Chesapeake Bay Program

Spotfire
Brief History
Report to Congress
Data and Metadata Sources
Indicator Matrix

Spotfire

For Internet Explorer Users and Those Wanting Full Screen Display Use: Web Player Get Spotfire for iPad App

Brief History

Monday, September 8, 2008: Created the chesapeakeactionplan.wik.is and populated it with the essential content for seeing if the Chesapeake Bay Program Office and its partners wants to use this further. Still have to input the template for the CAP Application Reporting System.

November 4, 2009: Fairfax County Times, Opinion, Commentary by David Schnare, A fresh approach to the Chesapeake Bay: What if the computer model is wrong, and what if enforceable limits are disconnected from reality?

May 1, 2010: Restart work on this wiki pilot with a focus on dashboards using Spotfire. See Dashboards and Previous Version

Report to Congress

Strengthening the Management, Coordination, and Accountability of the Chesapeake Bay Program
U.S. EPA Region 3, Chesapeake Bay Program Office (3C800), Annapolis, Maryland, In cooperation with the Chesapeake Bay Program Partners. CBP/TRS-292-08. 122 pages. July 2008.

Executive Summary
Data and Metadata Sources

Definition: A Health and Restoration Assessment of the Chesapeake Bay and Watershed is the annual assessment of the Chesapeake Bay Program partnership's progress toward meeting its health and restoration goals.

Indicator Data: http://www.chesapeakebay.net/indicator?item=15038

Metadata: http://www.chesapeakebay.net/status?menuitem=28514

Wiki Data: Bay Barometer and Bay Watershed Climate

ChesapeakeStat: http://stat.chesapeakebay.net/?q=node/3

The funding databases was queried for All Funding Sources, All Goals, All States, All Topics, and All Years, and those results were organized into a new spreadsheet for import into Spotfire. The goal was to produce a simple visualization of the funding database with multiple adjacent panes of graphics (pie and line charts) and data tables.

Indicator Matrix

<table>
<thead>
<tr>
<th>Concept and Definition</th>
<th>Status</th>
<th>Metadata and Data</th>
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<th>Status</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Bay Health, which provides information about the status of Bay water quality, habitats and lower food web, and fish and shellfish abundance.</td>
<td>Despite a 6 percent improvement in health since 2008, the Bay continues to have poor water quality, degraded habitats, and low populations of many fish and shellfish species. Based on these three areas, the overall health averaged 45 percent. The</td>
<td>Metadata and Data</td>
<td>Water Quality: Water quality was again very poor in 2009, meeting just 24 percent of health goals, a 2 percent increase from 2008.</td>
<td>Metadata and Data</td>
<td></td>
</tr>
</tbody>
</table>
modest gain in the health score in 2009 was due to a large increase in the adult blue crab population, expansions of underwater grass beds growing in the Bay's shallows, and improvements in water clarity and bottom habitat health.
### Chemical Contaminants:
Chemicals or compounds that can potentially harm the health of humans, wildlife and aquatic life. Toxics are constantly entering the Chesapeake Bay and its tributaries via wastewater, agriculture, stormwater and air pollution. While chemicals such as DDT and PCBs have been banned from production for years, many chemical contaminants are still widely used or persist in the environment.

*Based on the 2008 303(d) assessments,* 25 of the 89 monitored tidal water segments (28 percent) were unimpaired by chemicals. This represents a 6 percent decrease from 2007. The other 64 segments contained impairments in at least part or all of the segment. The 2009 status is based on the 2008 assessments, since 303(d) lists are updated every other year and will not be updated again until 2010.

### Habitats and Lower Food Web:
The Bay’s critical habitats and lower food web showed signs of improvement in 2009, increasing by 7 percent from 2008. However, they remain far below what is needed to support thriving populations of underwater life.

### Bay Grass Abundance:
More than 16 species of underwater bay grasses—also called submerged aquatic vegetation or SAV—are found in the Chesapeake Bay and its tributaries. Bay grasses are an excellent measure of the Bay’s overall condition because they are not under harvest pressure and their health is closely linked to the overall health of the Bay.

In 2009, there were 85,899 acres of bay grasses throughout the Bay, which was 46 percent of the goal and an increase of 9,039 acres from 2008.

