



Town of

Orleans
Massachusetts

Orleans Water Quality Advisory Panel Stakeholder Workshop

Floating Constructed Wetlands (FCW) Breakout Group

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January 20, 2016

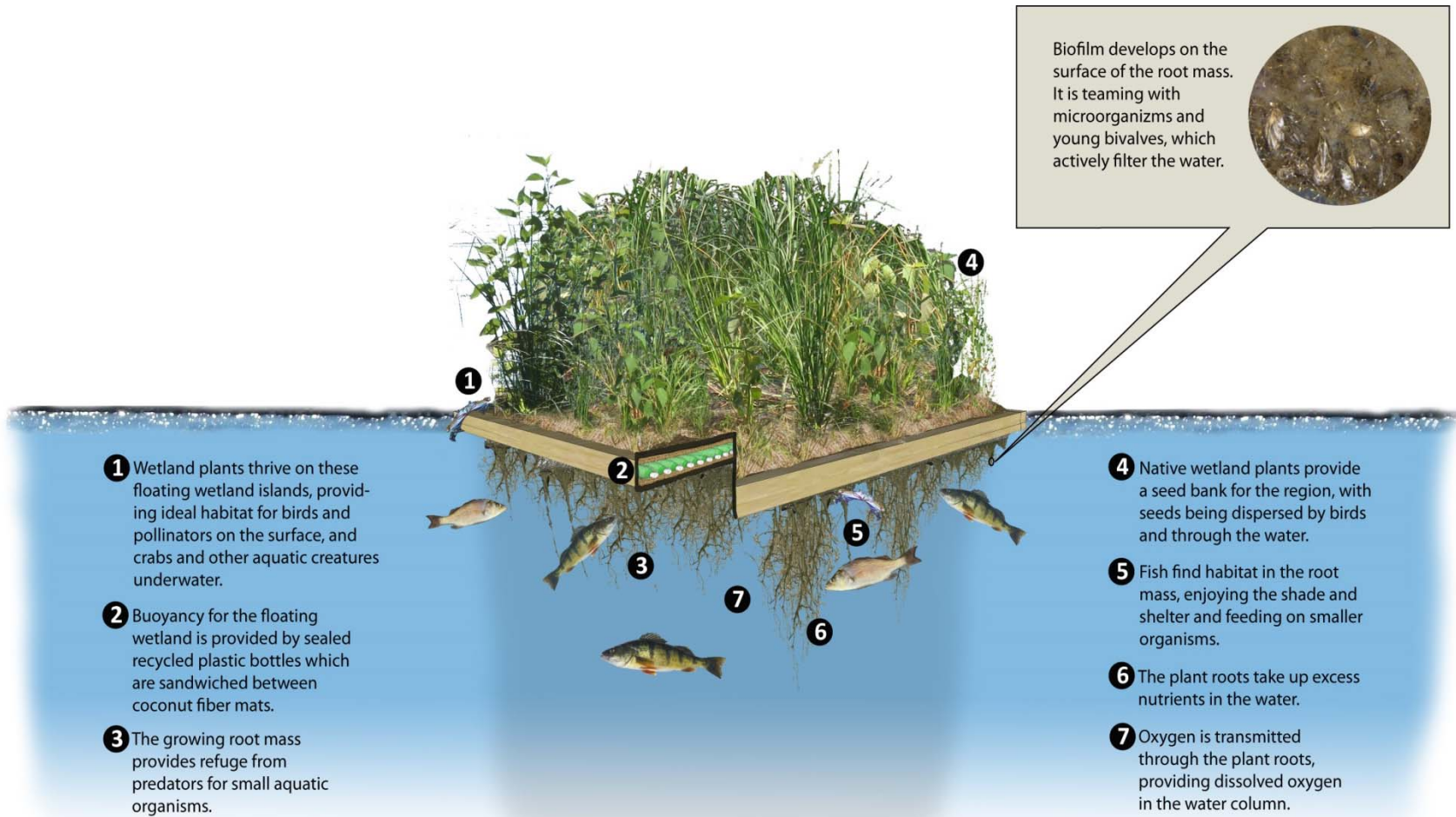
AECOM

FCW Overview

- ❖ Constructed Rafts That Float on the Water's Surface
- ❖ Planted with Native Plants
- ❖ Provide Habitat and Surface Area for a Wide Range of Naturally-Occurring Attached Growth Microorganisms and Invertebrates.
- ❖ As Water Passes Through the System, Pollutants Can be Reduced
 - Nitrogen
 - Phosphorus
 - Biological Oxygen Demand
 - Total Suspended Solids
 - Fecal Coliform
- ❖ Denitrification is Key Pathway for Nitrogen Reductions



FCW Schematic



FCW Estuaries

Jamaica Bay, New York



Baltimore Harbor, Maryland



Potomac Yard Stormwater Ponds, Alexandria, VA



Objectives Statement for Demonstration Project

- ❖ Evaluate FCW Potential
 - Reduce Nutrients
 - Realize Associated Ecological and Socioeconomic Benefits
- ❖ Evaluate Uncertainties Associated with the Local Climate and Environmental Conditions
- ❖ Provide Data to Evaluate the Value of FCWs at Meeting the Long Term Goals of the Town of Orleans in Reducing Nitrogen in its Water Resources.



FCW Demo and Full Scale Siting Evaluation Criteria

- ❖ Use Conflicts
- ❖ Utility/Infrastructure Conflicts
- ❖ Utility/Infrastructure Benefits
- ❖ Ease of Access
- ❖ Transferable Results
- ❖ Land Ownership
- ❖ Depth of Surface Water
- ❖ Overall Likelihood of Monitoring Plan to Yield Quantified Results



FCW Locations Evaluated

- ❖ Lonnie's Pond
- ❖ Namequoit River
- ❖ Paw Wah Pond
- ❖ Pochet Neck
- ❖ Quanset Pond



PRB Site Evaluation Matrix

Criteria	Lonnie's Pond		Namequoit River		Paw Wah Pond		Pochet Neck		Quanset Pond	
