Marine Environment Case Study

Project Location: Elfin Cove Area, Southeast Alaska, USA

This case study demonstrates the capabilities of patented BioHaven® technology to function in a harsh marine environment. The purpose of this application, which was the first seawater evaluation of the BioHaven floating treatment wetland (FTW) from Floating Island International (FII), was to study plant survival, biota colonization and island durability under marine conditions.

Two BioHaven islands were launched—a large module at Port Althorp (the "Port Althorp" FTW) and a small module in a private setting near Elfin Cove (the "Hobbit Hole" FTW). The larger island was moored to a piling at one end and chained to a mooring block at the other; the smaller island was tethered to an existing dock with nylon line. The Port Althorp FTW was constructed as a dock, with Trex decking applied to the top surface.

Installation Data

Location	Southeast Alaska, USA
Environment	Seawater cove
FTW Size	Area of 690 ft ² (64 m ²) for Port Althorp; area of 80 ft ² (7.4 m ²) for Hobbit Hole; thickness of 14 inches (35 cm) for both
Installation Dates	Port Althorp: 9/7/08 Hobbit Hole: 9/8/08
Species Planted	Numerous wild grasses, plants and saplings were planted on both FTWs: beach grasses, rye grass, wild arugula seeds, strawberries, silverweed, plantain, geranium, spruce, hemlock and alder. Garden herbs, vegetables and perennial/biennial flowers were also planted.

Operational Data

Average O&M Costs (Labor, Materials)	1 hour/week; no materials
Training Required to Operate	1-day training seminar
Anticipated Lifespan	At least 10 years

Results

• The BioHaven matrix was not adversely impacted by exposure to seawater and Alaska wintertime temperatures/wave action.

- Numerous marine biota, including mollusks, starfish, worms and filter feeders such as anemone, populated the BioHavens. Several species of kelp also took up residence.
- Perennial plants survived the winter and reemerged in the spring.
- Both BioHavens remained buoyant under snow loads up to five feet.
- The BioHavens remained intact with up to two-foot waves. The Port Althorp BioHaven was towed five miles in the summer of 2009 to the Hobbit Hole location to replace an existing section of dock. It is still in use and performing well.
- Boats were able to tie and moor to the BioHaven FTW.



Finished FTW in Port Althorp

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Installing the BioHaven® modules



Initial planting on the BioHaven

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Snow load in the winter



Tiny mussels attached to the BioHaven

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Habitat for ocean biota



Spring growth on the BioHaven P.O. Box 252, Shepherd, MT 59079 • 800.450.1088 • 406.373.5200 <u>www.floatingislandinternational.com</u> ©2011 Floating Island International Inc. All rights reserved.