

Restoration of Brewer Creek A Demonstration Project in Restoring a Watershed Operations Plan 1996, v.6

ADC, Anne Arundel County, 20-C-1

Situation

The restoration of the Chesapeake Bay is the most important environmental initiative ever undertaken in Maryland. The Chesapeake's preservation affects all geographic areas of the state, involves all levels of government and requires the participation and cooperation of every citizen in Maryland. While much has been accomplished to date and signs of progress are clearly evident in tributaries, much remains to be done. New challenges and new opportunities require Marylanders to renew their long standing commitment to the stewardship of the Chesapeake Bay. – *Maryland's Tributary Strategies, Restoring the Chesapeake Overview, February 1993.*

The Severn River, one of Maryland's greatest treasures, is noted for the rich and diverse bounty of its waters and beautiful shorelines. However, dramatic changes in the natural resources of the Severn River Watershed have occurred. These changes include:

- the decline of all major estuarine resources such as yellow perch, rock fish, shad, oysters, and clams, to a small fraction of their historical numbers;
- the loss of nearly all Submerged Aquatic Vegetation (SAV) and many of the waterfowl dependent on SAV's for food;
- poor water quality as evidenced by lesions and tumors found on fish in the Severn River;
- loss of scenic character and quality of life.

In response to the Maryland Tributaries Strategy Program, the Severn River Commission initiated efforts to develop a comprehensive Watershed Management Plan for the Severn River. Current efforts in the Severn River focus on developing specific nutrient reduction strategies at non-point sources within existing communities. Prominent among commission recommendations is to encourage community-based restoration projects. – *Living with the River, A Development Management Study for the Severn River Watershed to the Year 2020, Severn River Commission, 1 August 1995.*

Pierced by forever, worried by now.

Mission

In response to the national, state, and local call to citizens to become *stakeholders* in the restoration of the Chesapeake, the communities of *The Downs on the Severn* and *Sherwood Forest* in partnership with every available resource will retrofit and restore the Brewer Creek Watershed. This long-term comprehensive watershed restoration initiative will emphasize projects that enhance biological diversity and water quality.

Brewer Creek Restoration Partners (1995 to present)

- The Downs on the Severn
- Sherwood Forest
- National Oceanic Atmospheric Administration
- Chesapeake Bay Program (Environmental Protection Agency)
- National Fish and Wildlife Foundation
- Trust for Public Lands
- Maryland Department of the Environment
- Maryland Department of Natural Resources
- Maryland Environmental Service
- Chesapeake Bay Trust
- Chesapeake Bay Small Watershed Program
- Maryland Environmental Trust
- Anne Arundel County
- Severn River Association
- Severn River Commission
- Severn River Land Trust
- Yale University
- University of Maryland
- Oxford Laboratories
- Horn Point Environmental Laboratories
- Center of Marine Biotechnology
- National Aquarium in Baltimore
- Sister Schools for the Severn (Annapolis Senior High, St. Mary's High School, Severn School, Gilman School, Roland Park Country School, Holton Arms School, Bates Middle School, Samuel Ogle Science & Technology Magnet, St. Mary's Elementary School, Millersville Elementary, Sherwood Forest Naturalist Program)
- Chesapeake Connections Affiliated Schools (Arlington Echo Outdoor Education Center, Old Mill High School, George Cromwell Elementary, Folger McKinsey Elementary, Germantown Elementary, Davidsonville Elementary)
- Flood Marine Consultants, Inc.
- Underwood & Associates, Inc.
- Langenfelder, Inc.
- Quality Environmental Solutions, Inc.
- Greater Annapolis Veterinary Clinic
- along with a host of watershed conservation leaders, consultants, engineers, scientists

Objectives

The Brewer Creek initiative through partnership and long-term persistence will specifically:

- Create tidal wetlands to reduce nutrient flow into tidal waters and provide habitat for aquatic species.
- Stabilize shoreline using soft engineering (*Living Shorelines*) best management practices (BMPs) to interdict tidal sediment pollution and erosion.
- Construct a tidal Submerged Aquatic Vegetation (SAV) nursery capable of producing a reliable source of Redhead Grass (Severn River climax SAV species) for river and Bay reforestation operations. Nursery design is to take advantage of its proposed location as a natural propagation point within the Severn River.
- Reforest Brewer Creek and the Severn River with Redhead Grass (SAV).
- Restore the tidal spawning pond at the headwaters of Brewer Creek.
- Eradicate invasive species (Phragmites) from Brewer Creek.
- Install a pump out station at the creek's only marina.
- Construct an oyster remote setting site capable of setting 5 million oysters annually.
- Rejuvenate the 9 acre oyster reef (AA 697) at the mouth of the creek by annually seeding it with 250K oyster spat, restored all other adjacent oyster reefs.
- Establish a comprehensive community-based conservation training program capable of conducting restoration operations and imparting a stewardship ethic in the effort to develop future conservation advocates.
- Retro-fit the degraded floodplain of Howard's Branch in order to maximize native biological diversity and to interdict nutrient pollution and sediment pollution.
- Preserve all forested and sensitive areas within and adjacent to the Brewer Creek Watershed.
- Develop a comprehensive shoreline restoration plan for the Brewer Creek Watershed and adjacent shorelines using Chesapeake Bay shoreline best management practices.
- Facilitate best management practices for all residential properties within the watershed.

