

Maine Impervious Cover  
Total Maximum Daily Load (TMDL)

*for Aquatic Life-Impaired Waters*  
#DEPLW1239

**Appendix 3: Public Comments, Frequently Asked Questions and DEP Responses to Public Comments**

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## Public Comments and DEP Responses to Public Comments

This report is issued to satisfy the requirements of Section 303(d) of the Clean Water Act and of 40 CFR § 130.2 that the State of Maine provide an estimate of the total maximum daily load of pollutants for those impaired waters previously identified in the State. Because the results of the estimates may be subsequently considered and/or utilized in regulatory programs such as the MS4 program, the Department includes in the appendices examples of ways to utilize the information in the report, and recommendations regarding addressing the impaired waterbodies. This report does not impose any regulatory requirements.

### City of Bangor's Comments

#### VIA EMAIL

Melissa Evers  
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#### **Re: City of Bangor Comments on June 2012 Draft Maine Impervious Cover Total Maximum Daily Load Assessment (TMDL) for Impaired Streams**

The City of Bangor (the City) appreciates the opportunity to comment on the June 2012 draft of the Impervious Cover Total Maximum Daily Load report (IC TMDL) to the Maine Department of Environmental Protection (DEP or the Department).

On May 27, 2011, the City provided the Department with comment on the March 2011 draft of the IC TMDL. In these comments, the City communicated its concerns regarding the overall IC TMDL approach, in addition to making suggestions for improvement of the draft. While the City appreciates that the Department has incorporated a number of our suggestions, the City continues to question the appropriateness of using impervious cover (IC) as a surrogate for other pollutants in the TMDL context. Our May 27, 2011 comments are attached to this letter. (See Attachment A.) The City continues to urge the Department to reconsider the IC approach for the following reasons:

- While impervious cover is useful as a general predictive model, it does not indicate what pollutants are causing stream impairment. It therefore does not serve the purposes of a TMDL.
- No single mechanism for directly measuring effective IC is provided, leaving uncertainty as to how those subject to the IC TMDL are to implement it or to measure their progress. While stream-specific appendices mention a reduction in runoff volume and associated pollutants, there is no basis given for determining that reduction in runoff and associated pollutants bears a linear relationship to reduction in effects of IC.
- No case studies are provided showing how an impaired waterbody has met its water quality classification. The technical and financial feasibility of the IC TMDL approach has not been established, yet no opportunity for reevaluation of this approach is contemplated in this document.

The City also provides the following suggestions regarding the proposed IC TMDL, in the event that the Department issues the IC TMDL notwithstanding the objections of the City and others.

1. *Specify that watershed management plans should focus on pollutants of primary concern*

The amount of effective impervious cover may approximate the degree to which particular properties are contributing to stream impairments. However, it is too broad an indicator to provide the necessary guidance in determining what specific measures are needed to improve water quality in a given stream.

The waterbody-specific IC TMDL assessment summaries (Appendices 4 through 32) specify % effective IC reductions “in stormwater runoff volume and associated pollutants.” Not every pollutant is a problem in every stream. The IC TMDL should state that pollutants of greatest concern, as determined on an individual stream basis, should be addressed first, and others as necessary to meet a stream’s water quality classification.

2. *Clarify that reducing effective impervious cover, not the absolute amount of impervious cover, is the goal*

On page v of the executive summary, the TMDL refers to “the target % IC TMDLs” for each stream “and, for informational purposes, estimates the reductions that may be needed...” Without more, this appears to contemplate BMPs that reduce IC by physical removal of IC infrastructure, rather than reduction in *effective* IC. We suggest that this sentence be revised as follows: “This TMDL report establishes the target effective % IC TMDLs . . . , and, for informational purposes, estimates the reductions *in stormwater runoff volume and associated pollutants* that may be needed....”

An explicit statement, perhaps at the end of section 1 (Introduction), paragraph 5, that “reduction of actual impervious cover (e.g. removing pavement) is not necessary if water quality standards can otherwise be achieved” should be included.

The public notice, found in Section 7, states that the TMDL “established the target % impervious cover . . . and outlines the measures which may be needed to meet water quality standards. The report also outlines measures for reducing the impacts from impervious cover and stormwater.” This implies that the measures for reducing IC are separate from measures for reducing the impacts of IC. The City suggests the following: “The TMDL report establishes the target effective % impervious cover . . . and outlines the measures which may be needed to reduce the impacts from impervious cover and meet water quality standards.”

3. *Attainment of water quality standards should eliminate the need for further effective IC reductions.*

In Appendix 3, page 3, it is stated that “if the WQs are attained, but the IC target is not yet reached, then compliance with the TMDL and stream restoration is achieved.” However, in Appendix 1, section 2(a), it is stated that “If all water quality criteria are attained before the target % IC is reached, the need for further reductions in impervious cover would be reduced (or possibly eliminated)” (emphasis added).

First, as discussed in Comment #1 above, this should speak of reductions in the effects of IC, not reductions in IC. Second, if there is a scenario in which further reductions in IC are required after attainment is reached, it should be provided. Otherwise, the sentence should simply read “. . . the need for further reduction in the effects of impervious cover would be eliminated.”

Likewise, in Appendix 2, the last sentence of page 56 should read “Conversely, there is no need to reach a stream’s IC target (e.g., 9%) if a stream attains water quality standards. . . .”

In Appendix 1, Section 2(d), the first sentence should read “Monitoring shall continue until water quality standards are achieved.” It is unlikely, and unnecessary, that all impairments be removed. As stated elsewhere in the TMDL, so long as water quality standards are met, further work is unnecessary (aside from that required to maintain the classification).

On page 20 of the draft, in the last paragraph before Section 6, the TMDL states “The calculations of % IC reductions may change over time, as watershed delineations are refined, or as there are development changes in the watershed, but the water quality-based TMDL or loading capacity will not change, and compliance will be measured by the attainment of Maine’s water quality standards.” This statement is unclear. Effective % IC reductions may also be accomplished through implementation of BMPs that reduce the effects of impervious cover. Furthermore, there may be instances in which the stated IC TMDL goal for a stream does change; for instance, when water quality standards are met at a % IC level above or below that originally set. The City therefore suggests removing or revising this statement.

4. *The TMDL should address differences between MS4 and non-MS4 communities*

Our understanding is that this IC TMDL will be implemented primarily (if not exclusively) through the MS4 program. Some streams covered by this IC TMDL are in communities regulated under the MS4 program, while others are not. All communities should be held to the same standards.

Additionally, with respect to streams flowing through multiple communities, some assurance should be given that MS4 communities will not be responsible for pollution entering the MS4 from an upstream source.

5. *Mention all towns, not just primary towns*

In Table 2.1, the “Primary Town” (or towns) for each stream is listed. Some streams, such as Shaw Brook, flow through other towns as well for significant distances. These towns should be identified as well and be included in the IC TMDL.

6. *Allow for natural conditions*

On page 14, the TMDL notes that impairment may be due at least in part to natural conditions -- e.g. impermeable soil groups or naturally low dissolved oxygen levels. However, the table on page v does not mention natural background as an element of a TMDL. While page 16 indicates that natural background is included in load allocation, the Department has not explained how natural background was calculated or is measurable in terms of impervious cover. Furthermore, it may be that some streams are not naturally capable of supporting their current stream classification. The TMDL does not account for this possibility.

7. *Clarify whether a separate TMDL implementation plan is necessary*

Appendix 1 provides what appear to be two approaches to manage water quality: a watershed management plan, in Section 1; and a TMDL implementation process, outlined in Section 2. These two approaches should be

reconciled. Are both intended to be used? Either? Or are both simply resources that can be used, among other tools? This should be clarified, preferably by making it clear that these are two sets of tools, among others, that can be used to implement the TMDL.

8. *The water quality monitoring plan in the IC TMDL should be supplemented*

DEP's current and proposed biological monitoring program measures macroinvertebrate data in each stream about once every five years. This is not frequent enough to determine whether installation of BMPs and other changes are having an effect on the stream, and therefore will make adaptive management difficult. Monitoring on this schedule will fail to measure or account for yearly fluctuations, for example in precipitation (i.e. especially wet/dry summers). Finally, when a stream does come into attainment, it may be up to five years before this can be confirmed under the proposed monitoring schedule.

Furthermore, several streams in Bangor have not been monitored in accordance with this schedule to begin with. The most recent sample result given for Capehart Brook is from 2001, eleven years ago, and the only result from Arctic Brook is from 1997, fifteen years ago.

Setting goals and then providing unreasonably limited opportunities for regulated entities to determine if those goals are being met increases the burden on parties attempting to meet the goals. They must now do their own monitoring to determine progress and compliance or run the risk of implementing ineffective measures.

As stated in Appendix 3, "DEP may conduct testing sooner than the routine cycle, based on need (which is defined as either a catastrophic event or implementation of significant BMPs), as Department resources allow." While the possibility of DEP conducting more frequent testing if significant BMPs are implemented is appreciated, DEP should also prioritize sampling in those streams where data is more than five years old. DEP should continue working with others to find opportunities to integrate or otherwise lower the cost of testing. Finally, regulated entities should be allowed (but not required) to conduct additional monitoring.

9. *Clarify that assessment summaries are indicating estimated % IC only*

Appendix 3, page 4 refers to the "estimation of %IC in each watershed." In the assessment summaries, however, the amount of impervious cover is not referred to as an estimate. It should be made clearer in the assessment summaries that it is just an estimate.

10. *Preventing degradation requires additional steps beyond local stormwater control ordinances*

The final step under the "Next Steps" portion of the assessment summaries speaks of the need to "prevent future degradation of [stream] through the development and/or strengthening of local stormwater control ordinances." While local ordinances may form part of the solution, there are many state and local laws regarding stormwater already in place. Education, voluntary efforts, and involvement in design processes are also part of the solution. This sentence should read "prevent future degradation of [stream] through, *among other things*, the development and/or strengthening of local stormwater control ordinances."

11. *Address concerns regarding reduction in runoff volume*

A box on page 2 of each assessment summary states, e.g., “**8% IC** represents an approximate **65% reduction** in stormwater runoff volume and associated pollutants when compared to existing pollutant loads” (emphasis in original). In many areas, restrictive soil conditions make infiltration largely infeasible. Runoff volume may therefore have naturally high peaks following precipitation events.

Additionally, the IC TMDL should clarify that introduction of water into the stream, in and of itself, is not necessarily bad. For many Bangor streams, low base flow is as much or more of a concern than high flow. A simple reduction in runoff volume may prove negative, not positive.

Finally, the word “existing” should be changed to “untreated,” as many watersheds already have some BMPs in place.

12. *Adjust IC targets upwards as well as downwards where appropriate*

The assessment summary for Sucker Brook, on pages 2-3, calls for the stream to have the characteristics of a watershed with 8% impervious cover. Appendix 2, Page 56, however, notes that “it may be appropriate to set an IC goal for Sucker Brook in Hampden that is greater than the 9% [*sic* - actually 8%] default target for Class B because it attains Class C biological criteria despite having 31% [*sic* - actually 25%] IC in its watershed.” Some streams have the default percentage adjusted downward, e.g. Kimball Brook in South Portland and Phillips Brook in Scarborough. By this same token, and for the reason stated in Appendix 2, the 8% should be adjusted upwards for Sucker Brook.

13. *Assessment summaries should be periodically updated as more accurate data becomes available*

In many cases, inaccuracies still exist in the details of the individual stream assessment summaries. For example, the length of Arctic Brook is given as .18 miles, but the accompanying drawing shows a much longer stream. A significant part of the stream shown is an underground channel. The drawing should match the .18 mile length.

Furthermore, more and better GIS and other data about watershed boundaries and impervious cover will soon be available, if it is not already. This TMDL should be updated periodically to reflect current and new data as it becomes available to DEP.

14. *Reliance on “professional judgment” lacks scientific rigor*

At several points in the IC TMDL, conclusions are reached following application of professional judgment of DEP staff. Please explain the factual or technical basis for such conclusions.

15. *Assurances should be given to communities making diligent efforts*

Since measuring reduction in the effects of impervious cover is considerably more difficult to track than measuring a single pollutant for a traditional TMDL, communities -- even communities diligently implementing this IC TMDL -- run the risk of being accused of not moving quickly enough in that implementation. Communities -- particularly MS4 communities -- need some form of assurance that their efforts will not be in vain.

The following should be added to Section 6, page 20 of the TMDL before or after the parenthetical at the end of the paragraph: “An MS4 community which has a watershed management plan in place for its stream or streams of primary concern as identified in its MS4 stormwater management plan, and which has a funding source in place which will allow the municipality to make substantial progress on completing the tasks outlined in the watershed management plan, is considered to be making adequate progress under this IC TMDL.”

### **DEP Response to City of Bangor’s Comments**

August 14, 2012

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City of Bangor  
73 Harlow Street  
Bangor, ME 04401

#### **Re: DEP Response to the City of Bangor Comments on June 2012 Draft Maine Impervious Cover Total Maximum Daily Load Assessment (TMDL) for Impaired Streams**

Dear Mr. Nicklas,

Thank you for Bangor’s careful consideration of Maine’s Statewide Impervious Cover TMDL. I will list a condensed version of the concerns followed by Maine DEP’s responses.

*The City continues to urge the Department to reconsider the IC approach for the following reasons:*

- *...does not indicate what pollutants are causing stream impairment... does not serve the purposes of a TMDL.*
- *...no basis given for determining that (IC) reduction in runoff and associated pollutants bears a linear relationship to reduction in effects of IC.*
- *No case studies are provided showing how an impaired waterbody has met its water quality classification...*

The IC TMDL does not identify a single pollutant or specific set of pollutants, because observed impairments are due to the impact of a complex set of urban environmental alterations and associated runoff. The TMDL is not based on linear relationships and the statistical relationship between impervious cover and aquatic life impairments are extensively described in Appendix 2. The document recommends a watershed management plan with an iterative approach to apply structural and non-structural solutions to IC runoff. This non-prescriptive approach allows communities to incorporate innovative solutions that work incrementally towards the attainment of water quality standards.

