

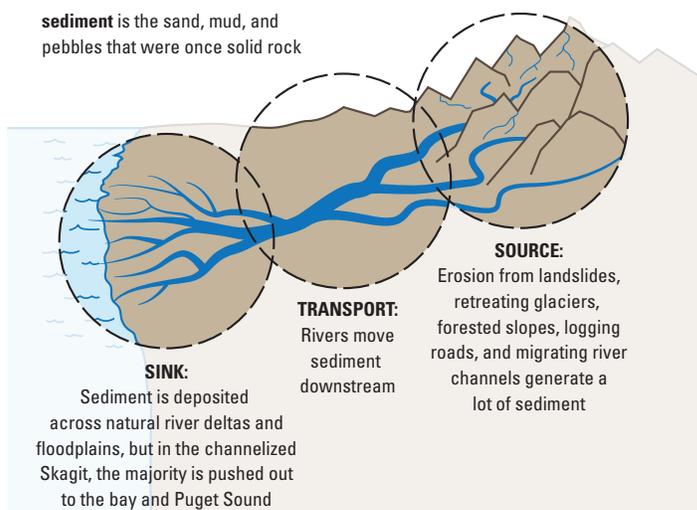
Sediment Conditions in the Clear Creek Area

The Puyallup River and Clear Creek both carry sediment.
How does that sediment affect agriculture in the Clear Creek area?



What is Sediment?

In the context of river and floodplain management, sediment refers to the soil, mud, sand, and gravel moved by rivers and streams. Erosion and sediment transport in rivers and streams are part of a natural process. But modifying river systems with flood control structures and intense development changes how sediment moves through rivers.



Puyallup River Sediment

Sediment loads in the Puyallup River system are naturally high, with the majority of the sediment coming from Mount Rainier. At 980,000 tons, the average annual suspended sediment load from the Puyallup River ranks third in suspended sediment load among the major rivers that drain to Puget Sound.

Many areas of the Puyallup River are experiencing aggradation (buildup of deposited sediment). For example, from 1985 to 2009, portions of the White River have experienced up to 7 feet of aggradation. The lower Puyallup River (from the City of Puyallup downstream), has experienced more moderate aggradation rates - approximately 0.3 inches per year, or about 7 inches total from 1985 to 2009.

More information is needed on how climate change will affect sediment transport in the Puyallup River. Erosion and transport of sediment are both expected to increase in the future.

Sediment in Clear Creek and its Tributaries

Erosion and sedimentation are concerns in Clear Creek and its tributaries, with documented sediment deposits up to 3 feet deep. Sediment deposits like this reduce the hydraulic capacity of the channel, contribute to more frequent overbank flooding, and provide a growth medium for invasive vegetation.

All four streams draining into Clear Creek would erode naturally, given the erodible soils and steep topography in the area. However, development has altered conditions, increasing sediment loads and the flows that transport this sediment. In general, the sediment is deposited in the low-lying Clear Creek area where agricultural land uses are located. All four streams have stormwater or sediment facilities that allow for some reduction in peak flows and/or capture and removal of sediment.



Sediment and Agriculture

Current and projected sediment in the Puyallup River and Clear Creek threaten agricultural viability by increasing flood risk and by compromising the ability of the system to drain agricultural lands. Specific risks include:

RISK OF LEVEE OVERTOPPING

Aggradation in the Puyallup River channel could increase flood risk to the Clear Creek area because overtopping of River Road Levee would happen at lower flows.

CLEAR CREEK BACKWATERING

Aggradation in the Puyallup River near the mouth of Clear Creek would increase the water surface elevation under most river flow conditions, thereby raising backwater conditions for Clear Creek.

DRAINAGE TO THE PUYALLUP RIVER

As aggradation raises the river bed of the Puyallup River, the river level rises relative to the land elevation in the Clear Creek area, which could limit the ability of the Clear Creek area to drain even during low river flow conditions.

CLEAR CREEK CHANNEL CAPACITY

The reduced hydraulic conveyance capacity in Clear Creek from sediment deposition and aggradation could cause the channel to be overtopped sooner.

DRAINAGE TO CLEAR CREEK

Sedimentation in the stream can cause higher water levels, which can create backwater conditions in the drainage system where ditches join Clear Creek.

What Can Be Done?

Projects designed to reduce sediment inputs to the low-lying Clear Creek area could improve drainage and increase flood storage capacity in the channel. Actions could include:

- Stormwater detention to control peak flows
- Control of direct discharges to the creeks
- Sediment source control
- Installation of log jams to store sediment in the creeks and reduce down-cutting

Additional projects could be identified through research on sediment sources and dynamics on Squally, Clear, and Canyon Creeks. An analysis of how climate change could affect sediment dynamics in the Clear Creek area would also be helpful for planning long-term agricultural viability.



More information on sediment conditions is included in the ***Sediment Conditions in the Puyallup River and Clear Creek Technical Memorandum***, which can be found online at: farminginthefloodplain.org/resources

How is the Farming in the Floodplain Project Involved?

The Farming in the Floodplain Project (FFP) is a collaborative project seeking to increase understanding of agricultural viability and analyze the impact of proposed changes to flood and hydrology systems on farmlands in the Clear Creek area of the Puyallup River Basin.

In November 2016, the FFP hosted a meeting where sediment experts presented information to farmers and others involved in planning for the Clear Creek area. The information in this factsheet summarizes information presented and discussed at that meeting. For more information on the Farming in the Floodplain Project, visit www.farminginthefloodplain.org