Brewer Creek Project Completions (As of: 1 October 2003)

<u>Description</u>	<u>Completion Date</u>	<u>Notations</u>
Fringe marshes (Sherwood)	1999	0.30 acres at 2 sites
Fringe marshes (The Downs)	1999	1.75 acres at 5 sites
Fringe marsh (Headwaters)	2003 (Pending)	0.25 acres
Shoreline BMPs (Sherwood)	1995	2 miles
Shoreline BMPs (The Downs)	1999	2 miles
SAV nursery (Redhead)	1995	1 st crop 1996, annual robust production of Redhead Grass supports numerous & reforestation operations
transplant Bay-wide		
SAV reforestation	1996 – On-Going	2 acres (Brewer Creek) / 60 acres (Severn River)
Fish spawning pond	Pending	Design & permitting complete
Phragmite eradication	Pending	Permitting complete
Pump out station	1999 – On-Going	Continuous operation
Oyster remote setting site	1995 – On-Going	Produces approximately a million oysters annually (salinity permitting) for conservation oyster reef seeding operations
Rejuvenate oyster reef AA697	1996 – On-Going	Reef seeded 1996, 1998, 2000
Conservation training (Sherwood)	1990 – On-Going	385 children ages 2 – adult, 8 week summer conservation leadership formation program capable of restoration missions within a 30 mile radius
Restoration of Howard’s Branch	2001	Created 3 acres of biologically diverse non-tidal wetlands (300% increase in plant & animal species), planted 700 Atlantic white cedar trees (globally threatened) making it one of the largest thriving cedar forests in the Western Hemisphere and doubling the number of this threaten species on the Western Maryland, manages (through bio-the drainage of a 283 acre to hurricane conditions cleaner than
Shore of retention bays) watershed from drought resulting in discharge rainwater, ranked by Earth Day International as one of the top ten (7 th) most significant restoration projects in 2001		
Forest preservation (Sherwood)	1996	Resource conservation plan adopted that 121 acres of interior forest to an Old condition
manages Growth		
Forest preservation (Brewer Pond)	1998	Preserves 50 acres of interior and riparian forest, 1 mile of undeveloped shoreline, and a 22 acre tidal pond by a fee simple purchase with an <i>In Perpetuity</i> conservation easement
Forest preservation (Sahlin Farm)	2001	Preserves 298 acres of interior and riparian forest through an <i>In Perpetuity</i> conservation easement
Residential BMPs	1996 - On-Going	A dozen projects to date to include: rain barrel installations, stormwater run-off plunge pool

retro-fits, bio-retention bay installations, golf course nitrogen reduction & management BMPs, stormwater infiltration BMPs

Operation & Project Plan Annexes

- *Sherwood Forest Shore Line Survey & Plan.* J. Flood & D. Schermerhorn, 1994.
- *The Downs on the Severn Community Shoreline Plan.* J. Flood & D. Schermerhorn, September 1997.
- *Restoration of Brewer Creek, A Demonstration Project in Restoring a Watershed.* W. Moulden, 1996, 1997 (v.2), 1998 (v.3), 1999 (v.4), 2001, (v.5).
- *Hidden Pond Fish Habitat Restoration Project.* K. Underwood & D. Wallace, 2002.
- *The Peninsula Project.* J. Flood & W. Moulden, March 1994.
- *Non-Tidal Nutrient Reduction System: The Edgehill Ravine.* K. Underwood & D. Wallace, 1995.
- *Rebuilding Oyster Reefs in the Severn River: The Boys & Girls of Sherwood Forest Initiative.* W. Moulden, 1994.
- *Reforestation of Baygrasses to the Severn River: The Brewer Point Aquatic Grass Nursery.* W. Moulden & J. Flood, 1995.
- *Preservation of the Green Cathedral.* W. Moulden, 1998.
- *Aquaculturing of Finfish in Tidal Waters, Restoration of Yellow Perch to the Severn River.* W. Moulden, May 1996.
- *Howard's Branch Stream Restoration & Wetland Enhancement Project.* K. Underwood & D. Wallace, 2000.

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- *A Census of Atlantic White Cedar, Chamaesypris thyoides on the Western Shore of Maryland.* P. Sheridan, K. Underwood, J. Boersman-Cole, R. Muller, J. Kibby, August 1997.
- *Population Genetic Analysis and Interpretation For Protection of Atlantic White Cedar (Chamaesypris thyoides): In Coastally Restricted Forests.* R. Eckert, 1995.
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- *Propagation of Atlantic White Cedar by Stem Cuttings.* L. Hinesley, F. Blazich, L. Snelling, 1994.
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- *Cost Analysis For Non-Point Source Control Strategies in the Chesapeake Basin.* Chesapeake Bay Program (EPA), May 1995.
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