#### *1. Specify that watershed management plans should focus on pollutants of primary concern*

This is an important point, that every stream has a unique watershed configuration and is affected differently by various pollutant sources and volumes of runoff and it is true that, “Not every pollutant is a problem in every stream.” The TMDL uses IC as a surrogate for the many potential pollutants and urban environmental characteristics influencing the streams. This approach does not identify specific pollutants in any given watershed, but recommends communities undertake watershed management that may include a ‘hot spot’ survey to identify problem sources. In some

watersheds, the volume of runoff may be the object of watershed management rather than specific sources because greater quantities of stormwater flows destabilize, alter structure, and impair habitat for aquatic life, and less base flow is available to aquatic life in streams during low flow periods.

2. *Clarify that reducing effective impervious cover, not the absolute amount of impervious cover, is the goal*

Editorial recommendations were incorporated as suggested, except for the public notice revisions. The public notice has already gone out, so it is too late to revise that language.

3. *Attainment of water quality standards should eliminate the need for further effective IC reductions.*

DEP has incorporated the suggested edits in: Appendix 1, section 2(a), Appendix 2, page 56 and Appendix 1, Section 2(d). The statement on page 20 is a necessary caveat to the % IC calculations and it lets the reader know that when watershed information is updated, then IC calculations may need to be updated as well. All the IC calculations are based on the total % IC in the watershed, not the effective % IC. The second part of the statement lets the reader know that stream specific goals will not change because the watershed information is updated.

4. *The TMDL should address differences between MS4 and non-MS4 communities*

The IC TMDL does not address how restoration will occur. In some watersheds where there is existing regulatory authority through the MS4 program, the MS4 entity will need to address its contribution to the impairment. There may also be other sources in the watershed that may be addressed voluntarily, in which case a watershed grant could be part of the equation. In other watersheds, there may not be any regulatory authority, in which case it may be fully a voluntary effort, though the possibility also exists that sources could become regulated through the residual designation authority in the Clean Water Act.

DEP will look for ways to encourage all communities to undertake the recommendations in the TMDL. The specific responsibilities of MS4 communities within their jurisdiction will be outlined in the MS4 permit.

5. *Mention all towns, not just primary towns*

DEP will change Table 2.1 to include all towns in the watershed, as displayed on the watershed maps in the individual stream summary.

6. *Allow for natural conditions*

All natural conditions are accounted for through the interpretation of water quality statutes, and by the TMDL's allocations. For example, if a stream originates from an unimpacted upstream wetland then an occurrence of low dissolved oxygen will not be considered a violation of water quality standards. Since it is difficult to separate natural background conditions in developed watersheds that are impacted by many small sources, DEP has assigned the same



%IC allocation to unregulated sources of stormwater, non-point sources, and background sources (load allocations (LAs)), as well as to regulated stormwater (wasteload allocations (WLAs)).

7. *Clarify whether a separate TMDL implementation plan is necessary*

The TMDL does not require, but recommends a separate plan for future action that leads to improvements in water quality. There is no prescribed approach and it is up to the community to decide on the appropriate process. DEP does require a ‘Watershed Based Plan’ for communities to receive 319 grants, so this may influence the choice of approach.

8. *The water quality monitoring plan in the IC TMDL should be supplemented*

Bangor’s concerns regarding the limitations of DEP biological sampling schedule are noted. DEP balances many competing requests for monitoring results and does not have the resources to meet all demands. The schedule is subject to operational decisions on an annual basis, so it is difficult to predict the exact year of future sampling on any given stream. The best estimate is 5 years from the last sampling date listed in the report, but this is subject to change given agency resource constraints. Both Arctic Brook and Capehart Brook have not been sampled more recently because there have been no significant improvements in the watershed that warrant resampling during the local sampling rotation.

DEP does allow outside entities to conduct their own biological monitoring to determine attainment status using DEP’s sampling protocols, but this can be expensive. DEP is committed to minimizing costs associated with quality assured methods, but has little ability to lower fixed costs on legally prescribed requirements. Communities that desire more frequent feedback on their progress towards attainment, than the DEP Biomonitoring schedule currently allows, may use other biological and water quality measures to gauge progress. Alternative measures can be found by consulting DEP or other environmental consultants.

9. *Clarify that assessment summaries are indicating estimated % IC only*

The summaries clearly delineate the source of the IC calculations and estimation is inferred when interpreting orthophotos in GIS.

10. *Preventing degradation requires additional steps beyond local stormwater control ordinances*

Voluntary and educational contributions towards watershed solutions are valuable and the suggested language has been added to the ‘Recommended Future Actions’ section of the report, on page 24.

11. *Address concerns regarding reduction in runoff volume*

The box on page 2 of each site-specific assessment summary contains a statement that is generally true. A given watershed may have conditions with naturally high peaks. The appropriate peaks will be determined during an engineering assessment. The term “existing” is used because not all existing treatment is effective and may need to be reengineered.

12. *Adjust IC targets upwards as well as downwards where appropriate*

The TMDL effective target is 9% for Sucker Brook, consistent with Appendix 2.

13. *Assessment summaries should be periodically updated as more accurate data becomes available*

Inaccuracies will be corrected as needed and data contained in Maine DEP's GIS system is continually updated as more accurate information become available. Thank you for pointing out the problem in Arctic, which we will correct.

14. *Reliance on "professional judgment" lacks scientific rigor*

Professional judgment of DEP staff is used to determine targets in 4 streams and the reasoning behind the judgment is described in the associated stream summaries.

15. *Assurances should be given to communities making diligent efforts*

The TMDL does not prescribe actions and therefore does not need to specifically assign measures of progress. Measures of progress, including an assessment of the community's effort, under the MS4 program will be determined based on the MS4 permit.

Sincerely,



Melissa Evers  
Environmental Specialist III

**Conservation Law Foundation Comments**

For a thriving New England

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July 19, 2012

**Sent via Email and Regular Mail**

**Re: CLF Comments on Maine Draft Impervious Cover Total Maximum Daily Load Assessment for Impaired Streams 06/14/2012**

Dear Ms. Evers:

The Conservation Law Foundation (“CLF”) offers the following comments on the Maine Department of Environmental Protection’s (“DEP”) draft Impervious Cover Total Maximum Daily Load Assessment for Impaired Streams (“draft IC-TMDL”) published June 14, 2012. CLF appreciates and recognizes DEP’s considerable effort in response to the 303(d) listing of 30 urban impaired stream segments located from approximately Bangor to Saco, Maine.

As you know from prior matters, CLF is a non-profit, member-supported organization with offices located in Maine, Vermont, Massachusetts, Rhode Island, and New Hampshire. For almost fifty years, CLF has used law, economics, and science to advocate for solutions that conserve natural resources, protect public health, and promote vital communities in our region. Water quality issues are central to CLF’s mission. On behalf of our members and other concerned Mainers, CLF strongly supports restoring Maine’s increasing number of urban impaired streams to meet state water quality standards as mandated by the Clean Water Act (“CWA”).

**Introduction**

The draft IC-TMDL correctly notes that intensive ongoing development from Bangor to Saco has dramatically increased the volume of impervious cover (*e.g.* pavement and roofs) in urban watersheds. This increase has caused a drastic and unacceptable decrease in urban water quality. The decrease in water quality occurs because stormwater quickly drains from impervious cover like rooftops and pavement into waterways, carrying pollution loads that vary in composition and quantity. In more natural environments, soil and vegetation control the flow of stormwater, allowing moisture to percolate and drain at a slower pace into both aquifers and streams. Moreover, natural environments do not contain the urban pollutants found on roadways and parking lots, and are better able to filter out pollutants before they enter streams. As indicated in the draft IC-TMDL, smaller streams in southern Maine have been overwhelmed by stormwater runoff from impervious cover, resulting in numerous violations of the CWA.

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Pursuant to the CWA, these streams must be restored immediately for the benefit of the environment and urban residents. Managing stormwater runoff is critical to restoring the health of Maine’s urban impaired streams, and using impervious cover as a planning tool has scientific support. See e.g. *Factors Influencing Riverine Fish Assemblages in Massachusetts*, USGS Report to Water Resources Comm’n, January 2012; *Urbanization, Water Quality, and the Regulated Landscape*, Owen, U. of Co. L. Rev., Spring 2011, p. 434-435; *Is Impervious Cover Still Important? Review of Recent Research*, Schueler et al., J. of Hydrologic Engineering @ ASCE/April 2009 (nearly 250 studies have tested hypothesis that stream health is connected to amount of impervious cover).

### **Legal Background**

The CWA assumed its current form in 1972, when earlier water quality laws underwent sweeping revisions. Prior law contained water quality standards but no meaningful enforcement tools. The reformulated CWA enacted a permitting system and residual designation authority (“RDA”) to enforce water quality standards. The CWA mandates that both point and nonpoint sources of pollution must be reduced to attain standards. Stormwater channeled through any conveyance is a point source pollutant. *Natural Resources Defense Council v. Train*, 396 F.Supp. 1393 (D.D.C. 1975), aff’d. by *NRDC v. Costle*, 568 F.2d 1369 (EPA regs defined stormwater flowing through storm sewers uncontaminated by industrial and commercial activity as point source); *Conservation Law Foundation v. Hannaford Bros.*, 327 F.Supp. 325, 326 (D.VT. 2004), aff’d 139 Fed. Appx. 338 (2d Cir. 2005) (storm drain and pipe from shopping plaza parking lot is a point source under CWA); *National Pollutant Discharge Elimination System (NPDES) Application for Storm Water Discharges*, 55 Fed. Reg. 47,990, 47,991 (Nov. 16, 1990) (urban runoff through conveyances such as separate storm sewers are point sources).

Pursuant to delegated authority from EPA, DEP is required to regulate point sources through the National Pollution Discharge Elimination System (known as “MEPDES” in Maine).<sup>1</sup> When generally-applicable technology-based effluent limitations contained in MEPDES permits are not stringent enough to implement applicable water quality standards, the degraded rivers and streams are listed as “water quality limited segments” (“WQLS”). States must then rank the WQLS in order of priority for clean up and calculate permissible levels of pollution known as “total maximum daily loads” (TMDLs)<sup>2</sup>. A TMDL is the maximum amount of a pollutant that can be discharged into a WQLS from all combined sources; it is the sum of individual waste load allocations (“WLA”) for point sources and load allocations (“LA”) for nonpoint sources and natural background, plus a Margin of Safety (“MOS”). 40 C.F.R. § 130.2(i).

<sup>1</sup> “Point source means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.” 40 C.F.R. § 122.2.

<sup>2</sup> “Total maximum daily load (TMDL): The sum of the individual WLAs for point sources and LAs for nonpoint sources and natural background. If a receiving water has only one point source discharger, the TMDL is the sum of that point source WLA plus the LAs for any nonpoint sources of pollution and natural background sources, tributaries, or adjacent segments. TMDLs can be expressed in terms of either mass per time, toxicity, or other appropriate measure. If Best Management Practices (BMPs) or other nonpoint source pollution controls make more stringent load allocations practicable, then wasteload allocations can be made less stringent. Thus, the TMDL process provides for nonpoint source control tradeoffs.” 40 C.F.R. § 130.2(i).

### Factual Background

Maine’s 2010 Section 303(d) List of Impaired Waters provides that TMDLs should be developed for most of the listed waters between 2010 and 2012. The draft IC-TMDL tries to meet that goal by developing a single TMDL to cover 30 impaired urban stream segments from Bangor to Saco. *See e.g. draft IC-TMDL* at § 2.1, table 2-1, § 5, and table 5-1. It notes that the streams addressed are small and “do not have point source wastewater discharges upstream in the watershed.” *Draft IC-TMDL* at § 5.2. The draft IC-TMDL differentiates between regulated stormwater – for which either individual MEPDES or MS4 (general) permits are issued – and currently unpermitted stormwater discharges which the draft IC-TMDL covers. *Id.* Despite the draft IC-TMDL’s reference to unpermitted stormwater discharges, it states that eighteen of the impaired segments are in MS4 Communities. *Draft IC-TMDL* at § 2.1; *see also id.* at § 5.2 (different streams have different portions of their watershed classified as a regulated area under Maine’s Phase II Stormwater Program). The MS4 permits currently in place are set to expire in July, 2013. The interplay between the terms of the new MS4 permits and the draft IC-TMDL has not been fully explained.<sup>3</sup>

The draft IC-TMDL provides some detail about individual stream impairment. For example, Table 2-1 sets forth an “Assessment Unit ID” for each impaired stream and the “Cause” which lists the types of testing the segment has undergone and failed. *See draft IC-TMDL*, table 2-1. The document explains why impervious cover was chosen as a pollutant surrogate rather than attempting to establish loads for individual pollutants in each stream segment: “% IC” was selected as a representative measure of the varying and difficult to measure amounts of dirt, oil, metals, nutrients, and other pollutants contained in stormwater flowing from impervious cover into streams. *Draft IC-TMDL* at pp. iv-v, § 5.2.

The draft IC-TMDL explains how it calculated the % IC for each stream segment, using the CWA formula for TMDL:  $TMDL = WLA + LA + MOS$ . *Draft IC-TMDL* at § 5-5.3. It does not, however, differentiate between WLA and LA. *See draft IC-TMDL*, table 5-1. “Since the streams addressed by this TMDL are small and do not have point source wastewater discharges upstream in the watershed, source-specific WLAs are not needed, and gross allocations for the WLAs can be used.” *See draft IC-TMDL*, § 5.2. Despite this statement, the draft IC-TMDL states that some of the impaired streams have portions of their watershed classified as “regulated area” under Maine’s Phase II Stormwater Program. Under that program, municipal separate stormwater sewer systems (MS4) and construction and industrial stormwater discharges are point sources and must be assigned WLA. *Id.* No specific point sources are identified in the draft IC-TMDL.

