

**TURFGRASS RESTRICTIONS DRIVEN BY  
REGULATORY SCIENCE: THE CHESAPEAKE  
BAY, FLORIDA, VERMONT, AND BEYOND**

*before the*  
**14<sup>TH</sup> Annual New England Regional Turfgrass  
Conference and Show**

*by*  
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**March 10, 2010**

# OUTLINE

- I. What is the Chesapeake Bay and Why is it Important?
- II. The Health of the Chesapeake Bay
- III. Pollutant Limit Goals – TMDLs in the Chesapeake Bay and New England
- IV. Is Turf a Big Part of the Problem?
- V. Why Should You Care? The Domino Effect.
- VI. Conclusions & Recommendations

# I. WHAT IS THE CHESAPEAKE BAY, AND WHY IS IT IMPORTANT?

- It is the largest estuary in the U.S.
- The Chesapeake Bay watershed covers 64,000 mi<sup>2</sup>, parts of 6 states + Washington DC, and more than 100,000 tributaries (EPA Chesapeake Bay Program website, 2010).
- 11,684 miles of shoreline.
- More than 16.6 million people live in the Chesapeake Bay watershed.



<http://www.fws.gov/chesapeakebay/newsletter/Fall04/Wildside.htm>

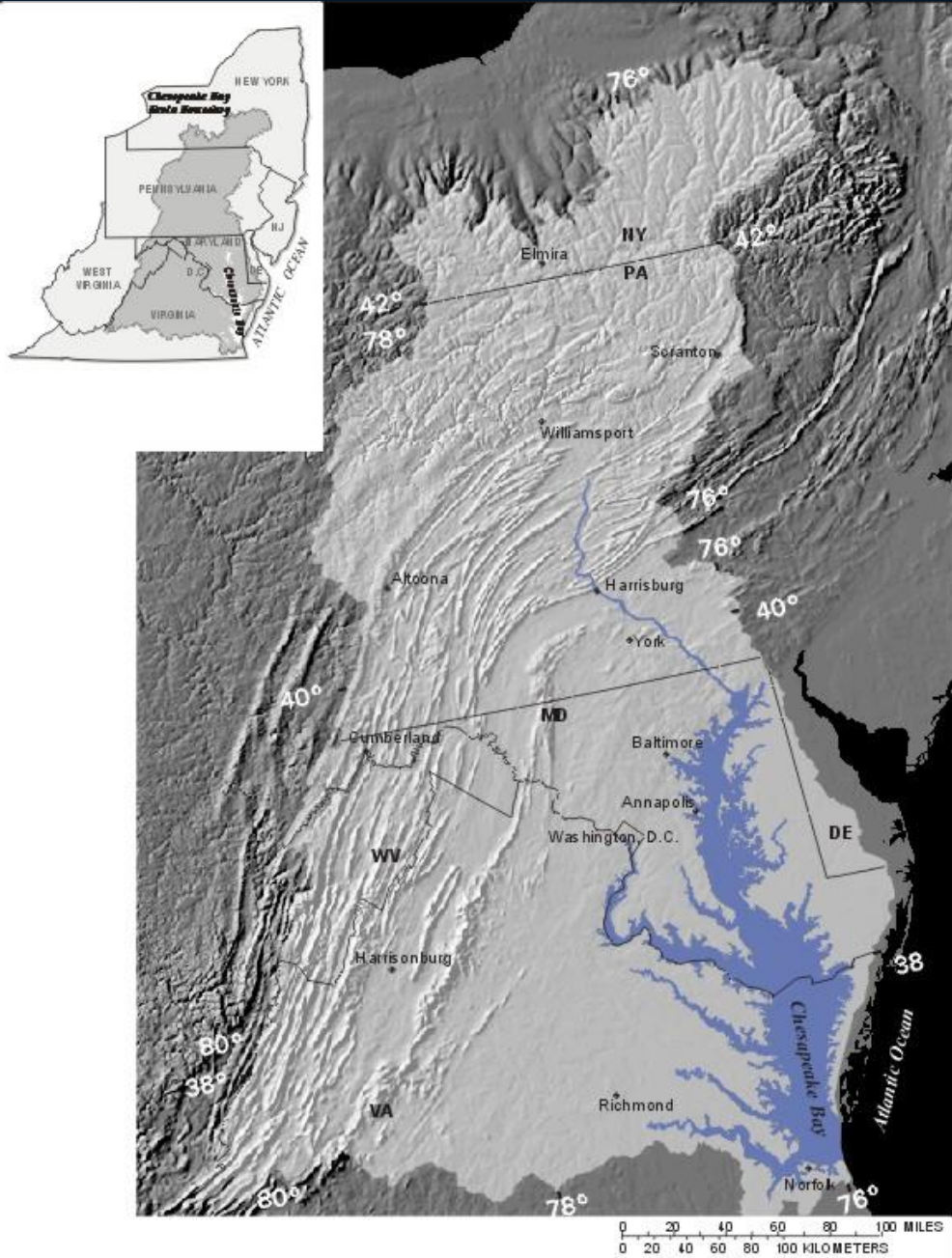


