The Feasibility of Removing Holden Creek Tidegates to Reduce Municipal Flooding in Tillamook, Oregon

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Holden Creek is a municipal creek that floods throughout the year, causing hundreds of thousands of dollars of damage. This project focused on the role of tide gates and possible changes that could allow for increased flow during low tides I found that tide gates worked to reduce flooding during king tides, but they only open a minimal amount when allowing rain water through, causing water to build upstream. Furthermore, the elevation drop of the creek, four feet, was less than the nine foot king tides, meaning if tides gates weren't in place, the creek would flood midway through town and below. After beaver dam removal, it was noticed that water would flood farm property at highway 101, the mouth of the creek. Since tide gates couldn't be removed, I decided to determine the volume of water this field could hold before Holden Creek backed up and flooded town. I determined for every inch it rains, the field receives 2.696 inches of water. Because the field is a 2.4 ft. drop from the creek's Miller Street crossing, it could only rain 10.7 inches before flooding, provided no water is released by the tide gate. It's common for Tillamook to receive four inches of rain a day for multiple days. Even with the clearance of beaver dams, we're still in danger of flooding with more development and large storm events. The only solution remaining is the installation of side opening tide gates instead of the bottom opening ones we currently use.

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