Finally the draft IC-TMDL expresses each % IC target “not explicitly” as a “daily increment,” but “in effect, daily targets because they will achieve reductions in stormwater runoff volume in all storm events whenever they occur (*e.g.* on any given day) throughout the year.” *Draft*

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<sup>3</sup> CLF strongly urges DEP to renew the MS4 permit on time and consistent with the requirements of the CWA. Moreover, revisions to Maine’s stormwater rules (Chapters 500 and 502) are pending. Chapter 500 provides standards for erosion and sedimentation control, inspection and maintenance, and housekeeping at development sites. Chapter 502 provides additional stormwater treatment controls related to development in urban watersheds. DEP should publish the revised rules for public comment without delay and promptly seek stakeholder input. Without a full panoply of controls in place, stormwater cannot be effectively managed to reduce water pollution.

IC-TMDL at § 5.3 Seasonal Analysis and Daily Loads.

#### Comments

CLF generally supports DEP’s efforts to devise innovative, comprehensive, and practical strategies to address stormwater pollution. CLF further supports DEP’s use of the “Impervious Cover” method as an assessment tool, to assert permitting jurisdiction using residual designation authority, and as a means of developing water-quality-based effluent limitations in permits. *See e.g. Factors Influencing Riverine Fish Assemblages in Massachusetts*, USGS Report to Water Resources Comm’n, January 2012; *Urbanization, Water Quality, and the Regulated Landscape*, Owen, U. of Co. L. Rev., Spring 2011, p. 434-435; *Is Impervious Cover Still Important? Review of Recent Research*, Schueler *et al.*, J. of Hydrologic Engineering @ ASCE/April 2009 (nearly 250 studies have tested hypothesis that stream health is connected to amount of impervious cover). % IC is an efficient and affordable means of identifying sources that cause or contribute to impairment of small (1st through 3rd order) urban streams. It may also be a good predictive tool for urban stream stressors like excessive flow, thermal pollution or loss of riparian habitat. Finally % IC may be a practical-to-use tool for urban planners tasked with managing stormwater runoff. *See Urbanization, Water Quality, and the Regulated Landscape*, at p. 463.

Despite CLF’s support for use of % IC in developing and implementing effective regulatory programs to control stormwater runoff, we have several concerns. First, it is not clear that the draft IC-TMDL meets the legal definition of a TMDL, including the fact that the draft IC-TMDL fails to allocate point source contributions to the waste load allocation. The wasteload allocation in a TMDL must allocate loading to individual “existing and future point sources.” 40 CFR § 130.2(h). The IC-TMDL must identify both existing and future point sources in each watershed and must differentiate between the WLA and LA so that the WLAs can be integrated into permits as required by law. 40 CFR §§ 122.44(d)(1)(vii)(B) and 130(2)(h) (“WLAs constitute a type of water quality-based effluent limitation.”)

In addition, the draft IC-TMDL does not, on its face, account for any effects of climate change. The *Scientific Assessment of the Effects of Global Change on the United States* (“*Assessment*”) sets forth a number of observed and predicted climate changes that should inform the TMDL process for waters degraded by precipitation-driven sources of pollutants.<sup>4</sup> For example, the *Assessment* notes that “[i]ntense rainfall from climate change will lead to increases in suspended solids (turbidity) and pollutant levels in water bodies due to soil erosion.” *Id.* The *Assessment* also reports that “higher water temperatures, increased precipitation intensity, and longer periods of low flows exacerbate many forms of water pollution, affecting ecosystems, human health, water system reliability and operating costs. In North America, climate change is likely to make it more difficult to achieve existing water quality goals for sediment.” *Id.* It is therefore essential for any TMDL addressed to the water pollution problems in the 30 listed waters covered by the draft IC-TMDL to account for these observed and predicted changes in the climate. For example, this information should, at a minimum, inform the establishment of a more conservative MOS.

Finally, it is uncertain whether achieving the targeted % IC reduction will achieve water

<sup>4</sup> Full citation: *Scientific Assessment of the Effects of Global Change on the United States*, A Report of the U.S. Government Committee on Environment and Natural Resources, National Science and Technology Council, May 2008 at p. 150.

quality standards. See *Urbanization, Water Quality, and the Regulated Landscape*, at p. 464; *Is Impervious Cover Still Important? Review of Recent Research*, at pp. 313-314. Both of these articles conclude that using % IC as an indicator of watershed stress in small watersheds has a reasonable scientific basis. The articles note, however, that the effectiveness of mitigation measures that reduce % IC in improving stream health is still inconclusive. *Urbanization, Water Quality, and the Regulated Landscape*, at notes 208 and 209 (this is a hotly debated issue and noting interview with Don Witherall discussing this limitation of impervious cover TMDLs).

#### **Other Regulatory Methods**

Section 303(d) authorizes TMDLs only for those waters for which best practicable control technology effluent limitations are not stringent enough to implement applicable water quality standards. 33 U.S.C. § 1313(d)(1)(A), (C). Indeed, EPA regulations make clear that TMDLs should only be developed where federal, state, and local regulatory and enforcement authorities are “not stringent enough to implement any water quality standard. 40 CFR § 130.7(b)(1). Therefore, as DEP identifies point source discharges of stormwater for each of the 30 impaired stream segments and develops WLAs, DEP must also regulate the discharges through existing permits or through permits developed under residual designation authority. See 33 U.S.C. § 1342(p)(2)(E) and 40 C.F.R. § 122.26(a)(9)(i)(C); *In re Stormwater NPDES Petition*, 2006 VT 91.

EPA has expressly acknowledged that “the most effective method for achieving water quality standards for some water quality impaired segments may be through controls developed and implemented without TMDLs.” EPA, *Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303(d) and 305(b) of the Clean Water Act*, at 54 (2005) (2006 IR Guidance). Under Clean Water Act regulations, a TMDL is required only if attainment cannot be reached by use of (i) technology-based effluent limitations imposed by the Clean Water Act, (ii) more stringent effluent limitations required by state, local, or federal authority, or (iii) other pollution control requirements required by state, local, or federal authority. 40 C.F.R. § 130.7(b)(1)(i)-(iii). The so-called “4b alternative” to developing a TMDL is available when “there are ‘other pollution control requirements’ sufficiently stringent to achieve applicable water quality standards within a reasonable period of time.” *2006 IR Guidance* at 54. In such instances, rather than develop a TMDL under Category 5, states should list these water bodies in Category 4b: “a use impairment caused by a pollutant is being addressed by the state through other pollution control requirements.” See *2006 IR Guidance* at 48. The 2006 IR Guidance further recognizes the fact that a waterway previously included on a State’s 303(d) list “does not necessarily mean that it must remain in Category 5 until a TMDL is established.” *Id.* at 57. Removal from the list prior to TMDL development may be warranted if a Category 4b approach would be sufficient to achieve water quality standards in a particular waterway. *Id.*

#### **Recommendations and Conclusions**

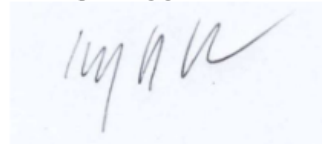
CLF supports using % IC as an assessment tool and as part of a comprehensive approach to managing stormwater pollution. DEP should supplement its IC- TMDL approach by adopting alternative “Category 4b” approaches that include developing permits through exercising RDA. With respect to the draft IC-TMDL, DEP should:

1. Clarify that it is a planning and regulatory tool for management of stormwater and not a

- traditional TMDL;
2. Clarify the interplay between the draft IC-TMDL and the MS4 permit for those stream segments within MS4 communities;
  3. Identify existing and future point sources for each watershed;
  4. Make clear that point source dischargers who have been or who are identified will be regulated pursuant to the CWA permits including permits developed through exercise of RDA authority;
  5. Prepare initial and annual water quality management plans for the impaired streams pursuant to § 208 of the Clean Water Act, which requires such plans for “area[s] with substantial water quality control problems.” 33 U.S.C. § 1288; see also 40 C.F.R. § 130.6(a);
  6. Set a MOS that accounts for increased runoff secondary to climate change; and
  7. Contemplate necessary revisions to and renew the MS4 permits on time by July 2013.

Thank you for considering our comments.

Respectfully yours,



Ivy L. Frignoca  
Staff Attorney  
Conservation Law Foundation  
47 Portland Street  
Portland, ME 04101  
(207) 210-6439 x 5011  
ifrignoca@clf.org

cc: Jennie Bridge  
David Courtemanch



**DEP Response to Conservation Law Foundation Comments**

August 14, 2012

Ivy L. Frignoca  
Staff Attorney  
Conservation Law Foundation  
47 Portland Street  
Portland, ME 04101

RE: Response to CLF Comments on Maine Draft Impervious Cover Total Maximum Daily Load Assessment for Impaired Streams 06/14/2012

Dear Ms. Frignoca,

Thank you for your review of the IC TMDL. Your comments provide an overview of many of the issues surrounding TMDL and the associated interpretations. Addressed below are the numbered summary items in your comments.

1. *Clarify that it is a planning and regulatory tool for management of stormwater and not a traditional TMDL;*

You are correct that this TMDL is, among other things, a planning tool for the management of stormwater with the intent to encourage communities to undertake the hard work of stream restoration. The fact that this is not a traditional, pollutant-specific TMDL designed to address discharges during low-flow critical conditions is apparent by the content and recommendations.

2. *Clarify the interplay between the draft IC-TMDL and the MS4 permit for those stream segments within MS4 communities;*

The relationship between the recommendations of the IC TMDL and how future MS4 permits will be applied to the affected stream segments is described on page 7 of the 'Frequently Asked Questions' section in Appendix 3. DEP has required each regulated MS4 to identify primary and secondary urban impaired watersheds within its boundaries, and to identify measures that are being taken, or will be taken, to address the impairments. In the 2013 MS4 permit cycle, DEP intends to use the IC TMDL recommendations as a guide for developing permit requirements that will include showing progress towards addressing impairments. DEP will encourage communities to develop watershed management plans for streams that do not have them.

3. *Identify existing and future point sources for each watershed;*

The approach to defining WLA or point sources is defined in Section 5 of the TMDL. All NPDES-regulated stormwater discharges are addressed by the WLA component of the TMDL. Allocations for NPDES-regulated stormwater discharges from multiple point sources are expressed as a single categorical WLA because data and information are insufficient to assign each source or outfall an individual WLA. The detailed approach to watershed management planning advocated in this TMDL recommends all stormwater sources and the associated runoff be identified and the effects of that runoff be reduced to meet the TMDL targets. This means that some stormwater conveyances will be identified as well as road and roof runoff, all of which require individual engineered solutions or BMPs tailored to treat the runoff.

4. *Make clear that point source dischargers who have been or who are identified will be regulated pursuant to the CWA permits including permits developed through exercise of RDA authority;*

Point source discharges in MS4 communities are regulated by the general permit issued by the State of Maine. Maine has the authority to designate additional discharges, if necessary, in order to meet water quality standards.

5. *Prepare initial and annual water quality management plans for the impaired streams pursuant to § 208 of the Clean Water Act, which requires such plans for “area[s] with substantial water quality control problems.” 33 U.S.C. § 1288; see also 40 C.F.R. § 130.6(a);*

The IC TMDL recommends, but does not require, the preparation of watershed management plans to address impaired designated uses. DEP intends to work with communities to develop those plans. A number of approved plans already exist and execution of the recommendations has begun. The ‘Reasonable Assurance’ section of the TMDL provides further information regarding ongoing efforts to develop watershed management plans.

6. *Set a MOS that accounts for increased runoff secondary to climate change; and*

An explicit MOS is used in this TMDL, meaning a portion of the total allowable loading is actually allocated to the MOS, thus lowering the TMDL target to account for environmental variability. CLF cites literature that points out the future water quality degradation potential associated with climate change and goes on to say, “...to account for these observed and predicted changes in the climate...should, at a minimum, inform the establishment of a more conservative MOS.” The TMDL target does account for observed changes in climate because targets were set using data collected during recent changes. The future is difficult to predict, but the TMDL also relies on attainment of water quality standards as the ultimate measure of success, and this provides further assurance. The targets and associated numbers, such as the MOS, represent measured numerical concepts and relationships as described in Appendix 2. In contrast, the path to attainment and addressing the effects of impervious cover is the adaptive application of structural and non-structural solutions. This fuzzy or flexible path means the focus on attainment helps to ensure communities and stakeholders will develop and act on plans to achieve the water quality goal, using the target IC numbers as a guide.

7. *Contemplate necessary revisions to and renew the MS4 permits on time by July 2013.*

The Department is currently working on revisions to the MS4 general permits and intends to re-issue them by July 2013.

Sincerely,



Melissa Evers  
Environmental Specialist III

## Maine DOT Comments



Maine Department of Transportation  
Environmental Office  
Child Street  
16 State House Station  
Augusta, ME 04333-0016

### Memorandum

To: Don Witherill, Director, Division of Watershed Management, Maine DEP  
Melissa Evers, Maine DEP

From: Stephen Tibbetts, Senior Environmental Engineer, MDOT, Environmental Division  
(207) 557-3471

Cc: John Branscom, Environmental Services Coordinator, MTA  
Robyn Saunders, GZA GeoEnvironmental, Inc. (GZA)

Date: July 5, 2012

Re: Maine DEP: Draft Maine Impervious Cover Total Maximum Daily Load Assessment (TMDL) for Impaired Streams, June 2012

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The Maine Department of Transportation (MaineDOT) has reviewed the “Draft Maine Impervious Cover Total Maximum Daily Load Assessment (TMDL) for Impaired Streams”, dated June 2012, and submits the following comments. Please contact Stephen Tibbetts for any questions/clarifications of MaineDOT’s comments.

In our previous comments, dated May 31, 2011 (Attachment 2), we requested that the DEP “should revisit the TMDL targets for those watersheds with greater than 25% impervious cover to assess whether the proposed targets are attainable considering anticipated stakeholder costs to retrofit their impervious cover and/or conveyance systems. Watersheds in the 20 to 25% range should also be revisited to insure that their proposed targets are realistic.” The DEP has not done this in the revised draft.

The revised report still includes a number of watersheds at or above the 25% threshold. The Center for Watershed Protection (CWP) recommends three thresholds for stream restoration:

**Sensitive streams** have watersheds that are below a 10% impervious cover. Impacts are generally minor and the water quality and habitat is good to excellent.