Figure 1. -- The Chesapeake Bay watershed and surrounding area.

# The Importance of the Chesapeake Bay

- It produces approximately 500 million lb/yr of seafood, despite dramatic declines since the 1960s.
- 348 species of finfish, 173 species of shellfish, and winter home to 1 million waterfowl.
- Hunting and fishing.
- 3.8 million acres of turf in the watershed – **the number 1 crop!** (9.5% of total area; EPA, Section 5.1 of 5/12/10 federal land mgmt guidance).



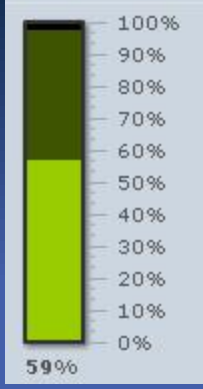
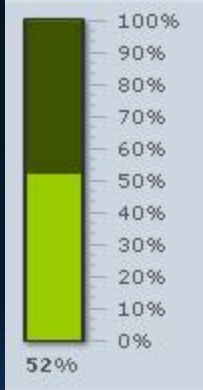
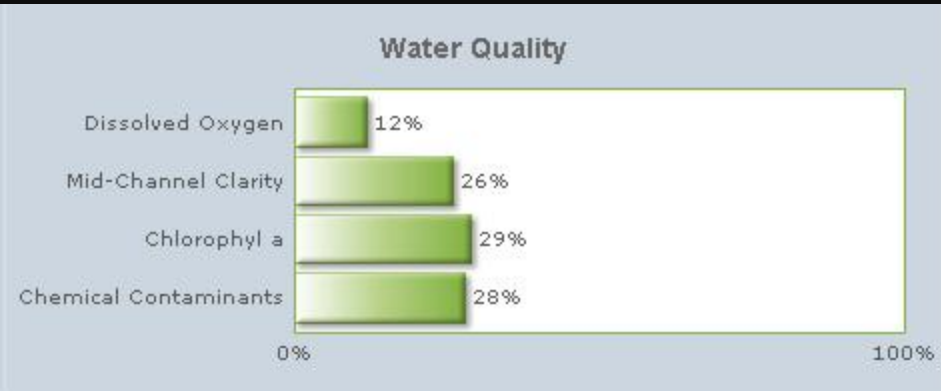
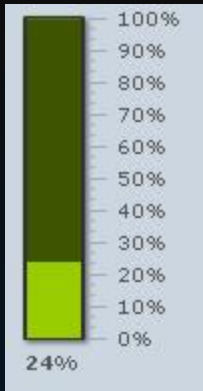
<http://blogs.smithsonianmag.com/science/2009/03/25/environmental-film-festival-review-who-killed-crassostrea-virginica/>



<http://www.nwf.org/Wildlife/Wild-Places/Chesapeake-Bay.aspx>

# II. HOW HEALTHY IS THE CHESAPEAKE BAY?

Not very healthy.



<http://www.chesapeakebay.net/images/BayHealthAnnual2009.jpg>

# III. THE EPA'S GOAL IS TO PROTECT THE BAY VIA THE USE OF TMDLS

Total Maximum Daily Loads for N, P, and sediments (TSS).

