

PHYTOREMEDIATION – Engineering plant functions to remove contaminants-of-concern (COC) from contaminated water.

Hypothesis: Can rooted soil (rhizosphere) safely remove soluble contaminants-of-concern (COC) from sewer plant outflow?

Two installations in Coupeville to measure early data:

- Phyto ESwale: East of Island Transit parking lot to treat stormwater.
- Phyto Test Cells: At Coupeville Treatment Plant.

Phyto Test Cell (PTC) Operation

We are filtering outflow water from the Coupeville Treatment Plant through tree roots and different soil types to evaluate their effectiveness in removing COC. The outflow water is the water released from the Treatment Plant into Penn Cove. COC will be evaluated in the outflow water applied to the PTC and in the water from the drain tubes in the bottom of the boxes.

Each PTC holds approximately 2.5 cubic feet of soil. Thirteen of the boxes were planted using 4 hybrid poplar and 2 willow whips. Each whip was 4 ft. in length and planted the full PTC soil depth. Both poplar and willow will root the full length of the whip that is under ground. This planting regime is designed to create a dense mass of tree roots in each box and mimic a mature tree rhizosphere function in 3 months.

The trees were planted in 4 different 'soils' or growing mediums. These were

1. Perlite only.
2. Sandy soil from Ebey's Prairie.
3. Sandy soil from Ebey's Prairie plus compost.
4. ½ Heavy (clay) soil from Ebey's Prairie and ½ perlite.

Three of the boxes are filled with perlite only with no trees.

We will evaluate the effect of these tree roots and the different growing mediums on the concentrations of nitrates, phosphorous, copper and other COC in the water from the drain tubes as compared to the Treatment Plant outflow water applied to the top of the boxes

This project is supported by the Town of Coupeville, Ecolotree Inc., Island County Marine Resources Committee and local supporters.