**Impacted streams** have water quality and habitat impairments. These are found in watersheds between 10 and 25% impervious cover.

**Non-supporting streams** have severe water quality and habitat degradation in watersheds with over 25% impervious cover. The impacts are so significant that they are not considered suitable for restoration.

Since a number of the listed watersheds can be considered as non-supporting streams under CWP’s classification, MaineDOT believes that the DEP should revisit the proposed TMDL targets to insure that watershed planning efforts where effective impervious cover exceeds 25% do not assume that IC targets of 9% can be obtained with current technology or without prohibitively expensive stormwater retrofits.

One serious concern that MaineDOT has is in the area of stormwater retrofits in these impaired watersheds and their ability to attain the targeted TMDL levels (to meet State water quality standards). From a recent CWP study of Arlington County in Maryland (Attachment 3):

“Arlington County is mainly built out with 41% impervious cover and was developed prior to most present day stormwater regulations so there is a lot of opportunity to retrofit. The majority of the County’s impervious cover is the result of county-owned roads, which has led to a lot of street bump-out bioretention concepts. However, designing retrofits for such an urban environment where the majority of publicly-owned impervious cover is the road system has proven to be quite challenging. In addition to the usual prerequisites for retrofitting, underground utilities, tree impacts and traffic patterns all need to be taken into consideration. As an example of these feasibility challenges, of the 9,705 (primarily public) acres assessed so far, *only 11% of the area was determined to be feasible to install retrofits.*”

From the same paper:

“A review of data from retrofit inventories conducted by the Center over the past few years reveals that, of the area assessed, *only about 6% to 24% could feasibly be treated with retrofits*, with the higher end of the range reflecting more rural conditions.”

As this process moves to the next step of watershed planning and plan implementation, stakeholders need to be made aware of the limitations involved in proceeding with an extensive retrofit effort on existing impervious areas. This should be highlighted in your report.

MaineDOT intends to be a stakeholder participant in future watershed planning efforts in these watersheds. We recognize the importance of working towards the improvement of water quality in Maine’s impaired streams and will work with DEP in that effort. We appreciate the opportunity to participate in the IC TMDL process.

**ATTACHMENT 1**  
**Maine DOT ICTMDL Comments - February 6, 2012**



Paul R. LaPage  
GOVERNOR

STATE OF MAINE  
 DEPARTMENT OF TRANSPORTATION  
 16 STATE HOUSE STATION  
 AUGUSTA, MAINE 04333-0016

David Bernick  
COMMISSIONER

To: Don Witherill, Director, Division of Watershed Management, MaineDEP

From: Stephen Tibbetts, Senior Environmental Engineer, Environmental Office, MaineDOT

Date: February 6, 2012

Re: Draft IC TMDL Report

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In addition to my comments dated May 31, 2011, copy attached, MaineDOT submits the following additional comments in response to the December 15, 2011 IC TMDL meeting in Augusta.

- Goodall Brook and Sucker Brook will be added to the 303 (d) list, but are not on the February 23, 2010 proposed changes to Chapter 502. Will Maine DEP be amending the proposed changes to Chapter 502 to add these two streams to that list?
- The watershed/subwatershed boundaries for the impaired stream watersheds should be ground-truthed as was done for the Whitten Brook Watershed Study in Skowhegan. The size and configuration of the actual watershed/subwatershed boundaries, and the amount of impervious cover, is significantly different from the original watershed map. The accurate delineation of the watershed boundaries is important in order for MaineDOT to determine the appropriate locations of and best options for stormwater BMPs within these impaired streams watershed. Unlike municipalities, the MaineDOT will be a stakeholder in all 29 watersheds' stormwater management plan working groups. The time and cost to the State to participate in these committees will be a disproportionately large burden and ground-truthing the watershed boundaries is an important first step which should be done prior to MaineDOT participating in these efforts so that resources are spent appropriately. The agency establishing the IC TMDL requiring subsequent actions and costs should be responsible for delineating the watershed boundaries.
- There is no regulatory jurisdiction to take any action to reduce the percent of effective impervious cover for areas that are not within some other jurisdiction that references TMDL requirements; however MaineDOT must be aware of and will participate in the municipalities' watershed planning efforts.
- How will reduction in effective IC be measured?
- Give credit for stream corridor restoration.

THE MAINE DEPARTMENT OF TRANSPORTATION IS AN AFFIRMATIVE ACTION - EQUAL OPPORTUNITY EMPLOYER  
 PHONE: (207) 426-1400 TTY: (207) 426-1400 FAX: (207) 426-1400

**ATTACHMENT 2**  
**Maine DOT ICTMDL Comments - May 31, 2011**



**Maine Department of Transportation**  
 Environmental Division  
 Child Street  
 16 State House Station  
 Augusta, ME 04333-0016

**Memorandum**

**To:** Don Witherill, Director, Division of Watershed Management, Maine DEP  
 Melissa Evers, Maine DEP

**From:** Stephen Tibbetts, Senior Environmental Engineer, MDOT, Environmental Division  
 (207) 557-3471

**Cc:** John Branscom, Environmental Services Coordinator, MTA  
 Robyn Saunders, GZA GeoEnvironmental, Inc. (GZA)

**Date:** May 31, 2011

**Re:** DEP's Preliminary Draft of Impervious Cover (IC) Total Maximum Daily Load (TMDL)

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The Maine Department of Transportation (MDOT) has reviewed the "Preliminary Draft, Maine Impervious Cover Total Maximum Daily Load (TMDL) for Aquatic Life-Impaired Waters", dated March 2011. We look forward to working with the DEP in the future on this important subject and appreciate the opportunity to participate in the report's review process.

Maine Turnpike Authority (MTA) is also submitting their comments to the report. MDOT concurs with their recommendations and submit the following supplemental comments. Please contact Stephen Tibbetts for any questions/clarifications of MDOT's comments.

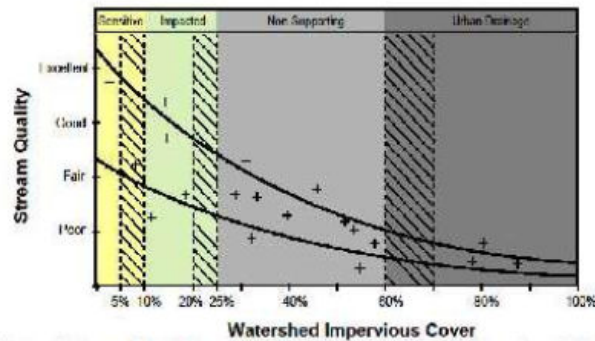
**IC-TMDL Science General Comment**

The science behind the impervious cover model has been verified through rigorous research. However, the model has been revised in the past years to show more variation in the effective impairment thresholds.

The ICM has been reformulated to show a broader range of IC as reported in Chesapeake Stormwater Network Technical Bulletin No. 3, "Implications Of The Impervious Cover Model: Stream Classification, Urban Subwatershed Management And Permitting". The following excerpt highlights some of the relevant findings of the study:

The reformulated ICM is best used as an urban stream classification tool to set reasonable expectations for stream quality indicators over broad ranges of subwatershed IC. In general,

### The Reformulated ICM (aka "The Cone")



the predictions of the ICM are as follows: Stream segments with less than 10% IC in their contributing drainage area continue to function as high quality streams, and are generally able to retain their hydrologic function and support good to excellent aquatic diversity. Stream segments that have 10 to 25% IC in their contributing drainage area behave as Impacted Streams and show clear signs of declining stream health. Most indicators of stream health will fall in the fair range, although some segments may range from fair to good as riparian cover improves.

The decline in stream quality is greatest towards the higher end of the IC range. Stream segments that range between 25 and 60% subwatershed impervious cover are classified as non-supporting streams (i.e., no longer supporting their designated uses in terms of hydrology, channel stability habitat, water quality or biological diversity). *These stream segments become so degraded that any future stream restoration or riparian cover improvements are insufficient to fully recover stream function and diversity (i.e., the streams are so dominated by subwatershed IC that they cannot attain pre-development conditions)*

This study makes the point that watershed plans (WP) need to reflect this variation in impervious cover in all of the subwatersheds and place planning priorities on those areas that can be restored to target goals. There are 10 of the watersheds with greater than 25% impervious cover yet these watersheds have a TMDL target of 10%. As the TMDL process moves forward, MDOT feels that *these TMDL goals will be not only difficult to attain but also prohibitively expensive to accomplish in these watersheds since the only design option available to MDOT and other stakeholders are expensive retrofits to their existing impervious areas.* To quote from the above study again:

• Page 2

-The management goal for both stream classes (non-supporting and urban) is to limit the extent of degradation, while at the same recognizing these subwatersheds are an intense human habitat, both in the uplands and the remaining stream corridor.

-The best prospects for improving stream quality indicator scores occurs in sensitive and impacted watersheds, whereas the cost and feasibility of restoration climbs rapidly in non-supporting and urban drainage subwatersheds.

**Recommendation:** DEP should revisit the TMDL targets for those watersheds with greater than 25% impervious cover to assess whether the proposed targets are attainable considering anticipated stakeholder costs to retrofit their impervious cover and/or conveyance systems. Watersheds in the 20 to 25% range should also be revisited to insure that their proposed targets are realistic. Effective watershed management should be based on recent research that develops management plans based on the current and anticipated watershed impervious cover and stream type: Sensitive, Impacted, Non-Supporting, and Urban Drainage. ("The Impervious Cover Model Revisited: review of recent ICM research", Tom Schueler and Lisa Fraley-McNeal, Symposium on Urbanization and Stream Ecology, May 23 and 24, 2008).

#### IC-TMDL Implementation Comments

From: "Adaptive Implementation of Water Quality Improvement Plans: Opportunities and Challenges", Nicholas School of the Environment and Earth Sciences, Nicholas Institute, Duke University, September 2007:

- As the multiplicity of stressors increases, there is more uncertainty about the predicted effects of pollutant load reduction actions on attainment of standards.
- One problem in establishing an implementation plan to secure a TMDL is the large uncertainty in quantifying the contributions of and effectiveness of controls on non-point sources.
- Adaptive implementation means that over time there is an organized and well supported program that uses new knowledge to continually re-evaluate the effectiveness of possible actions to meet the TMDL.

The DEP report emphasizes that future development in the watersheds will require adequate planning and design controls to ensure that no further increase in IC occurs. Existing impervious areas, however, will require a strong emphasis on retrofitting and/or disconnection of impervious surfaces from direct discharge into the receiving waters utilizing engineered BMP's and LID techniques.

No reduction in effective impervious area can be obtained without retrofitting. This will pose a difficult and expensive challenge for the MDOT and other stakeholders. With our limited right of way it is very difficult and costly to install state-of-the-art retrofits or to disconnect our drainage systems and discharge them into vegetated buffers.



There is a great deal of uncertainty as to the effectiveness of many of the BMP options available for retrofits. As new watershed plans are developed, implementation emphasis should be based on a “build and learn” process, where a few high priority sites are identified, BMP’s designed and installed, then monitored for their effectiveness in improving stream health. Once the monitoring results are clarified, more retrofits can be installed based on the findings. Also, as BMP science progresses, this approach leaves open opportunities to adapt new technologies into the watershed plan.

It is with this approach in mind that *MDOT recommends that DEP not set 10 year attainment periods for the watershed IC-TMDLs*. The overall goal of stream restoration should remain, but the time frame should remain flexible, allowing for fine-tuning of retrofit practices to the various watersheds, developing funding mechanisms for implementation, and getting all of the various stakeholders involved in the process.

In this era of diminished funding, MDOT and other stakeholders will find it beyond their financial means to meet their obligations proposed in the various watersheds included in this report. All of the watershed reports should emphasize fairness in their implementation plan. Least expensive practices that achieve the best stream restoration results should be emphasized, such that there is a balance between the cost of TMDL attainment and overall implementation costs, shared amongst the stakeholders.

**Note:**  
MDOT is currently reviewing their Drainage Connection Policy to include water quality pretreatment as a precondition to connection to MDOT drainage systems for all impervious cover that triggers Chapter 500 or MS4 permits. We are also considering applying this to any impervious cover whether it triggers DEP permitting or not. Municipalities should consider this addition to their existing policy for stormwater system connection. This would insure IC treatment for future projects discharging to State/Municipal conveyance systems.

ATTACHMENT 3

CWP Runoff Rundown Winter 2012

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# Runoff Rundown

Winter 2012

Issue #45

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 Cool Links

**Greetings!**

**Greetings!**

Welcome to the Winter 2012 issue of *Runoff Rundown*, the Center for Watershed Protection's quarterly e-newsletter dedicated to watershed and stormwater management news and updates.

This issue provides project updates, announcements from the Association of Watershed and Stormwater Professionals (AWSPs) and information about trainings, conferences and cool links.

Published by:  




Center staff Christmas hike at Patapsco State Park

[Click here to view this newsletter on the web.](#)

**Runoff Ramblings: Before You Join the Green Infrastructure  
 Bandwagon**  
 By Hye Yeong Kwon, Center for Watershed Protection

Before "Green Infrastructure," there was low impact design, environmentally sensitive site design, conservation design, smart growth, and new urbanism. These concepts are certainly not all synonymous with each other, but they do share similar tenets of reduced environmental impacts. And like a good conservationist that agrees with many of these tenets, I practice many of these things personally and

<http://archive.constantcontact.com/fs045/1101639006674/archive/1109127079170.html>

4/27/2012

professionally, and in general, hug a tree whenever I can. But the one thing I haven't done is join the "Green Infrastructure as Silver Bullet" bandwagon. Here is why.

Recently, I attended a couple conferences dedicated to Green Infrastructure. While many of the presentations were good, others left me wondering if we were all singing from the same page and raised more questions than they provided answers. For example, are we all defining Green Infrastructure the same way? What costs are we referring to when we claim that Green Infrastructure is lower cost than traditional infrastructure? What can we do about getting us all on the same page about Green Infrastructure?

