

CHAPTER 7.7 CHESAPEAKE BAY PROGRAM INITIATIVES

The Commonwealth of Virginia has 120 miles of Atlantic Ocean coastline and approximately 2,200 square miles of estuary. The estuarine waters of Chesapeake Bay and its tidal tributaries are valued for their commercial fishing, wildlife, sporting, and recreational opportunities, as well as its commercial values in shipping and industry. In the late 1970's, adverse trends in water quality and living resources were noted and prompted creation of the Federal-Interstate Chesapeake Bay Program (CBP).

Through participation in the CBP and implementation of special state initiatives, Virginia maintains a firm commitment to rehabilitate and wisely manage its estuarine resources. This chapter provides an overview of the state's initiatives intended to restore and preserve the Chesapeake Bay and its tidal tributaries.

More about the Chesapeake Bay Program can be found on their website: <http://www.chesapeakebay.net/>.

Chesapeake Bay Program and the Bay TMDL

In 1983, Virginia, Maryland, Pennsylvania, the District of Columbia, the Environmental Protection Agency, and the Chesapeake Bay Commission signed the first Chesapeake Bay Agreement, formally initiating the restoration and protection of the Bay using a cooperative Chesapeake Bay Program approach. This approach established specific mechanisms for its coordination among the Program participants. Over the past decades several updated and new Bay Agreements, Executive Council Directives and pollution reduction strategies have been adopted by the Bay Program partners, generally refining and making the goals and objectives of the restoration effort more specific, establishing timelines and measurable outcomes to gauge progress.

On June 28, 2000, the Chesapeake Executive Council signed Chesapeake 2000 – a far-reaching agreement that has been guiding Maryland, Pennsylvania, Virginia, the District of Columbia, the Chesapeake Bay Commission, and the U.S. Environmental Protection Agency (EPA) in their combined efforts to restore and protect the Chesapeake Bay. Chesapeake 2000 outlined over 100 commitments in five program areas – Living Resource Protection and Restoration, Vital Habitat Protection and Restoration, Water Quality Protection and Restoration, Sound Land Use, and Stewardship and Community Engagement – detailing protection and restoration goals critical to the health of the Bay watershed. From pledges to increase riparian forest buffers, preserve additional tracts of land, restore oyster populations and protect wetlands, Chesapeake 2000 pushed improving water quality as the most critical element in the overall protection and restoration of the Bay and its tributaries.

On June 16, 2014, the Chesapeake Executive Council signed the Chesapeake Bay Watershed Agreement – an update to the Chesapeake 2000 agreement. Representatives from Maryland, Pennsylvania, Virginia, the District of Columbia, the Chesapeake Bay Commission, and the U.S. Environmental Protection Agency (EPA) reaffirmed their support of the partnership. The 2014 agreement recommits partners to the Bay watershed restoration effort and emphasizes the need for a strategic, cost-effective approach to watershed restoration and protection. New signatories include New York, West Virginia and Delaware; over 12 federal agencies have also committed to restoration and protection efforts. The 2014 Watershed Agreement outlined 10 goals for five program areas – Abundant Life, Clean Water, Climate Change, Conserved Lands, and Engaged Communities – including the development and implementation of management strategies for the outcomes supporting goals outlined in the Agreement.

Despite some reductions in pollution resulting from nutrient load reduction efforts, the Chesapeake Bay and most of its tidal tributaries have been placed on the “impaired waters” list due to non-attainment of water quality standards. Per Section 303(d) of the Clean Water Act, this action necessitated the development of a “total maximum daily load” (TMDL). Since 2005 DEQ and regulatory agencies across seven jurisdictions (Virginia, Maryland, Delaware, West Virginia, Pennsylvania, New York, and the District

of Columbia) have been actively involved with EPA in the development of this TMDL, the largest ever developed to date. The Chesapeake Bay TMDL, approved December 31, 2010 by EPA, is an aggregation of smaller TMDLs representing the 92 individual tidal segments (39 of which belong to Virginia) comprising the Bay and its tributaries. The TMDL sets Bay watershed annual limits of 185.9 million pounds for nitrogen (25% reduction), 12.5 million pounds of phosphorus (24% reduction), and 6.45 billion pounds of sediment (20% reduction). These limits are divided by jurisdiction and major river basin as determined by modeling, on-the-ground monitoring data, and peer-reviewed science. A goal has been set to put all pollution control measures in place by 2025, with 60% of actions being completed by 2017. Increased dissolved oxygen concentrations, improved water clarity and growth of submerged aquatic vegetation (SAV), and the reduction in the frequency and size of algal blooms (as measured by chlorophyll a concentrations) are among the anticipated outcomes in water quality from these actions. More about the Chesapeake Bay TMDL can be found here: <http://www.epa.gov/reg3wapd/tmdl/ChesapeakeBay/tmdlexec.html>.

