

Wet Weather TMDL Developments

Adrienne Nemura

National Perspectives, Developments, and Advanced Urban
Wet Weather Solutions Workshop
The Wet Weather Partnership and NACWA
April 15, 2011, Nashville, TN

Overview

- ▶ **Historical background**
 - ▶ Water quality standards (WQS) and TMDLs
 - ▶ MEP v. TMDL v. Numeric Permit Limits
- ▶ **Examples**
 - ▶ Stormwater Volume TMDLs in VT
(Stormwater NPDES Petition)
 - ▶ Impervious Cover TMDL for Alamance, NC
- ▶ **Washington, DC Rally to Restore Sanity**

1980s: Focus on Wastewater Treatment Plants (WWTPs)

- ▶ Water quality standards regulations (48 FR 51405)

- ▶ Used to set wasteload allocations (WLAs)
- ▶ TMDLs being done but focus still on WLAs for WWTPs

- ▶ Example: Floyds Fork, KY

- ▶ Organic enrichment / low dissolved oxygen
- ▶ WLAs established for CBOD and NH₄ using a model
- ▶ WLA for TP set at 1.0 mg/l
- ▶ Low flow (7Q10) was 0 cfs.
- ▶ **Load Allocation (LA) set to 0!**

2006

- ▶ **Ms. Maximum Extent Practicable (MEP)**
 - ▶ Works hard to ensure goals in MS4 permit are attainable and achievable at reasonable cost
 - ▶ Focus on compliance: routine planning, inspections, and reporting
- ▶ **Ms. TMDL**
 - ▶ Overworked & criticized from all sides
 - ▶ Days of drudgery churning out TMDLs with artificial deadlines, imperfect targets, and scarce resources
 - ▶ Idealized goal of writing “the plan”



Adrienne & Erika Powers (Barnes & Thornburg) use storytelling to educate the StormCon audience about issues with stormwater TMDLs.

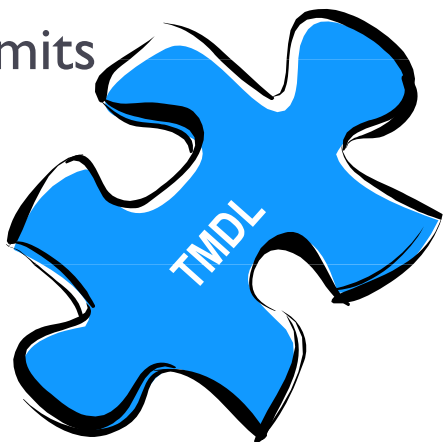
Ms. MEP v. Ms. TMDL (continued)

▶ Recommendations:

- ▶ Tailor TMDL targets
- ▶ Change the designated use
 - ▶ Use Attainability Analysis (UAA)
 - ▶ Site-specific criteria
 - ▶ Space/time averaging to assess compliance
 - ▶ Use an interim target
- ▶ Use adaptive watershed management
- ▶ Meet WLAs with non-numeric effluent requirements

Ms. MEP vs. Ms. TMDL (continued)

- ▶ If Ms. Numeric Permit Limits is truly needed...
 - ▶ Long-term average mass limits



Trust me,
whats the worst
that could happen?

“The greatest dangers to liberty lurk in insidious encroachment by men of zeal, well-meaning but without understanding.”



*Louis L. Brandeis,
American Supreme Court Justice,
1856-1941*

clf
conservation law foundation

SUPPORT CLF

BLOG

OUR WORK

YOUR STATE

GET INVOLVED

NEWSROOM

EVENTS

Why Become a Member? | Gift Planning: The Charles Cabot Society | Employer Matching Gift Search
| Gifts of Stock | Use of Funds

SUPPORT CLF

IF YOU CARE ABOUT NEW ENGLAND, YOU'LL WANT CLF IN YOUR CORNER.

CLF has worked tirelessly since 1966 to protect the New England you know and love — and we'll always look out for the best interests of your state, your town, and your community. However, we can't do it