The different definitions of Green Infrastructure have been at the center of this morass. The traditional use of the term by the conservation planning community refers to the network of natural lands across the landscape - forests, wetlands, stream corridors, grasslands - that work together as a whole to provide ecological benefits. More recently, EPA defined green infrastructure as "an approach to wet weather management that is cost-effective, sustainable, and environmentally friendly" (retrieved on December 27, 2011 from [http://pub.epa.gov/nodes/home.cfm?program\\_id=408](http://pub.epa.gov/nodes/home.cfm?program_id=408)). This broad definition includes both landscape-scale natural features and site-scale practices ranging from reduction of impervious cover to stormwater best management practices (BMPs), such as bioretention and stormwater wetlands, and everything in between.

In addition to the widely divergent definitions of Green Infrastructure, there are numerous ways to look at cost data. The current mantra on Green Infrastructure seems to be "lower cost than traditional practices," but the reality is that it depends on what definition is being used and what costs are being compared. Here are just a few examples:

#### Costs of Green Infrastructure site design versus "conventional" design at new development sites

Many studies show that site designs utilizing certain Green Infrastructure practices (such as narrower streets, reduced clearing and grading, and open channels for roadside drainage) can be cheaper than conventional designs that use mass clearing, curb and gutter and extensive paving (MacMullan and Reich, 2007; Conservation Research Institute, 2005). As borne out in various case studies, this can certainly be true when the practices are well designed and executed and are allowed to replace (or at least reduce the number and size of) conventional practices. However, many of these practices are still not permitted in local codes or credited for their stormwater treatment benefits. The added cost to the developer that results from the extra time required to obtain special exceptions and permits can be significant (MacMullan and Reich, 2007).

Even where Green Infrastructure site designs are consistently found to be more cost effective than conventional site designs, it is the rare community that will be able to use Green Infrastructure at new development sites to meet all the requirements of TMDLs, MS4 permits and other water quality mandates. Many of these urban areas are already built out and were developed prior to stormwater management requirements. Therefore, retrofitting of existing urban areas will be necessary to meet the required water quality standards. But to what extent? And at what cost?

#### Costs of Green Infrastructure BMPs for retrofit situations and redevelopment sites versus the "status quo"

This one is a bit tricky. The use of Green Infrastructure BMPs (such as bioretention, swales, and infiltration) in retrofit situations is typically much more expensive than installing the same practices in a new development situation simply because of existing site constraints such as utilities or poor soils (see costs in King and Hagan, 2001). However, there is also no "conventional" option for comparison - if these sites are not retrofitted, they will remain as-is with no associated costs. In addition, while some communities may have a stormwater utility or other source of funding to pay for retrofits, there is typically a limit to how much land can feasibly be retrofitted. A review of data from retrofit inventories conducted by the Center over the past few years reveals that, of the area assessed, only about 0% to 24% could feasibly be treated with retrofits, with the higher end of the range reflecting more rural conditions.

Installing Green Infrastructure BMPs on redevelopment sites is certainly a viable option for communities to realize water quality improvements and shifts the financial burden from the jurisdiction to the developer. The costs of using Green

Infrastructure BMPs on redevelopment sites have not been well studied. Some research suggests the cost may be higher to use these practices on redevelopment sites compared to installing them in new development situations or using more traditional BMPs on redevelopment sites (MacMullan and Reich, 2007). However, actually fostering redevelopment in our urban areas can be difficult. For example, the City of Baltimore's Comprehensive Plan assumes an addition of 10,000 households over a six year period. Based on an average lot size and site impervious cover, this equates to treating less than 0.5% of the total impervious cover in the City. At this rate, it would take many years to install enough Green Infrastructure practices to meet the City's MS4 permit requirement to retrofit 20% of its untreated impervious cover.

#### Costs of Green Infrastructure versus "gray infrastructure" for volume reduction in CSO communities

Numerous cities with combined sewer systems have documented that the use of Green Infrastructure practices to reduce runoff volume is cost-competitive with conventional stormwater and CSO controls (Kloss and Calarusse, 2006; MacMullan and Reich, 2007). In most cases, these cost studies have also factored in the additional social and economic benefits provided by Green Infrastructure (e.g., cleaner air, increased property values, improved aesthetics) that are not provided by gray infrastructure. However, where does this leave communities with separate storm sewer systems who must meet strict water quality mandates such as TMDLs?

None of these examples justify a blanket statement that Green Infrastructure is more cost-effective than traditional stormwater strategies. The truth is that we need a lot more research into Green Infrastructure and a lot more convergence on definitions and costs as we go about the business of fully accounting for both the benefits and costs of Green Infrastructure. Research studies and statements about Green Infrastructure costs should detail the specific costs (e.g., capital costs versus life cycle costs) and benefits (e.g., pollutant removal, runoff reduction, impervious acres treated, socioeconomic benefits) being measured as well as consider what entity ultimately bears these costs. Green Infrastructure has its place and should be an important part of the solution for meeting TMDLs and other water quality goals. However, it is just one piece of the puzzle and is certainly not a "magic bullet" solution for municipalities on a limited budget.

Let us know your thoughts and ideas on this topic. Want to send us your cost data on Green Infrastructure? Email us at [randlor@cwro.org](mailto:randlor@cwro.org)

#### References

Conservation Research Institute. 2005. *Changing Cost Perceptions: An Analysis of Conservation Development*. Prepared by Conservation Research Foundation for the Illinois Conservation Foundation and Chicago Wilderness.

King, D. and P. Hagan. 2011. *Costs of Stormwater Management Practices in Maryland Counties*. Technical Report Series No. TS-626-11 of University of Maryland Center for Environmental Science.

Kloss, C. and C. Calarusse. 2006. *Rooftops to Rivers: Green Strategies for Controlling Stormwater and Combined Sewer Overflows*. Natural Resources Defense Council. New York, NY.

MacMullan, E. and S. Reich. 2007. *The Economics of Low Impact Development: A Literature Review*. EcoNorthwest. Eugene, OR.

#### **Wow, That's A Lot Of Retrofits!** By Cecilia Lane, Chesapeake Stormwater Network

Since 2008, the Center for Watershed Protection has been working with Arlington County, Virginia to create a county-wide stormwater retrofit inventory. The County is taking a comprehensive approach to stormwater management through their Stormwater Master Plan Update. In addition to a county-wide retrofit inventory, the Plan Update includes a storm sewer capacity study and a complete stream survey. The County's approach to meeting the Chesapeake Bay TMDL is to improve stormwater controls through new or redevelopment regulations, upgrades of existing stormwater infrastructure, incorporation of new stormwater practices where they didn't previously exist (retrofits), stream restoration, monitoring, and education and outreach. The retrofitting project will result in a large, county-wide list of potential stormwater retrofits. To date, the Center has developed retrofit inventories for 21 of the County's 36 watersheds which has resulted in a list of 800+ potential

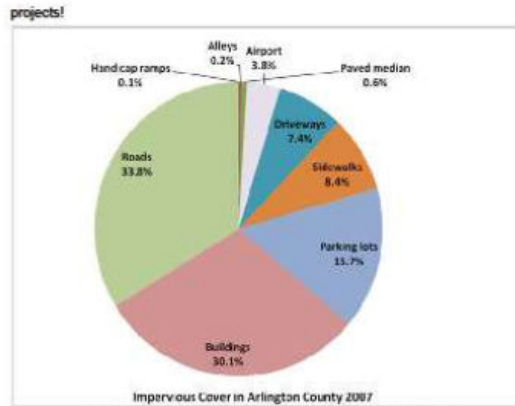


Figure 1 - Breakdown of Impervious Cover in Arlington County

Arlington County is mainly built out with 41% impervious cover and was developed prior to most present day stormwater regulations so there is a lot of opportunity to retrofit (Figure 1). The majority of the County's impervious cover is the result of county-owned roads, which has led to a lot of street bump-out bioretention concepts. However, designing retrofits for such an urban environment where the majority of publicly-owned impervious cover is the road system has proven to be quite challenging. In addition to the usual prerequisites for retrofitting, underground utilities, tree impacts and traffic patterns all need to be taken into consideration. As an example of these feasibility challenges, of the 0,705 (primarily public) acres assessed so far, only 11% of the area was determined to be feasible to install retrofits.

One of the desired products of the retrofit assessments is to have an interactive GIS-based inventory, which would allow the County to investigate areas that are up for other improvements and easily identify potential stormwater retrofit projects at those locations that could be incorporated into the plans. Arlington has one green street constructed (Figure 2) with several other retrofits in the design process. With 600+ projects, they will be busy for years to come!



Figure 2. Constructed Green Street in Arlington County before (left) and during (right) a storm.

Images courtesy Arlington County Department of Environmental Services.

For more information about this project, contact Greg Hoffmann at [ghh@arlington.org](mailto:ghh@arlington.org).

**DEP Response to MaineDOT Comments**

August 14, 2012

Stephen Tibbetts  
Senior Environmental Engineer  
MDOT, Environmental Division  
Child Street  
16 State House Station  
Augusta, ME 04333-0016

RE: Response to Comments on Maine DEP: Draft Maine Impervious Cover Total Maximum Daily Load Assessment (TMDL) for Impaired Streams, June 2012

Dear Mr. Tibbetts,

Thank you for your review of the TMDL, I'll address your points based on current interpretations of TMDL requirements.

1. *...DEP "should revisit the TMDL targets for those watersheds with greater than 25% impervious cover to assess whether the proposed targets are attainable considering anticipated stakeholder costs to retrofit their impervious cover and/or conveyance systems. Watersheds in the 20 to 25% range should also be revisited to insure that their proposed targets are realistic."*

TMDL targets are specifically designated to achieve attainment of water quality standards and require a technical linkage between the target and existing conditions. There are no provisions to set 'realistic' targets within the legal requirements of a TMDL assessment. A TMDL that set targets based on the attainment capacity or feasibility of potential actions would not pass legal and technical review requirements. DEP does acknowledge that watersheds with greater than 25% impervious cover will be very difficult to restore and this information should be used in the future to prioritize scarce project resources.

2. *'One serious concern that MaineDOT has is in the area of stormwater retrofits in these impaired watersheds and their ability to attain the targeted TMDL levels (to meet State water quality standards).'*

*'As this process moves to the next step of watershed planning and plan implementation, stakeholders need to be made aware of the limitations involved in proceeding with an extensive retrofit effort on existing impervious areas. This should be highlighted in your report.'*

The ability of a stream to attain the target, or State water quality standards, is outside of the legal considerations that define a TMDL assessment. The TMDL recommends developing Watershed Management Plans to define the BMPs and retrofits that will be needed to attain standards. A well-developed stakeholder process for each watershed will determine the degree of limitations. The limitations and retrofit opportunities will be different for each watershed and the TMDL addresses the diverse set of available options by providing examples of restoration activities.

MaineDOT will be a stakeholder in most, if not all of these watersheds. Maine DEP understands that MaineDOT will not necessarily have the resources to make every one of these watersheds a high priority. This has already been acknowledged in MaineDOT's current MS4 general permit. The Department will continue to work with MaineDOT

through its next MS4 permit to meet the restoration challenges, find solutions and improve water quality to best serve Maine citizens.

Sincerely,

A handwritten signature in cursive script that reads "Melissa Evers".

Melissa Evers  
Environmental Specialist III

**GZA Comments**

GZA  
GeoEnvironmental, Inc.

Engineers and  
Scientists

**VIA EMAIL**

July 19, 2012

Melissa Evers  
Maine Department of Environmental Protection  
State House Station #17  
Augusta, Maine 04333



Re: Maine Statewide Impervious Cover Total Maximum Daily Load

Dear Ms. Evers;

GZA GeoEnvironmental, Inc. (GZA) appreciates the opportunity to provide comments on the proposed Maine Statewide Impervious Cover Total Maximum Daily Load (TMDL) to address surface water impairments for aquatic life. GZA has attended stakeholder meetings and have provided comments via email on May 27, 2011. A copy is attached for the record. While the proposed responses to public comment that have been drafted in Appendix 3 of the TMDL touch upon some of the issues that have been raised, further clarification or discussion should be incorporated into the responses.

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Portland, Maine  
04101  
207-879-9190 phone  
207-879-0099 fax  
www.gza.com


**Community/Stakeholder Burden:** Funding sources for the development of watershed management plans, subsequent Best Management Practice (BMP) design and installation as well as monitoring attainment progress are critical issues that have to be addressed in order for the TMDL to be supported by the stakeholder groups that are being asked to bear the burden of implementation. Implementation and monitoring costs through attainment for the existing list of streams covered by the TMDL will conservatively exceed \$100,000,000.

**BMP Credits:** While methodologies exist to estimate BMP effectiveness it should be clearly stated that effective impervious coverage removal credits calculated or awarded toward TMDL compliance do not equate to water quality classification attainment criteria. In order for consistency a unified methodology should be used to determine credits.

**Professional Judgment:** In addition to the comments previously provided, water quality classification attainment decisions that are based on the exercise of professional judgment should be accompanied by concise decision statements that explain and provide the basis for the decision.

GZA requests that Maine Department of Environmental Protection consider these concerns as you move forward with the TMDL process. If you have any questions please feel free to contact me directly at 207-358-5113.

Very Truly Yours  
GZA GeoEnvironmental, Inc.