### Phytoplankton:
Plankton are free-floating...
Plankton are generally microscopic plants, animals, and bacteria that are part of the lower food web. They generally have limited or no swimming ability; instead, they are transported by tides and currents. The name plankton is derived from a Greek word that means "wanderer."

Bay's surface waters met the phytoplankton goal, an increase of 1 percent from 2008.

Bottom Habitat: Benthos - The organisms that live on and in the Chesapeake Bay's bottom sediments are known as benthos, a name derived from the Greek word meaning "depths of the sea." The benthic community is complex and comprises a wide range of plants, animals, and bacteria from all levels of the food web.

In 2009, 56 percent of the area of the Bay and its tidal tributaries met the bottom habitat restoration goals, which is a 15 percent increase from the previous year and a record high level.

Tidal Wetlands Abundance: Wetlands are transitional areas between land and water. While some wetlands are noticeably wet, others do not always have visible water. An area is defined as a wetland based on its soils and vegetation. Tidal, or estuarine, wetlands are flooded with salt or brackish water when tides rise. Tidal wetlands are found along the shores of the Bay and the tidal portions of streams, creeks, and rivers. As of 2005, there were approximately 283,946 acres of tidal wetlands.
Bay Fish and Shellfish Abundance:

Most fish and shellfish populations in the Bay remain far below desired levels. Overall, 59 percent of the health goals for fish and shellfish abundance have been met, a 9 percent increase from 2008.

Blue Crab Abundance:

There's nothing more "Chesapeake" than the Bay's signature crustacean, the blue crab. Callinectes sapidus ("beautiful swimmer" and "savory") is an aggressive, bottom-dwelling predator and one of the most recognizable species in the Bay.

In 2009, the population of spawning-age blue crabs in the Bay was 223 million, or 112 percent of the goal. This is a substantial increase from 2008, when the population was 131 million, or 66 percent of the goal.

Native Oyster Abundance:

The eastern oyster is one of the most famous and recognizable aquatic species in the Chesapeake Bay. While not everyone enjoys eating this peculiar-looking bivalve, we can all appreciate the vital functions oysters serve in the Bay's ecosystem, as well as their cultural and economic importance to the region.

Based on the most recent data from 2008, there are 3.24 billion grams of oyster biomass, or about 10 percent of the goal.

Striped Bass Abundance:

Striped bass — also known as rockfish or stripers — has been one of the most sought-after commercial and recreational fish in the Chesapeake Bay since colonial times. After a steep population decline in the 1980s, Chesapeake Bay striped bass are now at their highest numbers in decades.

Female striped bass spawning stock biomass has exceeded the target (goal) since 1995. In 2008, striped bass abundance measured 122 million pounds (148 percent of the goal).
Shad Abundance: American shad is the best-known of the six species of shad and herring that live in the Chesapeake Bay. *Alosa sapidissima* (meaning “most delicious” in Latin) is an important anadromous species that once supported the most valuable finfish fishery in the Bay.

Based on the most recent data from the James, Potomac, Susquehanna, and York rivers, the estimates of Bay-wide shad abundance is 27 percent of goal achieved in 2009.

### Juvenile Menhaden Abundance:
Atlantic menhaden is a keystone species that forms a critical link between the lower and upper levels of the Bay food web. In addition, menhaden make up one of the oldest and largest commercial fisheries on the Atlantic coast.

Researchers in Maryland measure juvenile menhaden abundance by casting nets and recording the number of hauls where menhaden are present. In 2009, the proportion of positive hauls was 22 percent.

### Factors Impacting Bay and Watershed Health

Factors Impacting Bay and Watershed Health, which explains contributors to pollution in the Bay and its rivers.

The impact of human activity is overwhelming nature and offsetting cleanup efforts in the Bay and its watershed.

**Metadata and Data** (none)

### Pollutants:
The Chesapeake Bay and its rivers are unhealthy primarily because of pollution from excess nitrogen, phosphorus and sediment. The main sources of these pollutants are agriculture, urban and suburban runoff, wastewater, etc.