TMDLs are used to cap contaminant discharges to impaired surface water bodies; i.e., discharges must be below the TMDL: "... a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards." (EPA TMDL webpage)

TMDLs are often also expressed as an amount of contaminant per season or year.

Driven by a lawsuit filed by the Chesapeake Bay Foundation.

# That's all very nice. But why should we care, here, today?

Federal and state regulators around the country who are responsible for implementing TMDLs are watching this.

For those in the Bay watershed and elsewhere: the other shoe is about to drop. New (Feb. 2011) EPA guidance suggests using the watershed approach throughout the country.

***TMDL-driven restrictions on N and P have begun to affect turf managers – discussed below.***

# TMDLs - - General

- TMDLs are developed pursuant to §303(d) of the Clean Water Act.
- Most TMDLs are based on pathogens, metals, nutrients, and sediment; there are also 24 other pollutant parameters (e.g., pesticides).
- There are 40,199 “impaired waters” surface water bodies with TMDLs in the US (11/22/10).
- States with the most approved TMDLs are PA > **NH** > KS > WV > ID > GA > MS > OH.

# Why Should We Care? (cont'd)

- They place limits on N, P, sediment and other contaminants of surface water.
- *TMDLs can be used to impose restrictions on:*
  - *turf management (N & P)*
  - *turf areas (reductions).*

## Why Should We Care? (cont'd)

- The EPA's Chesapeake Bay TMDL was completed December 29, 2010.
- By 2011, the EPA expects the States/D.C. to allocate their TMDLs down to the local level.
- What are the States/D.C. doing? – Watershed Implementation Plans (WIPs).

# IV. IS TURF A BIG PART OF THE PROBLEM?

## EPA-Modeled Contributions of Urban/Suburban Land Use to the Bay

*(estimates for 2009, published 9/24/10 [TMDL])*

- 8% of the N.
- 15% of the P.
- 16% of the sediment.

(pp. 4-24, 4-41)

# Nutrient TMDLs Projected in New England: Example of Impaired Waterbodies

CT: Quinnipiac R., Thames R., Stamford Harbor, Silver Lake

MA: Blackstone R., Charles R., Eel Pond, Ten Mile R.

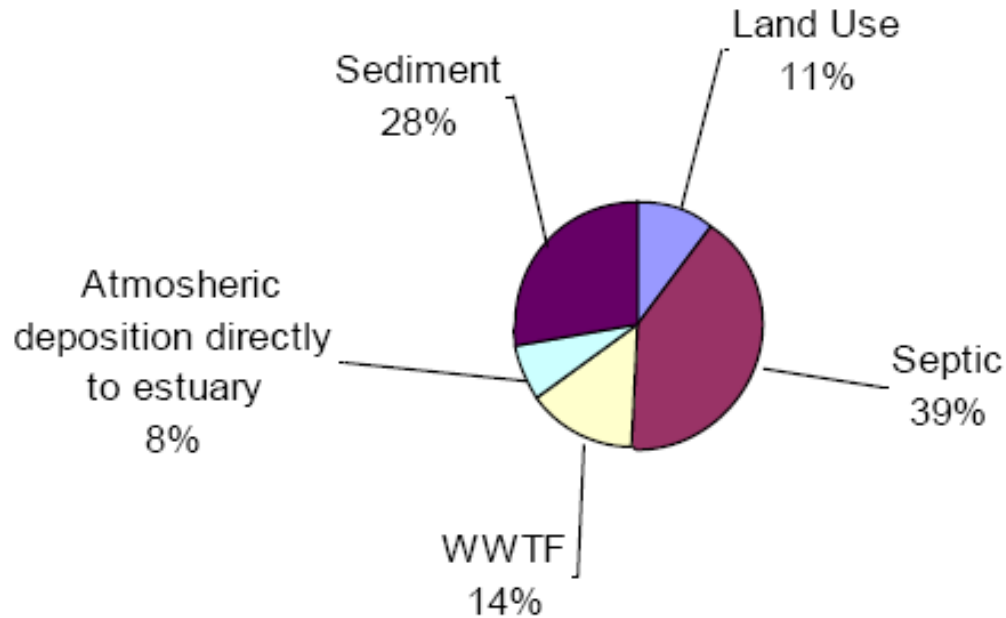
ME: Christina Res., Hammond Lake, Penobscot R.