  
Lawrence E. Morse, CWS CSS  
Associate Principal

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**From:** Lawrence Morse  
**To:** "[Melissa.evers@maine.gov](mailto:Melissa.evers@maine.gov)"  
**Bcc:** [Robyn Saunders](#)  
**Subject:** % IC TMDL Comments  
**Date:** Friday, May 27, 2011 4:12:00 PM  
**Attachments:** [image001.png](#)

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Melissa

First I would like to thank you and the department for the opportunity to participate in the initial stakeholder meetings and review of the preliminary draft. As you are aware GZA represents a major stakeholder in many of these watersheds. Comments that relate specifically to the concerns of that stakeholder will be provided separately. Following are some independent concerns that I and other share and believe should be clarified or addressed more clearly in the document:

1. Community Burden – This TMDL will place a great burden on the communities that these watersheds lie within. The level of funding available through 319 grants for watershed management plan development and implementation is insufficient to be relied upon as a viable funding source to assure that the goals of the TMDL are attainable. Communities are the prime stakeholder in this process and will likely be required to bear the bulk of the costs associated with the TMDL. Financial participation by other stakeholders, especially those contributing to the impervious coverage stress, is critical for success. The TMDL as written does not discuss consequence of continued non attainment, which is the incentive for stakeholder contribution. The TMDL should discuss these points clearly.
1. False Positive expectations – The TMDL as written provides a false expectation to the lay person that the reduction of effective impervious cover is the ultimate goal of the TMDL process when in fact it is a tool being used in an adaptive management process to achieve the attainment of Aquatic Life Criteria. Further, there is no guarantee that implementing BMP's or LID's established in the plan to reduce the effective %IC to below the established targets will result in attainment, resulting in a non ending loop of iterative modifications to the plan and continued investment. Although this is stated in the TMDL it should be rewritten so that the criteria for attainment is clearly understood by all readers.
2. Professional Judgment – Use of this term in the TMDL has raised several concerns in the lay community as to its meaning and use by the department. While the use of professional judgment is a necessary tool used by natural resource professionals in interpreting mother nature, it can be misunderstood by the non professional. The limits of the departments discretion in the use of professional judgment in determining attainment of Aquatic Life Criteria is outlined in statute, which should be referenced or a brief discussion of the terms meaning in this context include in the document.

Please feel free to contact me if you wish to discuss further.

Lawrence E. Morse, CSS CWS  
Associate Principal  
GZA GeoEnvironmental, Inc.  
202 Kent Place  
Newmarket, NH 03857

Phone: 603-659-3559  
Fax: 603-659-7750

**DEP Reponse to GZA Comments**

August 14, 2012

Lawrence E. Morse, CWS CSS  
Associate Principal  
GZA GeoEnvironmental, Inc.  
4 Free Street  
Portland, Maine 04101

**RE: Response to Comments on Maine Statewide Impervious Cover Total Maximum Daily Load Assessment (TMDL) for Impaired Streams, June 2012**

Dear Mr. Morse,

Thank you for your review of the TMDL, I'll address the issues raised in your letter based on current interpretations of TMDL requirements. The TMDL is a technical document designated to link impaired streams to pollutant sources and set targets to achieve attainment of water quality standards. Many of the issues raised in your comments are directed at potential future measures needed to achieve the water quality standards described in the TMDL and lie outside of the legal and technical considerations required in a TMDL assessment.

- **Community/Stakeholder Burden:** *Funding sources for the development of watershed management plans, subsequent Best Management Practice (BMP) design and installation as well as monitoring attainment ...*

Installation and funding of BMPs is not required to be part of a TMDL report, nor does the TMDL dictate how an impaired water will be restored. The next recommended step is to develop a watershed management plan that lays out the details of what needs to be accomplished and how it might be funded. Any requirements placed on contributors to the impairment would occur not through the TMDL, but through separate regulatory authority. Otherwise, funding would happen through other means, including the possibility of some grant funding.

Responsibility for restoring impaired streams is not confined to a specific level of government and any successful restoration effort requires a partnership among a spectrum of stakeholders. Over time, DEP has found that restoration in lake watersheds is the most successful when initiated by local stakeholders. It is in the municipality's best interest to spearhead watershed planning because they have the local knowledge needed to integrate economic growth and community needs with water quality improvement projects.

- **BMP Credits:** *While methodologies exist to estimate BMP effectiveness it should be clearly stated that effective impervious coverage removal credits calculated or awarded toward TMDL compliance do not equate to water quality classification attainment criteria. In order for consistency a unified methodology should be used to determine credits.*

The FAQ's include an example of how compliance might be measured in the future, but DEP may consider other methodologies to estimate BMP effectiveness after further discussions with stakeholders. After further deliberation, it is possible that a consistent methodology will emerge. These credits provide a way for communities to document their efforts in a consistent comparable manner.

If a community has established that it has made all feasible efforts to restore a waterbody and attainment is still not possible, then a Use Attainability Analysis (UAA) would likely be the next step. Under the Clean Water Act, a UAA is the process that enables a community to end the pursuit of rigorous restoration activities and it is described here- <http://water.epa.gov/scitech/swguidance/standards/uses/uaa/index.cfm>. A credit system for both structural and non-structural BMPs would contribute toward future UAA considerations.

- **Professional Judgment:** *In addition to the comments previously provided, water quality classification attainment decisions that are based on the exercise of professional judgment should be accompanied by concise decision statements that explain and provide the basis for the decision.*

‘Best professional judgment’ was used to assign targets in four watersheds, which are identified in Table 5.1. The assumptions behind those judgments are fully described in the specific watershed summaries.

Sincerely,



Melissa Evers  
Environmental Specialist III

**Interlocal Stormwater Group Comments**



Interlocal Stormwater Working Group

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- Portland
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- Windham
- Yarmouth

July 18, 2012

Maine Department of Environmental Protection  
 Attn: Melissa Evers  
 State House Station #17,  
 Augusta, ME 04333

Dear Melissa,

I am writing this letter on behalf of the Interlocal Stormwater Working Group (ISWG). You will likely receive comments from some of the ISWG communities, but the group as a whole wished to have this submitted to convey our concerns on the *Draft Maine Impervious Cover Total Maximum Daily Load (TMDL) for Aquatic Life-Impaired Waters*.

We recognize the importance of water quality and it is our desire to see these waterbodies meeting their State water quality classification. We also recognize and appreciate the great working relationship that we have with DEP. We look forward to continuing to work together to find common ground so that the needs of our water resources, DEP and the municipalities can all be met.

**GENERAL COMMENTS:**

1. It is important to the regulated municipalities that DEP's role<sup>a</sup> in improving the water quality of impaired waterbodies is not lost. Municipalities expect the following from you as the regulator: good data, funding support and recognition of the larger context of stormwater regulation. The revised draft IC TMDL continues to put the burden of restoration on municipalities and public road entities. Demonstrated through past performance, DEP has taken an active role in the restoration of impaired waters. However, DEP does not have the resources to address all 29 impaired waterbodies presented in this revised draft IC TMDL. It was conveyed at the January 19, 2012 ISWG meeting that DEP does not have the resources to make data available to municipalities in a timely manner. Given this, please:

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## Interlocal Stormwater Working Group

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- Clarify how DEP's limited resources will be utilized and what the priorities will be.
- Please clarify DEP's plans for data transfer so that municipalities will have access to all current and historic water and sediment quality data, macroinvertebrate sampling results, watershed delineations and revisions, and other data that DEP has collected and is using to make decisions within the watersheds in a timely manner (ideally within 6 months of data collection).
- Please specify DEP's proposed process for water quality monitoring, support for water quality monitoring related to Watershed Management Plan development, and transfer of quality-assured water quality monitoring data to municipalities in a timely manner (ideally within 6 months of data collection).

2. As discussed at the recent meetings, municipalities are not comfortable with the absolute values of %IC for attainment. DEP and EPA responses to comments about absolute values indicated that the ultimate measure will be attainment with aquatic life standards and not the %IC that is achieved. In November of 2009, the Chesapeake Stormwater Network published *Technical Bulletin No. 3: The Reformulated Impervious Cover Model: Implications for Stream Classification, Subwatershed Management and Permitting*<sup>ii</sup>.

The paper concludes that a range of values may be more appropriate considering all the unknowns, which would apply to both the %IC target as well as the margin of safety. Three specific changes are suggested to the model as follows:

“First, the Impervious Cover (IC)/stream quality relationship is no longer expressed as a straight line, but rather as a "cone" that is widest at lower levels of IC and progressively narrows at higher IC. The cone represents the observed variability in the response of stream indicators to urban disturbance and also the typical range in expected improvement that could be attributed to subwatershed treatment. In addition, the use of a cone rather than a line is consistent with the findings that exact, sharply defined IC thresholds are rare, and that most regions show a generally continuous but variable gradient of stream degradation as IC increases.

Second, the cone width is greatest for IC values less than 10%, which reflects the wide variability in stream indicator scores observed for this range of streams. This modification prevents the misperception that streams with low subwatershed IC will automatically possess good or excellent quality. As

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noted earlier, the expected quality of streams in this range of IC is generally influenced more by other watershed metrics such as forest cover, road density, riparian continuity, and cropping practices.

Third, the reformulated ICM now expresses the transition between stream quality classifications as a band rather than a fixed line (e.g., 5 to 10% IC for the transition from sensitive to impacted, 20 to 25% IC for the transition from impacted to non-supporting, and 60 to 70% IC for the transition from non-supporting to urban drainage). The band reflects the variability in the relationship between stream hydrologic, physical, chemical, and biological responses and the qualitative endpoints that determine stream quality classifications. It also suggests a watershed manager’s choice for a specific threshold value to discriminate among stream categories should be based on actual monitoring data for their ecoregion, the stream indicators of greatest concern and the predominant predevelopment regional land cover (e.g., crops or forest).”

3. It is understood that EPA has approved IC TMDLs in Maine. However, has the methodology been approved in the context of all 29 watersheds in which it is currently being applied? If so, please provide documentation of EPA’s approval.
4. Please include the TMDL element slide (from the 12/15/11 PowerPoint presentation).
5. Incorporate language regarding reevaluating and reassessing regarding water quality standards. It was suggested that CSO have reassess/reevaluate language included and similar language could be included from these.
6. Add column to Table 5-1 to support DEP assertions regarding best professional judgment decision for TMDL targets. Please be sure to explain the circumstances where the MOS is equal to 2 (i.e., Kimball, Nasons, Phillips and Red Brooks) as well as the target TMDL differences for Class B (Card Brook = 8%, all others = 10%) and Class C streams (range from 10 – 15%). Also please clarify the criteria used when making “best professional judgment” determinations.
7. There are 29 streams included in this report and neither DEP nor the municipalities nor public road entities have the resources to move efforts forward in all 29 watersheds. With little to no guidance or experience in WMP development, most municipalities will likely require assistance from outside contractors or organizations to develop and implement the WMP, which will

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compound the cost borne by the municipalities. While DEP receives funding from the Federal government to develop TMDLs and do some implementation, there is not enough to meet the need. In addition, it has also been acknowledged we are still figuring out what does and does not work. Therefore, please:

- Provide watershed specific prioritization of expectations that acknowledges these many limitations.
  - The referenced Watershed Management Plan Guidance Document (USEPA's *Handbook for Developing Watershed Plans to Restore and Protect Our Waters*) lists the 303d list as a source of "known pollutant impairments in the watershed". As discussed in Comment 1, please provide DEP's plan for communicating all available quality assured data to municipalities in a timely manner.
8. Add a preamble to the report that discusses the disconnect between %IC reduction and water quality attainment. Specifically:
    - Discuss that in order to reach attainment, it is very likely that stream habitat and floodplain restoration will be required in addition to reductions in IC.
    - Clarify how stream habitat and floodplain restoration fits into the overall model since, as written, the TMDL does not provide credits for stream corridor restoration, which is a necessary component for successful stream restoration.
  9. Please clarify that the three case studies provided in the proposed IC TMDL (i.e., Whitten Brook in Skowhegan, Penjajawoc Stream in Bangor and Long Creek in South Portland) are not case studies for achieving restoration and/or attaining of water quality standards for aquatic life, but case studies for potential next steps after the TMDL (e.g., development of watershed management plans and funding strategies).
  10. It is understood that in the two previous revisions of this report, much of the focus was placed on revising the appendices. In addition, further information and clarity was necessary in order to incorporate comments. Therefore, the following comments are being provided again in hopes that they will be addressed to make this a better end product. We have a number of specific concerns, as follows:

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- Please explicitly state in paragraph 1 of “Why is a TMDL Assessment Needed” that the TMDL and stream compliance is based solely on macroinvertebrate sampling & modeling. References to “restoring water quality” suggests that surface water quality (analytical) data has been collected and evaluated when it has not. References to “surface water quality” should be replaced by “environment suitable for macroinvertebrate communities” or something similar.
- We understand that the impairment of streams is not up for debate at this time. However, it would still be helpful to explain how stream reaches were deemed impaired (this was meant to be in an appendix with the performance standards). In most cases there are no upstream/downstream sample sites to bracket impaired areas. This is less of a concern in watersheds where impervious areas border the stream for most of its length; however, in several watersheds there is substantial forested or grassland buffer adjacent to the stream that, according to the main body of the report, should result in improved water quality. Please reconcile this either within the individual TMDLs or in the body of the report. It appears to be inconsistent to recommend stream buffers to improve water quality and aid stream recovery in the body of the text but not consider the presence of natural and/or undeveloped buffers when defining impaired reaches or developing sampling sites within the individual TMDLs in the appendices. Please provide documentation supporting determinations (as explicit discussion in the text with citations to appropriate published sources), to address this significant data gap.
  - This comment was meant to be addressed through the individual stream summaries and it does not appear to have been addressed.
- The inconsistency between an “unimpaired reach” not meeting macroinvertebrate criteria and no sampling in the “impaired reach” needs to be addressed. As many of the TMDL Appendices are written, there are substantial data gaps related to sampling and classification as well as conflicting recommendations about whether reducing IC and adding buffers is going to improve water quality to the point where they reach attainment. Please address this throughout the report and in the appendices.