**Metadata and Data** (none)
and air pollution.

2009 water year was 30.8 billion gallons per day (BGD). This is 6.6 BGD less than 2008 and 16 BGD less than the 46.9 BGD average flow from 1990-2009.

Phosphorus: Phosphorus is a type of nutrient contributing to the Bay's poor water quality. While phosphorus is vital to plant life, human activities—from applying fertilizers to using household cleaners—contribute more phosphorus than the Bay's waters can handle. Elevated phosphorus levels cause more algae to grow, blocking out sunlight and reducing oxygen for fish, blue crabs and other Bay life.

Provisional estimates indicate that 11.3 million pounds of phosphorus reached the Bay during the 2009 water year (October 2008-September 2009). This is 3.1 million pounds less than 2008 and 9.5 million pounds less than the 20.8 million pound average load from 1990-2009.

Annual average river flow to the Bay during the 2009 water year was 30.8 billion gallons per day (BGD). This is 6.6 BGD less than 2008 and 16 BGD less than the 46.9 BGD average flow from 1990-2009.

Sediment: Sediment is made up of loose particles of clay, silt and sand. It is a natural part...
of the Chesapeake Bay, created by the weathering of rocks and soil. However, in excess, sediment clouds the waters of the Bay and its tributaries, which harms fish, oysters and underwater bay grasses.

Sediment from nontidal rivers reached the Bay during the 2009 water year (October 2008-September 2009). This is 1.6 million tons less than 2008 and 2 million tons less than the 4 million ton average load from 1990-2009.

Annual average river flow to the Bay during the 2009 water year was 30.8 billion gallons per day (BGD). This is 6.6 BGD less than 2008 and 16 BGD less than the 46.9 BGD average flow from 1990-2009.

Chemical Contaminants (used elsewhere) chemicals or compounds that can potentially harm the health of humans, wildlife and aquatic life. Toxic chemicals are constantly entering the Chesapeake Bay and its tributaries via wastewater, agriculture, stormwater and air pollution. While chemicals such as DDT and PCBs have been banned from production for years, many chemical contaminants are still widely used or persist in the environment.

Based on the 2008 303(d) assessments, 25 of the 89 monitored tidal water segments (28 percent) were unimpaired by chemicals. This represents a 6 percent decrease from 2007. The other 64 segments contained impairments in at least part or all of the segment. The 2009 status is based on the 2008 assessment.
The Bay’s decline is directly linked to the rise in population and corresponding development in the watershed.

**Land Use:**

Metadata and Data (none)

**Natural Factors:**

Annual rain and snowfall influence the amount of water that flows in rivers.

Metadata and Data (none)
Pollution entering the Bay each year generally corresponds with the volume of water that flows from its tributaries and the concentration of pollutants in that water.

<table>
<thead>
<tr>
<th>River Flow</th>
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<tbody>
<tr>
<td>Each day, billions of gallons of fresh water flow through thousands of streams and rivers that eventually empty into the Bay. That fresh water also carries polluted runoff from the Bay's 64,000 square-mile watershed. The amount of pollution in the Bay each year is largely determined by a combination of the amount of pollution on the land and the amount of water flowing into the Bay from its many tributaries. Precipitation increases river flow because the water washes off the land and into streams and rivers. In addition, some water seeps into the soil and into groundwater. It can take years, even decades, for these waters—and the pollutants they may carry—to slowly travel through underground systems until they reach the streams that drain into the Bay.</td>
</tr>
</tbody>
</table>

**Annual average river flow to the Bay during the 2009 water year (October 2008-September 2009) was 30.8 billion gallons per day. This is 6.5 billion gallons per day less than 2008 and 17.6 billion gallons per day less than the 48.4 billion gallon per day average flow from 1938-2009.**
Other Pressures:

Climate change, invasive species and fisheries harvest are additional factors that impact the health of the Bay ecosystem.

Metadata and Data (none)
Restoration and Protection Efforts, a summary of the Bay Program’s efforts to reduce pollution, restore habitats, manage fisheries, protect watersheds and foster stewardship.

New restoration programs and projects were put in place in 2009, but resulted in only incremental gains toward goals. The measures for restoration and protection efforts averaged 64 percent, a three percent increase from 2008.