NH: Contoocook R., Great Bay, Lower Little Bay, Upper  
Portsmouth Harbor

RI: Blackstone R., Greenwich Bay, Lake Washington

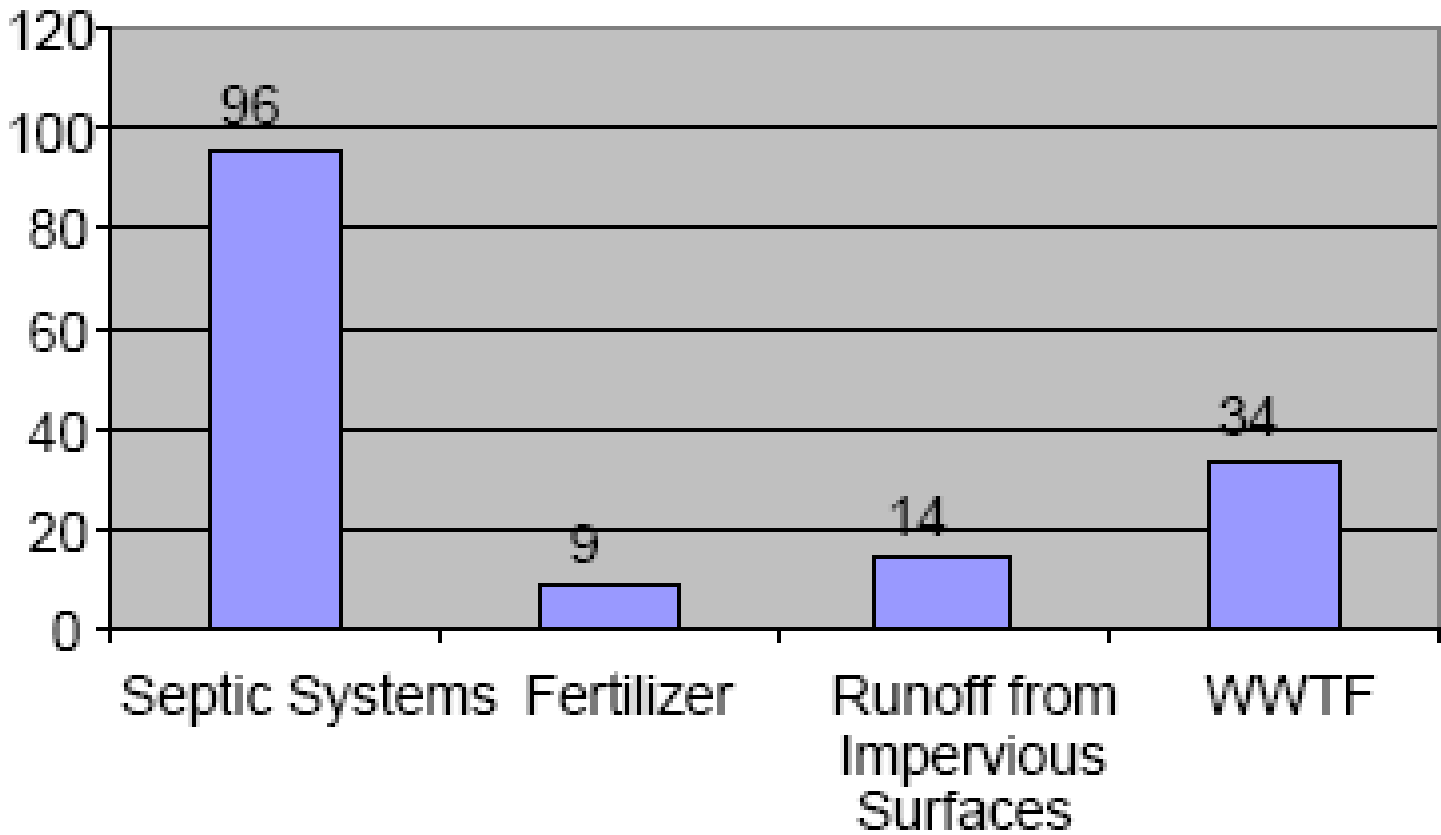
VT: Ticklenaked Pond, Muddy Br., Shelburne Pond (lake)