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More specifics were requested in order to address this comment, they are provided as follows:

- The Kennedy Brook TMDL seems to suggest that adequate buffer in downstream locations may result in stream recovery, and therefore it is possible that the impaired segments identified in other TMDLs may overstate the problem. However, results actually demonstrate that the sample site shown as being in the unimpaired reach of the stream is NA. It is a very big concern that NA results are being depicted in unimpaired reach of Kennedy Brook.
  - Some are listed as impaired up to a wetland – are streams expected to meet classification at wetlands discharges even if the flow from the wetland is low DO or low pH and therefore not hospitable to macroinvertebrates?
  - Many show impairment upstream of the bulk of the impervious in the watershed (See Card Brook). How is reducing impervious downstream of impairment going to result in recovery upstream?
  - Another general concern (see Concord Gully): there appears to be substantial forest buffer between the impervious areas and the stream. This should result (according to the information provided in the main text of the TMDL document) in improved water quality. Please include a discussion of this in all streams where this occurs.
- For the most part, the data determining that the stream is impaired is more than 10 years old. For NA streams this is less of an issue (unless work has been done it's unlikely that they would come into compliance), but for the indeterminate streams, more recent data showing attainment or nonattainment would be helpful. At a minimum, please provide information about when each stream is due for another assessment.
  - As discussed under Comment #1, DEP must be prepared to locate and share the aggregate data to date. Please explain DEP's intended approach to data collection and dissemination as well as what plans exist if DEP's ability to collect or disseminate data is compromised by budget cuts.

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 Yarmouth

- The final sentence in the first paragraph on Page 2 states: “Aquatic life assessments conducted by the Maine Department of Environmental Protection (DEP) Biological Monitoring Program will be used to measure the progress of water quality improvements.” Should DEP’s budget no longer allow biomonitoring, what is the process for determining attainment?
    - It would be helpful to have a subsection at the beginning of each section heading that defines the methodology and reference documents, provides a brief synopsis of the methods used, and provides peer-reviewed journal articles or appropriate state/federal guidance documents as references supporting the methodology. Any deviations from the approved methodology should be explicitly discussed with documented reasons why methods were not followed.
    - Please provide a definitions section that captures all terminology and acronyms used in the report.
11. The Whitten Brook delineation example demonstrates the need to field check watershed boundaries for urban watersheds. It makes it difficult to accept the inclusion of any impaired watershed in this IC TMDL that has not been field checked. Please
    - Provide a list of any streams where the watershed delineation is based solely on contour maps and provide an explanation including:
      - DEP’s estimated timeframe for completing a field check of the watershed delineations.
      - Plan of action if DEP’s budget does not allow for this work to be completed, including alternative funding sources.
      - Please acknowledge that this is a considerable burden on municipalities if DEP is not able to complete or otherwise fund the revised watershed delineations.
  12. How was TMDL target derived for each watershed? How did you settle on this target from the ranges identified by DEP in their guidance document? Please clarify the methods used when making “best professional judgment” determinations.

Partners: Casco Bay Estuary Partnership ♦ Cumberland County Commissioners ♦ Cumberland County Emergency Management Agency ♦ Cumberland County Soil & Water Conservation District ♦ Friends of Casco Bay ♦ Maine Department of Environmental Protection ♦ Maine Department of Transportation ♦ Maine Nonpoint Education for Municipal Officials ♦ Maine Turnpike Authority ♦ Portland Area Comprehensive Transportation System ♦ Southern Maine Community College ♦ University of Southern Maine




## Interlocal Stormwater Working Group

	<ul style="list-style-type: none"> <li>This comment was intended to be addressed through the Frequently Asked Questions appendix; however, it has not been completely addressed.</li> </ul>
Biddeford	13. Is WLA/LA the same as WLA & LA and does that mean WLA ÷ LA? Please clarify & make consistent throughout the document.
Cape Elizabeth	
Cumberland	14. The Frequently Asked Questions appendix (page 5) specifies that “One option for tracking interim progress is to conduct an inventory of existing BMPs...Use engineering calculations for each BMP in the inventory to determine credits toward TMDL attainment”. In Long Creek and other watersheds that are attempting to implement restoration efforts it has been acknowledged that BMPs alone are likely to be insufficient to restore macroinvertebrate communities. Habitat restoration, contaminant source control, floodplain restoration, and flow control are also frequently required to aid in macroinvertebrate recovery. The TMDL does not address these needs and leads the user to believe that by meeting the %IC targets that water quality will be restored. Furthermore, the available data on BMP effectiveness is typically a range of effectiveness and monitoring of specific BMPs is prohibitively expensive. Please clarify the following:
Falmouth	
Freeport	
Gorham	
Old Orchard Beach	
Portland	
Saco	
Scarborough	
South Portland	<ul style="list-style-type: none"> <li>Is DEP proposing to monitor individual BMPs within these 29 watersheds in order to determine their effectiveness and credits toward TMDL attainment? If not, who is responsible for this monitoring, and what funding sources is DEP proposing to offset this (considerable) burden to municipalities?</li> <li>What is the plan for the properties where BMP retrofits are not feasible?</li> <li>What is the plan for areas where the stream is impacted by IC-related contaminants for which there is no BMP available to mitigate the impacts (e.g., chloride)?</li> </ul>
Westbrook	
Windham	
Yarmouth	15. The Frequently Asked Questions appendix (page 7) states that “For the existing MS4 permit, the DEP has already negotiated with each MS4 what constitutes adequate progress in addressing the impairments...” Please clarify what constitutes adequate progress in addressing stream impairments for

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Interlocal Stormwater Working Group

	communities (or portions of communities) within these watersheds that are not subject to an MS4 permit.
Bideford	<sup>i</sup> Maine has had a water classification system since the 1950's. This classification system establishes water quality goals for the State. The classification system is used to direct the State in the management of its surface waters, protect the quality of those waters for their intended management purposes, <u>and where standards are not achieved, direct the State to enhance the quality to achieve those purposes.</u>
Cape Elizabeth	<sup>ii</sup> <a href="http://www.chesapeakestormwater.net/all-things-stormwater/the-reformulated-impervious-cover-model.html">http://www.chesapeakestormwater.net/all-things-stormwater/the-reformulated-impervious-cover-model.html</a>
Cumberland	
Falmouth	Sincerely yours,
Freeport	
Gorham	
Old Orchard Beach	Katherine H. McDonald
Portland	Project Scientist
Saco	Cumberland County Soil & Water Conservation District
Scarborough	On behalf of the Interlocal Stormwater Working Group
South Portland	
Westbrook	
Windham	
Yarmouth	

Partners: Casco Bay Estuary Partnership ♦ Cumberland County Commissioners ♦ Cumberland County Emergency Management Agency ♦ Cumberland County Soil & Water Conservation District ♦ Friends of Casco Bay ♦ Maine Department of Environmental Protection ♦ Maine Department of Transportation ♦ Maine Nonpoint Education for Municipal Officials ♦ Maine Turnpike Authority ♦ Portland Area Comprehensive Transportation System ♦ Southern Maine Community College ♦ University of Southern Maine

**DEP Response to the Interlocal Stormwater Group Comments**

August 14, 2012

Katherine H. McDonald &  
Tamara Lee Pinard  
Stormwater Program Manager  
Cumberland County Soil & Water Conservation District  
35 Main Street, Suite 3  
Windham, ME 04062

RE: Response to Interlocal Stormwater Working Group (ISWG) Comments on Draft Maine Impervious Cover Total Maximum Daily Load (TMDL) for Aquatic Life-Impaired Waters.

Dear Ms. McDonald & Ms. Pinard,

Thank you for your review of the TMDL, I'll address the numbered 'General Comments' listed in ISWG's letter and the response will be based on current interpretations of TMDL requirements. The TMDL is a technical document that links impaired streams to pollutant sources and set targets to achieve attainment of water quality standards. Many of the issues raised in your comments are directed at future implications of the TMDL and lie outside of the legal and technical considerations required in a TMDL assessment.

General Comments-

1. *...DEP does not have the resources to address all 29 impaired waterbodies presented in this revised draft IC TMDL.*
  - *Clarify how DEP's limited resources will be utilized...*
  - *...clarify DEP's plans for data transfer so that municipalities will have access to all current and historic ... data that DEP has collected... in a timely manner...*
  - *... specify DEP's proposed process for water quality monitoring, support... related to Watershed Management Plan development... in a timely manner...*

The concerns raised in this comment point to the potential future measures needed to achieve the water quality standards described in the TMDL, which is not a legal requirement of an IC TMDL. The TMDL provides recommendations to take actions that result in water quality improvements. The DEP would like to see progress in all impaired watersheds, but DEP will set realistic expectations based on limited public resources. DEP will allocate limited resources as we have done in the past, through a combination of grants to municipalities and offering staff resources on specific stream projects.

Most of DEP's Biomonitoring data is available on DEP's website for download, a 6 months turnaround is not always possible due to the time consuming nature of enumerating aquatic organisms and the associated quality control measures. Besides Biomonitoring and the Volunteer River Monitoring Program (VRMP), DEP has no standardized reporting approach for data collected on streams. Project specific data is available on request and should be able to meet a 6 months turnaround, once quality assurance measures have been applied.

2. *... municipalities are not comfortable with the absolute values of %IC for attainment. ...In November of 2009, the Chesapeake Stormwater Network published Technical Bulletin No. 3: The Reformulated Impervious Cover Model: Implications for Stream Classification, Subwatershed Management and Permitting. The paper concludes that a range of values may be more appropriate ...would apply to both the %IC target as well as the margin of safety.*

The information contained in this comment regarding how to set up realistic parameters surrounding managing impervious thresholds has important educational value, but it cannot be applied to the specific technical requirements of a TMDL. The TMDL must link pollutant sources to designated impairments and set targets to achieve attainment of water quality standards. TMDLs take a conservative approach and applying ranges of values are not accepted under current interpretations of the law. As stated, ‘... the ultimate measure will be attainment with aquatic life standards and not the %IC that is achieved’. This grants flexibility to stakeholders to develop watershed plans and that go beyond traditional engineering approaches that limit the effects of IC.

3. *... has the methodology been approved in the context of all 29 watersheds in which it is currently being applied? If so, please provide documentation of EPA’s approval.*

The TMDL for all 29 watersheds has not been submitted to EPA for approval because it is still under public review, so no documentation currently exists. Once DEP submits the TMDL and EPA approves it, the documentation will be available. DEP has worked closely with EPA to develop a TMDL that meets Federal requirements and anticipates approval.

4. *Please include the TMDL element slide (from the 12/15/11 PowerPoint presentation).*

See page V. of the June Draft

5. *Incorporate language regarding reevaluating and reassessing regarding water quality standards.*

Reevaluating and reassessing Maine’s water quality standards does not come under the purview of a TMDL assessment. The purpose of a TMDL is to determine the pollutant loading and reductions that enable waters to meet existing water quality standards, which are designated under Maine statute. Specific legal rules, separate from the TMDL, need to be followed to change water quality standards.

6. *Add column to Table 5-1 to support DEP assertions regarding best professional judgment decision for TMDL targets.*

This was done in the June draft, see Table 5-1 and the corresponding watershed summaries.

7. *...Provide watershed specific prioritization of expectations that acknowledges ... limitations (both financial and restoration outcomes). ...please provide DEP’s plan for communicating all available quality assured data to municipalities in a timely manner.*

This comment refers to possible outcomes of the TMDL and the potential success of efforts that are beyond the scope of this TMDL. The case studies are provided for reference and educational purposes and demonstrate many of restoration challenges that municipalities may face. Each watershed is different, as are the potential solutions. The availability of data was addressed in the response to comment #1.

8. *Add a preamble to the report that discusses the disconnect between %IC reduction and water quality attainment. ...Discuss that in order to reach attainment, it is very likely that stream habitat and floodplain restoration will be*

*required... Clarify how stream habitat and floodplain restoration fits into the overall model ... a necessary component for successful stream restoration.*

The report does discuss the surrogate and disconnected nature of %IC to water quality attainment on page 2 of the June draft. Floodplain and habitat restoration are important to attainment, but not the focus of the TMDL. They are discussed in Section 4 and on page 30 of the June draft. These items are mentioned in the draft to suggest that they should be further explored during the development of a Watershed Management Plan.

9. *Please clarify that the three case studies provided in the proposed IC TMDL...d) are not case studies for achieving restoration... but case studies for potential next steps after the TMDL...*

ISWG correctly states that the case studies are provided for reference and guidance towards steps to take after the TMDL. Maine began to identify impairments in urban streams during the last 15 years and efforts to restore these streams are just beginning. With time, we do expect to have successful examples as we have had through DEP's 319 Program on Maine lakes- <http://water.epa.gov/polwaste/nps/success319/>. In the meantime, we see no reason to hold back on new practices and projects that are known to benefit water quality.

10. *We have a number of specific concerns...*

- a. *Please explicitly state in paragraph 1 of "Why is a TMDL Assessment Needed" that the TMDL and stream compliance is based solely on macroinvertebrate sampling & modeling. References to "restoring water quality" suggests that surface water quality (analytical) data has been collected and evaluated when it has not. References to "surface water quality" should be replaced by "environment suitable for macroinvertebrate communities" or something similar.*
- b. *...helpful to explain how stream reaches were deemed impaired... It appears to be inconsistent to recommend stream buffers to improve water quality and aid stream recovery in the body of the text but not consider the presence of natural and/or undeveloped buffers when defining impaired reaches or developing sampling sites within the individual TMDLs in the appendices. ...*
- c. *The inconsistency between an "unimpaired reach" not meeting macroinvertebrate criteria and no sampling in the "impaired reach" needs to be addressed. ...as well as conflicting recommendations about whether reducing IC and adding buffers is going to improve water quality...*

The watershed specific summaries are meant to be concise summaries of available data to describe the impairments listed in Maine's Integrated Water Quality Report. The impaired stream reaches were determined through DEP's assessments of aquatic life use, as protected by Maine's water quality standards. Maine's 303 d listing of impaired waters, (which for these waters did not include listings for specific pollutants) is a separate legal process from the TMDL, please refer to Maine's 'Integrated Water Quality Monitoring and Assessment Report' for listing details (<http://www.maine.gov/dep/water/monitoring/305b/index.htm>).

Maine's macroinvertebrate sampling and habitat assessments in waters affected by polluted stormwater integrate the effects of upstream pollution sources and therefore bracket sampling is not required; this is especially true in small urban watersheds. In watersheds where DEP has a minimal amount of sampling data, TMDL assessments are typically based on the best available data. DEP staff is available to answer specific data questions on any stream to help understand any apparent gaps. The streams are complex systems and, depending on the circumstances, both reducing IC and adding buffers may be in order. These considerations will be explored in detail through the watershed planning process.