In Virginia, the Department of Environmental Quality (DEQ) has primary responsibility for point source discharge, non-point source control programs, bringing together programs in the areas of surface and groundwater protection, waste management, and air pollution control. Other state and federal agencies that provide vital support include: Department of Conservation and Recreation, Game and Inland Fisheries, Forestry, Health, Marine Resources Commission, Agriculture and Consumer Services, the United States Geological Survey and the scientific community via agreements with the Virginia Institute of Marine Science, Old Dominion University and Virginia Commonwealth University.

Watershed Implementation Plan

Virginia's Watershed Implementation Plan (WIP) for the Bay TMDL is an evolution of Virginia's Tributary Strategies Program started in 2005. It was designed through a collaboration of agencies under the Secretary of Natural Resources, local and regional non-regulatory governmental bodies, concerned citizen groups, and the regulated community to accomplish the allocation goals set by the Bay TMDL. The first of three phases of the WIP establishes the authorities, actions, and control measures that will be implemented to achieve the non-point and point source TMDL allocations. It allocates basin-specific pollution loads to wastewater treatment plants, agriculture, forest, urban stormwater, septic, and air sources. It is anticipated that many of these allocations will be achieved through the enforcement of current and proposed regulations. Proposed tax credits and existing grant programs (such as Virginia's Water Quality Improvement Fund) will facilitate Best Management Practices (BMPs) and system upgrades that prevent and/or reduce nutrient and sediment pollution. Use of the existing Nutrient Credit Exchange program is also incorporated into the plan. Additionally, the WIP charts out a study designed to evaluate the numeric chlorophyll a standards used to determine nutrient impairment in the tidal portion of the James River. More information about Virginia's Phase II WIP can be found at the following website: <http://www.deq.virginia.gov/Portals/0/DEQ/Water/TMDL/Baywip/vatmdlwipphase2.pdf>. Virginia is currently preparing its Phase III WIP, which will include a more focused and sustainable local engagement effort and local strategies, as described here: <http://www.deq.virginia.gov/Programs/Water/ChesapeakeBay/ChesapeakeBayTMDL/PhaseIIIWatershedImplementationPlanning.aspx>. This planning is partially informed by the midpoint assessment – a review of the progress Virginia has made towards meeting the nutrient and sediment pollutant load reductions necessary for Bay restoration. Virginia reports on progress in the annual report on Chesapeake Bay and Virginia Waters Clean-Up Plan. The latest report is found at [http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/RD4002016/\\$file/RD400.pdf](http://leg2.state.va.us/dls/h&sdocs.nsf/By+Year/RD4002016/$file/RD400.pdf).

Water Quality and Habitat Monitoring Initiatives

Chesapeake Bay Program

Monitoring is vital to understanding environmental problems, developing strategies for managing the Bay's resources, and assessing progress of management practices. The purpose of the Chesapeake Bay Program (CBP) Water Quality and Habitat Monitoring Program is to assess status and trends in

water quality and living resources throughout the Virginia portion of the Bay and its major tidal tributaries. Parameters monitored include those directly related to Water Quality Standards (e.g. dissolved oxygen, water clarity, chlorophyll *a*, etc.) as well as basic ecological health indicators such as primary productivity, nutrients, phytoplankton species, etc. A general description of Virginia's Chesapeake Bay monitoring program is:

- Water quality monitoring at 45 fixed stations on the Rappahannock, York and James Rivers;
- Water quality monitoring at 27 fixed stations in the Chesapeake Bay mainstem;
- Water quality monitoring and estimates of nutrient loading at stations on the James, Rappahannock, Mattaponi, Pamunkey, Shenandoah, Appomattox, Chickahominy and other smaller rivers throughout the Bay watershed;
- Monitoring of benthos communities in the Bay and its tributaries at 19 fixed stations and 100 random stations per year;
- Spatially and temporally intensive monitoring of selected water quality parameters on a rotating waterbody basis for 3-year periods.
- Annual aerial submerged aquatic vegetation surveys through-out the Bay and its tributaries.