## Lewis Bay Nutrient Loading



From: DRAFT Lewis Bay System and Halls Creek Total Maximum Daily Loads for Total Nitrogen (Report #96-TMDL-18 Control #314) August 12, 2010. <http://www.mass.gov/dep/water/resources/lewisbay.pdf>

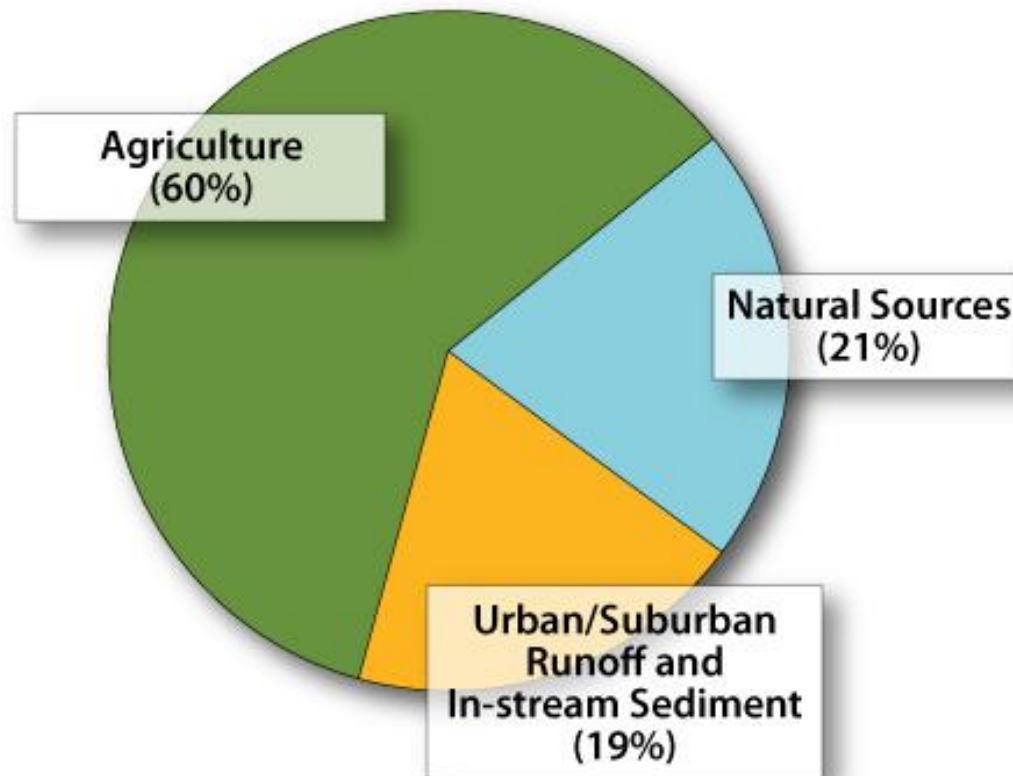
**FIGURE 5: Controllable Nitrogen Loads  
(kg/day) to the Lewis Bay System**



From: DRAFT Lewis Bay System and Halls Creek Total Maximum Daily Loads for Total Nitrogen (Report #96-TMDL-18 Control #314) August 12, 2010. <http://www.mass.gov/dep/water/resources/lewisbay.pdf>

# What is the Modeled Contribution of Sediment (TSS) to the Chesapeake Bay?

## Sources of Sediment to the Bay



Note: Does not include loads from the ocean or tidal shoreline erosion. Loads are based on an average-hydrology year using the Chesapeake Bay Program Watershed Model Phase 4.3 (Chesapeake Bay Program Office, 2009).

# Conclusions from the Modeling

- Agriculture is the largest single contributor of N, P, & TSS to the Bay via fertilizers, tilled cropland, and application of manure. Significant improvements since 1985.
- Urban/suburban fertilization is a relatively small contributor. (But is it 'low hanging fruit'?) Pervious and impervious surfaces, low and high intensity, modern stormwater mgmt, all considered.