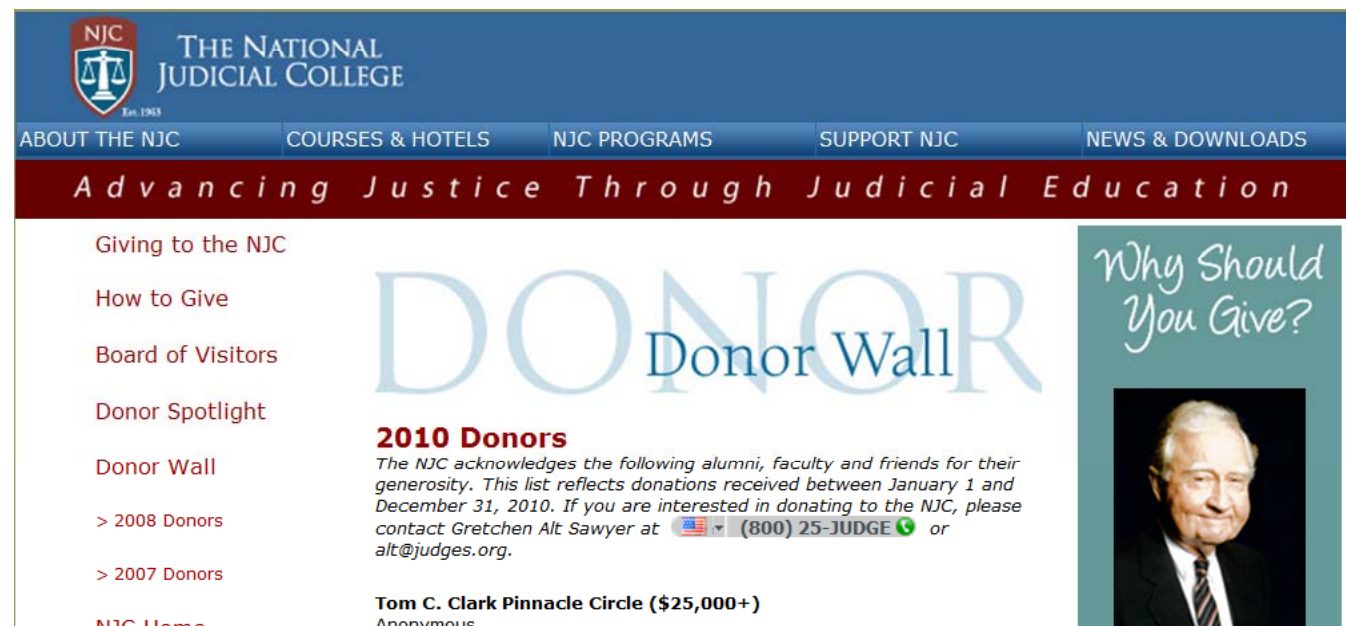
“Every day, we use the law, science, and the market to develop innovative, pragmatic solutions to New England’s toughest challenges, in order to make New England a better place to live, work and play for everyone.”

<http://www.clf.org/donate/>

Stormwater NPDES Petition

“This appeal may be characterized as the latest chapter in a continuing feud over the permitting of unregulated stormwater discharges into impaired waters in the state of Vermont.”

*Thomas S. Durkin, Environmental Judge
State of Vermont Environmental Court*



The screenshot shows the website for The National Judicial College (NJC). The header includes the NJC logo and the text "THE NATIONAL JUDICIAL COLLEGE" with "Est. 1963" below it. A navigation bar contains links for "ABOUT THE NJC", "COURSES & HOTELS", "NJC PROGRAMS", "SUPPORT NJC", and "NEWS & DOWNLOADS". Below the navigation bar is a red banner with the text "Advancing Justice Through Judicial Education". The main content area features a "DONOR Donor Wall" section. On the left, there is a sidebar with links: "Giving to the NJC", "How to Give", "Board of Visitors", "Donor Spotlight", "Donor Wall", "> 2008 Donors", "> 2007 Donors", and "NJC Home". The "DONOR Donor Wall" section includes the heading "2010 Donors" and a paragraph: "The NJC acknowledges the following alumni, faculty and friends for their generosity. This list reflects donations received between January 1 and December 31, 2010. If you are interested in donating to the NJC, please contact Gretchen Alt Sawyer at (800) 25-JUDGE or alt@judges.org." Below this text, a donor is listed: "Tom C. Clark Pinnacle Circle (\$25,000+)" and "Anonymous". On the right side of the donor wall, there is a box titled "Why Should You Give?" with a photo of an older man in a suit.

Stormwater NPDES Petition (continued)

- ▶ June 2003- CLF petition under 402(p)(2)(E) to establish NPDES permits for ALL stormwater for five brooks
- ▶ VT Agency of Natural Resources (ANR) asks EPA for guidance on Residual Designation Authority (RDA)
- ▶ ANR categorically denies CLF's petition
- ▶ CLF appeals to Vermont Water Board and wins
- ▶ VT Supreme Court remands issue back to ANR to evaluate RDA

Stormwater NPDES Petition (continued)

- ▶ ANR – RDA not needed- data and ongoing TMDLs. If anything, use a NPDES general watershed permit. Evidence submitted included:
 - ▶ *Potash Brook TMDL (approved by EPA Oct. 2006)*
 - ▶ *Four other draft TMDLs (May 2007)*
 - ▶ *Mapping Report (that identified all stormwater outfalls)*
- ▶ CLF appeals. Moves for summary judgment. ANR moves to dismiss and request relief.
- ▶ Judge rules that ANR must exercise RDA

