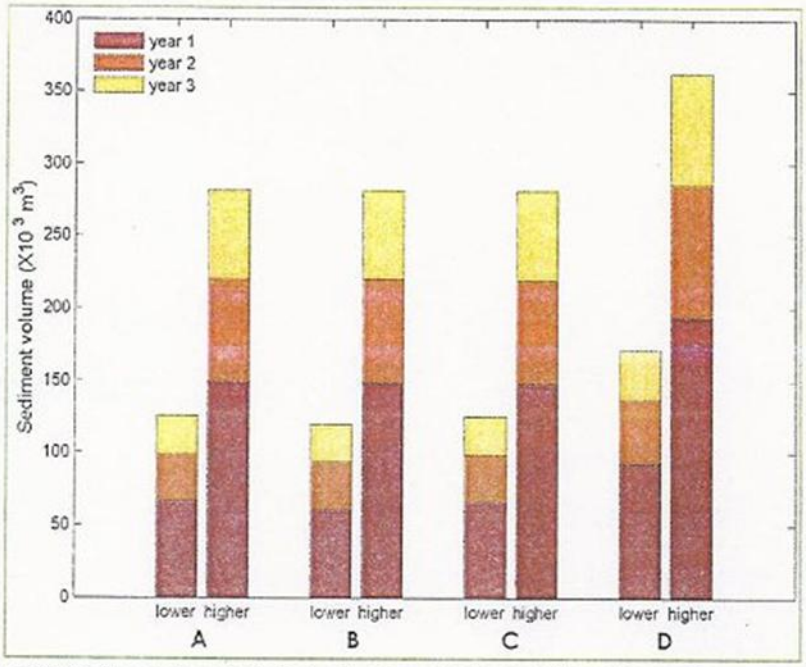
sediment would be eroded from the Middle Basin. It would be deposited in the North Basin and in southern Budd Inlet. The Port of Olympia and marinas along Percival Landing would absorb about 80% of those exported sediments.

The second phase would be when the restored estuary reaches dynamic equilibrium. Beyond five years after dam removal the rate of change slows, and the net transfer of sediments between basins slows. After that river sediment and possibly previously transported material from the estuary would continue to accumulate in the port and marina region.

The extent of erosion and deposition is similar for all four restoration alternatives. The model predicts that from 98,000 to 291,000 cubic yards of sediment would be exported from the restored estuary during the first year, if the lake is not dredged before the dam is removed.



Predicted sediment volume for the Port and marina region by year and in cubic meters for Alternatives A to D. [Report Figure 4.3]

By year ten for Alternatives A, B, and C the North Basin would accumulate 149,000 cubic yards, with the Port of Olympia and the Percival Landing marinas accumulating 586,000 cubic yards. Sediment accumulation at both locations would be as much as 6.5 feet in depth. Also, 140,000 cubic yards would be dispersed into other parts of southern Budd Inlet. For Alternative D the sediment discharged to the port and marina areas is predicted to be 21% higher, because only the western half of the North Basin would be part of the restored estuary.

Scour

In general, the projected tidal velocities among the four restoration alternatives would be similar. Average velocities within the basins would be low during flood or tidal events and should not affect structures and land use along the shore. However, the restriction points of 5th Avenue, Burlington Northern Santa Fe railroad trestle, and Interstate 5 would need to be reinforced to resist scour during flood or extreme tidal events. At those times, velocities up to 16 feet per second are predicted.

The maximum velocities through the BNSF railroad trestle would decrease by approximately 40% if the trestle was widened (Alternative B). Only a small decrease in maximum velocity is projected if the opening of the Deschutes Parkway bridge at Percival Creek was doubled (Alternative C). Velocities through the entrance to Budd Inlet are not significantly affected when only the western half of North Basin is part of the restored estuary (Alternative D). Fig 4.2

Flooding

The current summer lake elevation is 6.5 feet above Mean Sea Level (MSL) with winter levels a foot lower at 5.5 feet MSL. By comparison the tides within Budd Inlet range from a high tide of 6.8 feet MSL to a low tide of -7.7 feet MSL. The Federal Emergency Management Agency's (FEMA) elevation for a 100-year flood within the current shoreline of Capitol Lake is 11.5 feet MSL. Whereas the FEMA 100-year high tide level in Budd Inlet is 10.6 feet MSL.

In Heritage Park the bulkhead along the Arc of Statehood is below the 100-year flood elevation. Recent landscaping additions to Heritage Park raise the ground elevation behind the bulkhead to 11.5 feet MSL to prevent flooding from the lake into downtown Olympia. In general, tidal elevations within a restored estuary would be below the current elevations in the lake. At Heritage Park saltwater would not be expected to harm existing vegetation behind the bulkhead. In the South Basin, portions of Tumwater Historical Park and some islands would be submerged during spring high tides.

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