## V. Why Care? Uh Oh.

From a June, 2010 letter sent to the 6 Bay governors and D.C. mayor, endorsed by 58 senior policy leaders and senior scientists. (Weingrad, Hughes et al., 2010):

- They advocate costly retrofitting of existing developed areas to limit stormwater contaminant discharges to pre-development rates.
- ***“13) Measures to reduce or eliminate fertilizer usage on residential lawns, golf courses, and public lands should be included in your state’s WIP, including measures to prohibit phosphorus in fertilizers sold for maintenance of such properties.”***

## More Uh Oh

- Florida Ordinances: Sarasota County (2007) + Naples, Collier County Proposal, etc.
- Vermont Draft Ordinance (H. 26) that Models the Florida (and some Chesapeake Bay) Action:
  - Blackout Dates** - - October 15 – April 1
  - SRN** - - All N fertilizer must have at least 15% SRN
  - P** - - No P > 0.67% except for grow-in or repair or deficient or in composted manure ( $\leq 0.25$  lb P/1,000 sq ft)
  - Buffers** - - 25 ft.

## Excerpts from a Draft White Paper by a Builder's Association in the Mid-Atlantic Region

- “Trees should be encouraged along with natural vegetation instead of turfgrass. (EPA is seeking to limit turfgrass around the Bay and replace it with natural vegetation.)
- HOA governing documents will control grass cover, plant types, use of fertilizer, . . .
- HOA governing documents will provide authority to expand and keep pace with the science of protecting the local water quality without having to get a majority vote of the Member constituency.”

# Unintended Consequences?



Richard L. LaNore, MRW Lawns, Inc.

# Unintended Consequences of Legislated Turf Restrictions

From Hochmuth et al. (2011; U.F.I., IFAS)

- Nutrient losses are negligible during the active growth period for healthy turf being fertilized according to BMPs.
- Properly fertilized turfgrass helps prevent soil erosion which moves soil and nutrients off-site.
- There are no scientific reports relating summer fertilizer bans with improved water quality, but fertilizer control by science-based BMPs has been shown to be effective in reducing water pollution.
- The literature documents the importance of using BMPs and education programs together to maximize the improvement of nutrient management and its impact on water quality.

# Guidance to Federal Land Managers

First proposed for comments in March, 2010.

Unrealistic assumptions were made about turfgrass management, then EPA concluded in the proposed draft: *“Using those statistics and the turf estimates noted above, 227.5 million pounds of N are applied to turf areas each year.”*

I commented (4/23/10): *“If a more reasonable assumption of 58 lb N/A is applied (the midpoint of the 36-80 lb N/A range below) to 45% of the 3.8 million A stated at the beginning of section 5.1, then a more realistic turf N loading number would be 99 million pounds, not the 227.5 million pound figure listed twice in the section.”*

# Guidance to Federal Land Managers (cont'd)

So how did EPA consider the comments? The EPA *increased its estimate of N loading to the watershed in the final version (5/12/10)*. “Annual N applied to turf areas in the watershed . . . is approximately **389 million pounds of N per year**. Such a magnitude of N use in the watershed underscores the need for management practices that reduce risk, ranging from high-quality nutrient management planning and implementation by institutions to turf reduction actions, to prevent excess N from entering the Bay.”

*These biased assumptions are official and readily available to all regulators throughout the country.*

In other words, ***turf now has a bullseye on its back in MN, FL, the Chesapeake Bay watershed states, VT, and ??.***

# VI. Conclusions & Recommendations

## Turf is Low Hanging Fruit (sorry, botanists)

- It's not a crop.
- The science is not well understood by others.
- The turf constituency is not extensive nor politically well organized.
- Bad science by the EPA guidance document authors indicate one can get 'more bangs for the buck' by hitting turf with a big hammer.
- Bad science in FL is a snowball rolling downhill.

# Conclusions & Recommendations

## Do Research

- For those in the Bay watershed: what does your State's WIP state about turf?
- For those not in the Bay watershed: do TMDLs exist relevant to your work areas? ***Is your legislature considering nutrient ordinances that are not based on good science?***

## Get Involved

- Consult your local association's leaders and lobbyist, and ask: Whom should we target in the State legislature? In the news media?
- Find a way to communicate the science: ***turf yields fewer bangs (in pollution reduction) for the buck.***