Estuarine Probabilistic Monitoring Program (Coastal 2000)

A less extensive monitoring program which probabilistically samples all of VA's estuarine waters (including those outside the Bay watershed such as on the Atlantic coast of the Eastern Shore, Back Bay, and North Landing River) is the "National Coastal Assessment (NCA) Program", formerly known as the "Coastal 2000 Initiative". A detailed description of this program is provided in Chapter 3.2.

Habitat Restoration

The Bay Program partnership implements programs to [restore](#) critical habitats and tracks progress on an annual basis. These efforts not only restore habitat for wildlife and fisheries, but they also improve water quality. Since 2003, 173 acres of submerged aquatic vegetation were planted Bay-wide. Between 2010 and 2012, 5,503 acres of wetland were established Bay-wide. Since 1988, 2,576 miles of fish passage (primarily via dam removals) were restored Bay-wide. As of 2014, oyster restoration efforts have taken place in the Lynnhaven, Piankatank, and Lafayette Rivers. For more information on DEQ's role in coastal habitat restoration, see Chapter 7.5.

The 2014 Watershed Agreement included a [Vital Habitats Goal](#) to "restore, enhance and protect a network of land and water habitats to support fish and wildlife and to afford other public benefits, including water quality, recreational uses and scenic value across the watershed." Goal outcomes addressed the following areas of concern: wetlands, black duck population, stream health, brook trout population, fish passage, submerged aquatic vegetation, forest buffers, and urban tree canopy,

Toxics

The 1987 Chesapeake Bay Agreement committed signatories to develop, adopt and begin implementation of a basin-wide toxics strategy to achieve a reduction of toxic pollutants consistent with the Water Quality Act of 1987. Following the implementation of a multi-jurisdictional effort to define the nature, extent, and magnitude of toxics problems, the strategy was further strengthened with the adoption of the 1994 Basin-Wide Toxics Reduction and Prevention Strategy. The primary goal of the 1994 strategy was to have a "*Bay free of toxics by reducing and eliminating the input of chemical contaminants from all controllable sources to levels that result in no toxic or bioaccumulative impact on living resources that inhabit the Bay or on human health*".

Building upon progress achieved through the implementation of the 1994 Strategy, the Chesapeake Bay Program adopted a revised strategy in December 2000 known as the "Toxics 2000 Strategy". With the

retention of the 1994 goal, new objectives and commitments were developed and incorporated. The agreement made commitments to four goals: 1) prevent and reduce chemical contaminant inputs and eliminate toxic impacts on living resources that inhabit the Bay and rivers 2) eliminate all chemical contaminant-related fish consumption bans and advisories, 3) clean up contaminants in the sediment in the three most urbanized areas referred to as “Regions of Concern” (i.e., Baltimore Harbor, Anacostia River, Elizabeth River), and 4) sustain progress in the face of increasing population and expanded development within the watershed. Though much of the pollution control measures since 2000 have focused on nutrients and sediments, progress has been made on accomplishing these goals through the collaborative work of federal, jurisdictional, and non-governmental organizations. One success story is the removal of sediments contaminated by polyaromatic hydrocarbons and other pollutants from the Elizabeth River. The Toxic 2000 Strategy also includes commitments to the continued monitoring and reporting of toxics and their biological impacts. [Toxic Contaminants in the Chesapeake Bay and its Watershed: Extent and Severity of Occurrence and Potential Biological Effects](#)¹ provides the most recent overview of this work.

The 2014 Watershed Agreement established a [Toxic Contaminants Goal](#) to “ensure that the Bay and its rivers are free of the effects of toxic contaminants on living resources and human health.” Goal outcomes included increased research efforts related to the impact and mitigation of toxic contaminants as well as improved policy and prevention efforts.

¹ US Environmental Protection Agency, US Geological Survey, US Fish and Wildlife Service, 2012 *Toxic Contaminants in the Chesapeake Bay and its Watershed: Extent and Severity of Occurrence and Potential Biological Effects*, USEPA Chesapeake Bay Program Office, Annapolis, MD, December, 2012, 175 pages
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