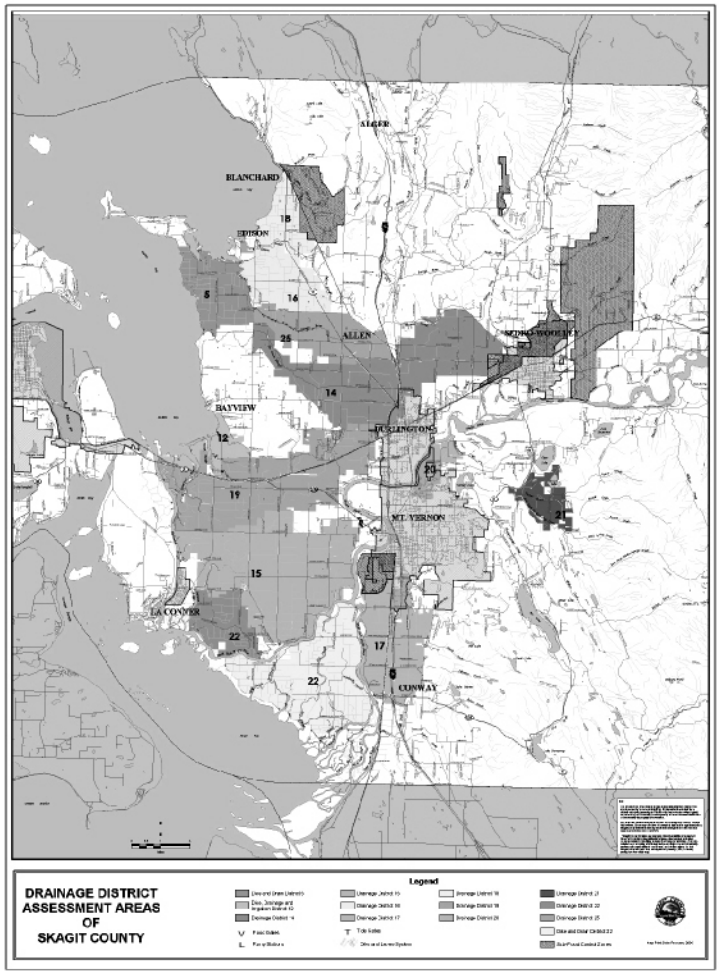
History of Drainage in Skagit Valley

As the early settlers discovered over 100 years ago, the Skagit delta soils require drainage to be farmed. Within 20 years of the first settlers coming to the Skagit, a complex system of dikes and drainage infrastructure was developed to make the lower river delta lands suitable for farming.

By the turn of the century the lower Skagit and Samish River delta areas had an extensive network of drainage ditches, dikes, levees and tide gates to protect these new agricultural lands from flooding and tidal inundation. By the 1960's the delta's complete flood protection and drainage infrastructure was in place, essentially as it exists presently. These levees, dikes and associated tide gates prevented flooding and facilitated drainage necessary for agricultural use. When dikes and levees were first built, the land could not be used for crops for about 2 to 3 years due to residual salinity in the soils. The early crops first grown on the delta consisted of oats and barley that are relatively salt tolerant.

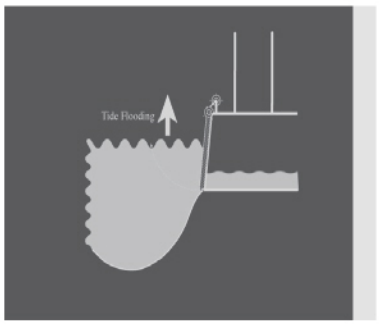


Today the Skagit River Valley is often referred to as "The Agricultural Heartland of Western Washington" and is legendary worldwide for its agricultural productivity. The agricultural landscape on the Skagit and Samish Deltas encompasses approximately 65,000 acres.

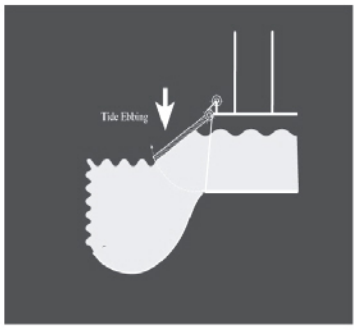
The lower Skagit River delta floodplain is characterized by a vast agricultural landscape surrounded by approximately 147 miles of levees and dikes, with nearly 380 miles of drainage ditches and approximately 130 tide and flood gates. In many areas, the drainage system is shallow and drains only the top few feet of land. The drainage system works to move water off the land in the late fall, winter and early spring months.

Tidegate Operation

There are many different types of tide gates, but the most common configurations include either top-hinged or side-hinged lids installed on the downstream ends of culverts. Tide gates open and close as the result of water level differences between the downstream and the upstream sides of the gate.



Because a tide gate rests against the mouth of a culvert (or against ridges, if it is placed inside the culvert), it can open only in one direction, away from the culvert. Such unidirectional movement of the lid allows water to flow in only one direction, downstream, and prevents backflow during flood (high) tides.



A tide gate opens during ebb (low) tides, when water pressure on its upstream side exceeds both the pressure of water on its downstream side and the gate's own "restorative" force. This force (also known as *effective weight*) is caused by the effect of gravity on the gate and is responsible, in the absence of water pressure, for closing it. The effect of this force is obvious in top-hinged gates, which remain closed under the influence of their own weight except during each of the two daily ebb tides if there is sufficient water pressure to open them.

Tidegates & Fish

Tidegates are critically essential for the long-term sustainability of Skagit agriculture. Without the extensive network of levees, tidegates and drainage works, it is estimated that approximately 40,000 acres of the Skagit and Samish deltas would no longer be available for agriculture. However, tidegates are also a barrier to fish passage and prevent access to habitat upstream of the tidegates.

In early 2010, the drainage districts in the valley, through the leadership of the Western Washington Agricultural Association (WWAA), entered into an historic agreement, in which the districts agreed to help recover critical Chinook habitat in exchange for regulator certainty to maintain, repair and replace tidegates as necessary. The agreement, dubbed the ***Tidegate Fish Initiative*** (TFI), provides a mechanism to link the permitting of tidegate maintenance activities and the achievement of estuarine habitat restoration goals for Skagit Chinook. The TFI will allow for habitat restoration credit banking and provide a system of checks and balances to assure that mutually supportive restoration activities will occur in a timely and cooperative manner. In exchange, drainage districts will be able to use credits obtained from habitat restoration work to maintain, repair and replace tidegates. For a district to complete the maintenance of a tidegate, sufficient habitat credits must be available.