Bay Program partners have implemented 62 percent of needed efforts to reduce nitrogen, phosphorus and sediment pollution, which is a 3 percent increase from 2008.

Reducing Pollution:

Metadata and Data (used before)
and discharge nutrients into groundwater.

99 percent of the wastewater phosphorus goal, which is a 3 percent increase from the previous year. Decreases in the amount of nutrients discharged from wastewater treatment plants account for a large portion of the estimated nutrient reductions in the watershed to date.

Wastewater Phosphorus: Treated wastewater released from municipal and industrial wastewater facilities.

Urban/Suburban Nitrogen: Nitrogen from developed lands that range from major cities to small, single subdivisions.

Population growth and development are offsetting the Bay Program's efforts to reduce pollution from urban and suburban land and septic systems. The increases in population and construction have also surpassed the gains achieved from improved landscape design and stormwater practices.
Additionally, it is still challenging to comprehensively account for on-the-ground control practices.

**Urban/Suburban Phosphorus:** Phosphorus from developed lands that range from major cities to small, single subdivisions.

**Urban/Suburban Sediment:** Sediment from developed lands that range from major cities to small, single subdivisions.

**Air Nitrogen:** Emissions from vehicles, industries, agriculture, electric utilities and other sources.

As of 2009, the Bay Program partners have met 9 percent of the goal for air pollution controls necessary to reduce nitrogen, which reflects no significant improvement from the previous year. While progress in this area is limited, it is expected to accelerate over the next several years as recently approved air pollution control measures take effect.

**Related Indicators:**

**Nitrogen in Rivers**
Entering Chesapeake Bay: Flow Adjusted Concentration Trends through 2008: Changes in nitrogen concentrations for the period 1985-2008 at 34 stream sites in the Chesapeake Bay watershed. Adjusted trends are downward, with 25 sites showing decreasing trends. Two sites show increasing trends. Seven sites show trends that are not statistically significant. Downward trends in flow-adjusted concentrations indicate improvements in water quality conditions, while upward trends may be used to identify watersheds that may require an increased level of pollution control.

Related Indicators: Phosphorus in Rivers Entering Chesapeake Bay: Flow Adjusted Concentration Trends through 2008: Changes in phosphorus concentrations have been determined for the period 1985-2008 at 34 stream sites in the Chesapeake Bay watershed. The majority of the flow-adjusted trends are downward, with 22 sites showing decreasing trends. Four sites show increasing trends. Eight sites show trends that are not statistically significant. Downward trends in flow-adjusted concentrations indicate improvements in water quality.
Restoring Habitats:

Efforts to restore habitats throughout the watershed achieved modest gains in 2009, with progress toward the overall goal at 63 percent, an 8 percent increase from 2008.

Metadata and Data (used before)
is closely linked to the overall health of the Bay.

Restoring Wetlands: Increasing both the quality and number of wetland acres in the Bay watershed.

In 2009, 609 acres of wetlands were established or reestablished in Maryland, Pennsylvania, Virginia and the District of Columbia. The restored total stands at 13,614 acres, or 54 percent of the goal.

Reopening Fish Passage: Removing dams, culverts and other man-made obstructions or installing fish lifts, ladders and other passageways that block or impede fish migrations to historic upstream spawning habitats.

The Bay Program's fish passage efforts are long-standing and generally successful. From 1988 through 2005, Bay Program partners opened 1,838 miles of fish passage, surpassing their original 1,357-mile restoration goal. In early 2005, the partners committed to increasing the restoration goal to 2,807 miles by 2014. In 2009, 16 miles of fish passage were restored. This brings the total to 2,339 miles, or 83 percent of the goal.

http://semanticommunity.info/Chesapeake_Bay_Program

Updated: Wed, 23 Sep 2015 02:32:24 GMT
Powered by mindtouch
Restoring Oyster Reefs:

An aquatic reef, or oyster reef, is a solid, three-dimensional ecological community made up of densely packed oysters. Healthy reefs form when oyster larvae attach to larger oysters at the bottom of the Bay. Layers of oysters grow upward and outward, creating hard surfaces over the bottom that provide habitat for numerous aquatic species.