	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
Site Suitability										
Use Conflicts										
Utility/Infrastructure Conflicts										
Utility/Infrastructure Benefits										
Ease of Access										
Land Ownership										
Depth of Surface Water										
Quantifiable Results										
Regulatory Criteria										
Total Criteria Points										
Rank										

❖ Scoring

- A good ranking (1) was assigned if the criterion could be fully met.
- A neutral ranking (0) was assigned if the criterion could be met in part, but there were some potential issues and/or difficulties.
- A poor ranking (-1) was assigned if the criterion could not be met.



FCW Site Preliminary Draft Ranking

Criteria	Lonnie's Pond		Namequoit River		Paw Wah Pond		Pochet Neck		Quanset Pond	
	Rating	Score	Rating	Score	Rating	Score	Rating	Score	Rating	Score
Site Suitability										
Use Conflicts	1	1	0	0	0	0	0	0	1	1
Utility/Infrastructure Conflicts	0	0	0	0	0	0	0	0	0	0
Utility/Infrastructure Benefits	1	1	0	0	0	0	0	0	0	0
Ease of Access	1	1	-1	-1	1	1	-1	-1	1	1
Land Ownership	0	0	0	0	0	0	-1	0	0	0
Depth of Surface Water	1	1	1	1	0	0	1	1	1	1
Quantifiable Results	1	1	-1	-1	0	0	0	0	0	0
Regulatory Criteria	0	0	0	0	0	0	0	0	0	0
Total Criteria Points		5		(1)		1		(1)		3
Rank		1		4		3		4		2



FCW Next Steps

- ❖ Review with Town
- ❖ Finalize Site Evaluation
- ❖ Complete Engineering Work Plan
- ❖ Develop Cost Estimates (Project, O&M, Replacement and Monitoring)
- ❖ Prepare Conceptual Drawings
- ❖ Prepare Preliminary Specifications
- ❖ Identify Monitoring Protocols
- ❖ Identify Maintenance Requirements
- ❖ Describe Regulatory Requirements





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Thank You