Stormwater TMDLs

- ▶ Biological impairment data
- ▶ Aquatic life use impairments due to stormwater
 - ▶ Sediment load
 - ▶ In-stream sources (bank erosion)
 - ▶ Habitat degradation
 - ▶ Washout
 - ▶ Loss of habitat from reduced baseflow (later ignored by EPA)



Stormwater TMDLs- Two Surrogates

	Hydrologic Target*	Wasteload Allocations**
Bartlett Brook	9%	32%
Potash Brook	16%	16%
Englesby Brook	25%	34%
Centennial Brook	50%	63%
Morehouse Brook	54%	65%

* Hydrologic target set as flow reduction needed from flow equaled or exceeded 0.3 percent of the time

** Wasteload allocations set as runoff volume flow reduction from 0.3 percent flow target

Impervious Cover TMDL for Little Alamance Creek, NC

▶ Narrative WQS

- ▶ “the ability of an aquatic ecosystem to support and maintain a balanced and indigenous community of organisms having species composition, diversity, population densities and functional organization similar to that of reference conditions”
- ▶ Impaired if benthic macroinvertebrates or fish are scored as Poor, Fair or Severe Stress
- ▶ Macroinvertebrates at SR 2309 have been “poor” to “fair” since 1985



Little Almanace (cont).

- ▶ **Stressor identification study**
 - ▶ Eliminated traditional pollutants
 - ▶ Identified stormwater runoff & hydromodification
- ▶ **Plans already in place! (Local Watershed Plan AND Final Restoration Plan)**
- ▶ **“Because of the uncertainty in identifying specific pollutants in urbanized stormwater runoff, difficulties arise in quantifying the real target (biological integrity) in a TMDL.”**
- ▶ **The NRC “suggests that a more straightforward way to regulate stormwater contributions to waterbody impairment would be to use a surrogate (e.g. impervious cover), as a measure of stormwater loading”**

Little Almanace (continued)

- ▶ “Literature” defines 10% impervious cover threshold
 - ▶ 62% of degraded sites in NC >10%
 - ▶ 90% of non-degraded sites in NC < 10%
- ▶ TMDL target is 9% imp. cover (regulated AND un-regulated sources!) + 1% margin of safety
- ▶ Current condition is 26%; requires 62% equivalent reduction in imp. cover
- ▶ There is hope (“trust me”):
 - ▶ Lists examples of controls that can be used (including those that DON’T reduce imp. cover)
 - ▶ Compliance with TMDL based on improved biota

Recommended Reading

- ▶ Nemura, A.D., Powers, E. (2006) *Maximum Extent Practicable Meets TMDL for Municipal Stormwater Permits- Which Will Prevail?* StormCon. Denver, CO.
- ▶ Judge Durkin's opinion:
<http://www.vermontjudiciary.org/gtc/Environmental/ENVCRT%20Opinions/In%20re%20NPDES%20Stormwater%20Petition%2014-1-07%20Vtec.pdf>
- ▶ WEF Impaired Waters Symposium 2011. Miami, FL
 - ▶ Fowler, J., Martinez, M., Silva, S. *Addressing Stormwater Source-Impairments Through the Development of Surrogate TMDLs.*
 - ▶ El-Farhan, R.M., Benelmouffok, D.E., Michaelis, B. *Flow Reductions for Restoration of a Biologically Impaired Urban Stream: Pollution and Pollutant.*
 - ▶ Jones, B.G. *Existing Water Quality Standards and Wet Weather Compliance are Mutually Exclusive. Why Does This Have to be the Case?*
- ▶ TMDL Tip Sheet
[http://www.poultryegg.org/environment/docs/2011\(Jan26\)_LimnoTech_TMDL_Tip_Sheet-final.pdf](http://www.poultryegg.org/environment/docs/2011(Jan26)_LimnoTech_TMDL_Tip_Sheet-final.pdf)

“When it is obvious that the goals cannot be reached, don't adjust the goals, adjust the action steps.”



Confucius
Teacher, philosopher, and
political theorist
551-479 BC

National Goals for ~~TMDLs~~ Watershed Plans?

- ▶ Implementation Plans that can actually be fully implemented?
 - ▶ Consider cost and reasonable schedules?
- ▶ Restored and protected waterways, without sacrificing economic development?
- ▶ Targeting financial resources where we expect to get a return for the investment?
 - ▶ Diverse aquatic & terrestrial biological communities
 - ▶ Clean water for recreation
 - ▶ Where people actually want to recreate and it is physically safe?
 - ▶ Where we can actually achieve this standard?
 - ▶ Balance cost of protecting drinking water supplies with cost to treat?

Adrienne Nemura, P.E., BCEE

LimnoTech

(734) 332-1200 anemura@limno.com



www.csicop.org/specialarticles/show/web_extra_photos_from_the_rally_to_restore_sanity_and_or_fear