In 2009, habitat restoration efforts took place on 1,148 acres of oyster reefs. This brings the total acreage treated since 2007 to 2,867, or 116 percent of the 2010 target (goal). Although the target has been achieved, oyster restoration must continue in order to increase ecological benefits and sustain a commercial fishery.

Managing Fisheries:

Overall work to develop ecosystem-based fisheries management plans for blue crabs, oysters, striped bass, Atlantic menhaden and American shad stands at 51 percent.

Metadata and Data (used before):
Management index does not fully capture the work being done to develop ecosystem-based fisheries management plans. In 2010, the Bay Program will create a new index for monitoring progress toward ecosystem-based fisheries management.

### Oyster Fishery Management

Same as above.

### Striped Bass Fishery Management

Same as above.

### Shad Fishery Management

Same as above.

### Menhaden Fishery Management

Same as above.

### Protecting Watersheds:

Progress was made toward protection of the thousands of smaller watersheds in the region during 2009, with a 2 percent gain toward the overall goal. Overall, the partnership is 77 percent of the way toward its goals for protecting watersheds.

### Planting Forest Buffers:

Riparian, or streamside, forest buffers provide habitat for wildlife, stabilize stream banks from erosion and keep river waters cool, an important factor for many fish. Well-maintained forest buffers also naturally absorb nutrients and sediments, helping to improve the health of neighboring streams and rivers. From September 2008 to August 2009, about 722 miles of forest buffers were planted, for a total of 6,858 miles since 1996. This is 69 percent of the goal, a 7 percent increase from the previous year.
Developing Watershed Management Plans:

Bay Program partners are working with local governments, community groups and watershed organizations to develop and implement locally supported watershed management plans. These plans are a method for maintaining, protecting and restoring the natural resources within a watershed, while also enhancing the quality of life in our communities.

In 2009, watershed plans were developed for 20,661 acres, bringing the total to 13.9 million acres. This represents 61 percent of the goal.

Preserving Lands:

Land in the Chesapeake Bay watershed is a finite resource. Once a natural area such as a forest or a wetland is developed into a housing subdivision or shopping center, it is lost forever. Preserving land for use as parks, wildlife refuges and historic sites provides wildlife with the habitat they need to survive, filters pollution before it can flow to the Bay and its tributaries, and gives people a place to visit and enjoy the natural beauty of our region.

In 2009, 132,873 acres of land were preserved. This brings the total amount of land protected to 7.14 million acres, which surpasses the 2010 goal. Preservation efforts will continue, because in December 2007 the Bay states committed to permanently conserve an additional 695,000 acres of forested land throughout the watershed by 2020.

Fostering Stewardship:

Programs to foster the public’s stewardship of our region.

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Metadata and Data (used before)
the Chesapeake Bay and its watershed resulted in a score of 67 percent, which reflects an increase of 2 percent from 2008.
Healthy freshwater streams are intrinsically linked to a healthy Chesapeake Bay. The watershed’s streams, creeks and rivers eventually flow into the Bay, so their water quality has a direct effect on the entire Bay.

**Watershed Health**, a summary of the health of freshwater streams throughout the Bay watershed and pollution trends in those streams.

**Health of Freshwater Streams in the Chesapeake Bay Watershed:**

Between 2000 and 2008, the average stream health scores in 10,452 sampling locations indicated that 5,459 were in very poor or poor condition and 4,656 were in fair, good or excellent condition.

**Nitrogen in Rivers Entering Chesapeake Bay:**

Flow-Adjusted Concentration Trends: Between 1985 and 2008, 25 out of 34 sampling sites showed downward flow-adjusted trends for nitrogen concentrations, while two sites showed upward trends. Trends were not statistically significant at
Flow-Adjusted Concentration Trends: Between 1985 and 2008, 22 out of 34 sampling sites showed downward flow-adjusted trends for phosphorus concentrations, while four sites showed upward trends. Trends were not statistically significant at the remaining sites.
Flow-Adjusted Concentration Trends: Between 1985 and 2008, 13 out of 34 sampling sites showed downward flow-adjusted trends for sediment concentrations, while two sites showed upward trends. Trends were not statistically significant at the remaining sites.