- d. *The Kennedy Brook TMDL seems to suggest that adequate buffer in downstream locations may result in stream recovery, and therefore it is possible that the impaired segments identified in other TMDLs may*

*overstate the problem. However, results actually demonstrate that the sample site shown as being in the unimpaired reach of the stream is NA. It is a very big concern that NA results are being depicted in unimpaired reach of Kennedy Brook.*

The observations on Kennedy's buffer do not extrapolate to other streams. The impaired segment is incorrectly depicted on the map and DEP has updated the map to include site 620.

- e. Some are listed as impaired up to a wetland – are streams expected to meet classification at wetlands discharges even if the flow from the wetland is low DO or low pH and therefore not hospitable to macroinvertebrates?*

No, low DO that results from natural conditions do not violate water quality standards. DEP has developed different macroinvertebrate standards for wetland environments and can use those to distinguish natural versus anthropogenic impacts.

- f. Many show impairment upstream of the bulk of the impervious in the watershed (See Card Brook). How is reducing impervious downstream of impairment going to result in recovery upstream?*

Reducing downstream impacts will not influence upstream conditions; other upstream sources will need to be examined.

- g. Another general concern (see Concord Gully): there appears to be substantial forest buffer between the impervious areas and the stream. This should result... in improved water quality. Please include a discussion of this in all streams where this occurs.*

The substantial buffer on Concord does have a beneficial effect, but not enough to completely compensate for the other discharges. As the text states, buffers are beneficial to streams, but only a partial antidote for the effects of stormwater runoff. The benefits of buffers can be conditional on the extent of other pollutant sources in the watershed.

- h. ...please provide information about when each stream is due for another assessment.*

As stated in the report, Biomonitoring assessments follow a rotating basin schedule, for 5 basins and more information regarding that schedule can be found at:

<http://www.maine.gov/dep/water/monitoring/biomonitoring/materials/qapp.pdf>

This schedule is subject to operational decisions on an annual basis, so it is difficult to predict the exact year of future sampling on any given stream. The best estimate is 5 years from the last sampling date listed in the report, but this is subject to change and putting dates in the TMDL could be misleading.

- i. Please explain DEP's intended approach to data collection and dissemination as well as what plans exist if DEP's ability to collect or disseminate data is compromised by budget cuts.*
- j. ...Biological Monitoring Program will be used to measure the progress of water quality improvements." Should DEP's budget no longer allow biomonitoring, what is the process for determining attainment?*

The response to comment # 1 explains DEP approach to data dissemination. DEP does not currently anticipate substantial reductions in funding for data dissemination or data collection. Federal support and funding for DEP's Biomonitoring has been robust in the past, but there is always the potential for future budget cuts in the political process.



- k. *It would be helpful to have a subsection at the beginning of each section heading that defines the methodology.... deviations from the approved methodology should be explicitly discussed with documented reasons why methods were not followed.*
- l. *Please provide a definitions section that captures all terminology and acronyms used in the report.*

The methods, definitions and terminology used are fully described within the report and are adequate as stated.

- 11. *Provide a list of any streams where the watershed delineation is based solely on contour maps and provide an explanation including: ...timeframe for completing a field check of the watershed delineations...Plan of action if DEP's budget does not allow for this work to be completed...acknowledge that this is a considerable burden on municipalities if DEP is not able to complete...*

The watershed delineation status for each stream was included in the June draft. A description of the sources of watershed delineations and the GIS impervious coverage is on page 14 of the document and the source used for each watershed is in the individual summary. Delineations in the most highly urbanized watershed have been completed and DEP is continuing to intensively map these watersheds. If a community is about to embark on the watershed management planning process, they should contact DEP and we will work with the community to make sure accurate mapping resources are available.

- 12. *How was TMDL target derived for each watershed?... clarify the methods used when making "best professional judgment" determinations.*

DEP used the guidance in Appendix 2 and best professional judgment was applied to 4 watersheds, see Table 5-1. The reasoning behind the best professional judgment is described in the corresponding watershed summary.

- 13. *Is WLA/LA the same as WLA & LA and does that mean  $WLA \div LA$ ? Please clarify & make consistent throughout the document.*

As stated on page 17 of the document WLA and LA are combined, so the 3 references to WLA/LA, in the title to Table 5-1, will be changed to WLA & LA. The June draft contains no references to 'WLA  $\div$  LA'.

- 14. *The Frequently Asked Questions... Is DEP proposing to monitor individual BMPs within these 29 watersheds in order to determine their effectiveness and credits toward TMDL attainment? What is the plan for the properties where BMP retrofits are not feasible? ...What is the plan for areas where the stream is impacted by IC-related contaminants for which there is no BMP available to mitigate the impacts (e.g., chloride)?*

The FAQ's provide provisional answers to many questions posed on future potential actions and Watershed Management Plans, which are not technically required in a TMDL assessment. The 'credits towards attainment' is an example of how compliance might be measured in the future, but DEP may consider other reporting options after more in-depth discussions with stakeholders. There are no specific retrofit plans for any watershed and various available options will be considered during the watershed planning process.

Chloride is connected to IC runoff, but the characteristics of chloride are a special case due to storage, heavy application and groundwater contamination within some watersheds. Chloride will likely be treated as a separate contaminant in watersheds with exceedances because it cannot be addressed through traditional LID and BMP solutions.

- 15. *The Frequently Asked Questions... clarify what constitutes adequate progress in addressing stream impairments for communities (or portions of communities) within these watersheds that are not subject to an MS4 permit.*

The FAQ's provide answers to many questions, such as this one, that are not technically required in a TMDL. In watersheds where there currently may not be any regulatory authority, progress may be fully a voluntary effort, though the possibility also exists that sources could become regulated through the residual designation authority in the Clean Water Act.

Sincerely,

A handwritten signature in cursive script that reads "Melissa Evers".

Melissa Evers  
Environmental Specialist III

**Stella Luick Comments**

July 18, 2012  
Ms. Melissa Evers  
Maine DEP  
17 State House Station  
Augusta, Maine 04333

Re: Proposed IC TMDL for Card Brook, Ellsworth, Maine

Dear Ms. Evers:

Please accept this written correspondence as my formal comment as both a stakeholder and as a resident of Ellsworth, Maine, with regards to the proposed Maine DEP's IC TMDL for Card Brook in Ellsworth, Maine. Not only does the proposed IC TMDL for Card Brook does not make any logical sense for a receiving water of "urban drainage," it conflates the issue of culpability for the stream's "impairment" and places the burden on a small municipality struggling to meet tangible municipal tasks.

To begin with, all roadway drainage and parking lot runoff emanating from Route 1 and High Street (Rte 3) in Ellsworth, conveys to Card Brook. In the recent past, when the Harmon Tire Center project was proposed for development, the Maine DEP approved drainage re-direction plans submitted by Maine DOT. Not only was a larger diameter culvert installed for this project, but a level lip spreader was installed *under water*. Now, I'm not an engineer, but this clearly does not make any sense and does not fit into the definition of "logical reasoning." A level lip spreader is supposed to be constructed above grade for the purpose of capturing sediment and runoff from making its way to a "Water of the State." This clearly did not occur. Secondly, if the Maine DOT continually conveys roadway drainage to "Waters of the State" then there is no question that Card Brook and others will begin to show signs of impairment including elevated temperature, issues with Dissolved Oxygen related to fine sediments conveyed in the Stormwater and elevated chlorides originating from winter snow removal and road deicing activities. To direct all roadway drainage to such a small, shallow brook will undoubtedly create unhealthy conditions for aquatic life.

To place the entire burden on small cities and municipalities and ultimately, the already strapped, financially struggling taxpayer is not only unconscionable but irresponsible. If this is going to be the ultimate decision, then the DEP needs to consider the actions of the licensing division of the Maine DEP for these projects and the Maine DOT. They too need to take responsibility for their actions and help with costs associated with IC TMDL attainment.

Very Truly Yours,

Stella Luick  
City of Ellsworth Resident

**DEP Response to Stella Liuck's Comments**

August 14, 2012

Stella Luick  
City of Ellsworth Resident

Re: Response to Comments on Proposed IC TMDL for Card Brook, Ellsworth, Maine

Dear Ms. Liuck,

Maine develops TMDL's for all waters that do not meet water quality standards, as defined by Maine statute, and places these waters on an impaired list, called the 303d list. DEP is legally required under Maine statute and the Federal Clean Water Act to develop TMDL's that identify pollutant sources and find solutions to restore 303d listed waters. The IC TMDL provides a technical definition on the effects of impervious surfaces on aquatic resources. Problem recognition and definition (as you describe) are the first steps towards finding solutions to difficult water quality impairments and the community within the watershed needs to be part of the solution.

The TMDL provides a broad overview of the watershed processes and doesn't address project specific issues, such as the underwater lip level spreader described in your letter. I suggest you contact Jim Beyer in the DEP's Land Licensing Division in the Bangor office to find out more regarding specific project and licensing issues.

Ellsworth will grow and change in the future, and the planning recommended under the TMDL will enable the city to consider impacts to Card Brook as it moves forward with infrastructure improvements. The community actions that result from the TMDL will range from minor operational changes in routine activities to construction of engineered stormwater structures. Many of the pursuant projects will be eligible for Federal grant funds and the long term planning process should allow for reasonable financing options. The community will be able to define technically credible solutions and implement them at a reasonable pace to create a healthier stream and watershed.

Sincerely,



Melissa Evers  
Environmental Specialist III

## **Maine Municipal Association Comments #1**

### ***Maine Municipal Association’s comments to Maine Department of Environmental Protection’s Draft Maine Impervious Cover Total Maximum Daily Load Report for Aquatic Life-Impaired Waters (December 2011)***

Maine Municipal Association (MMA) would like to thank the DEP for the opportunity to provide comments on the December 2011 draft of the Impervious Cover (IC) Total Maximum Daily Load (TMDL) Report. MMA understands that streams and other water bodies in Maine are very valuable natural resources to the state’s citizens, and in certain instances protective measures need to be implemented to restore or protect these State assets. Our comments on these proposed rules are provided from the perspective of regulated entities, rather than the perspective of stream biologists, geomorphologists, or macro-invertebrate specialists.

**Regulation or non-regulation: The affected communities deserve to know.** This is not an easy document to understand in terms of its real-life implications with respect to those who will ultimately be held responsible for compliance. The fist of mandate is delivered in a velvet glove. In that sense, as a regulatory document, this draft TMDL has a seductive element. For the municipal governments that will likely be held largely or primarily responsible to the federal government or its designee, every effort is made throughout the document to describe the implications of having an impaired stream identified in your community as the beginning of a relatively soft, information-gathering, seemingly inexpensive, step-by-step and “iterative” consciousness-raising experience. Whenever money is implicated, grant programs are identified. Just as seductively, neither the specific methods of determining noncompliance nor the consequences of noncompliance are so much as mentioned.

Cutting through the presentation, the document appears to require 17 municipalities to either take the lead or assume an integral part in the development of 29 watershed management plans that inventory, identify, prioritize and finally implement a broad array of management practices and infrastructure installations at a total cost of millions of dollars. As noted in Case Study #3, the development of the Long Creek management plan was injected with \$2.1 million of federal stimulus funds and enjoys ongoing funding through the imposition of certain annualized fees on watershed property owners effectively imposed as a result of EPA’s designation of the watershed as a NPDES-regulated site. The prime funding of the Penjajawoc Stream management plan in Bangor was the more modest \$867,000, half coming from federal stimulus funds and half provided by the City itself. It might be noted that federal stimulus funds are no longer forthcoming, the economy is still in very tough shape, new property tax dollars are unavailable, and even the most sacred local government funding programs at both the state and federal level are at serious risk.

By the softness of this regulatory approach, a conundrum is presented to those trying to represent the interests of the regulated community. Should we gratefully accept these designations of impaired streams because they are couched in a “just show progress” regulatory approach, or should we seek more codified detail with respect to our on-the-ground obligations? There does not appear to be much that can be done with respect to the designations. They flow from the Clean Water Act. Seeking an enhanced regulatory diction, however, is clearly an option.

Generally, a community's highest interests when subjected to regulation are: (1) certainty and predictability with respect to the obligations to be incurred; and (2) rational and cost effective regulatory requirements.

Clean-cut predictability, in the case of this document, is sacrificed to a process; that is, the process of engaging stakeholders, inventorying the assets, prioritizing the response, finalizing the watershed management plan and then implementing its specifics. This process will presumably take the community in the appropriate direction given the particular environmental challenges facing the water body, but the financial and regulatory implications are uncertain. On the financial side, there are certainly some sources where resources external to the municipality may be available, but there is no apparent nexus between the availability of those external resources and prioritized terms of the watershed management plan. For example, if the planning process identifies a prioritized infrastructure installation costing \$500,000, that would appear to become the regulatory imperative regardless of funding availability.

There should be a clearly-stated nexus. To the extent the implementation of this TMDL demands financial expenditures at the municipal level, those obligations should be expressly tolled until financial resources external to the municipality are made available at a significant matching rate. The property taxpayers in the municipality will doubtlessly pay their share and then some, but others at the private-sector, state and federal level must also provide substantial matching contributions, not as a vague promise or a grant program gone dry, but as money on the table.

Related questions for DEP's consideration:

1. Is the IC TMDL Report a regulatory document? If it is not, then changes to the existing language in the Report need to be made so that it does not sound like a directive.
2. What steps does DEP take to ensure the accuracy of its watershed designations and other site specific data?
3. By what criteria does DEP allocate its own limited resources, including the distribution of grants or the Department's hands-on technical assistance, when assisting with the development of the watershed management plan?
4. Does DEP approve the watershed management plan? If so, what is the review process?

**The math of impervious cover.** This document takes up a great deal of its space laying out as its foundation a correlation between the percent of impervious cover in a small stream watershed and the quality of that stream's water. In summary, a percentage of impervious cover that exceeds 10% more or less is presumptively the root cause of an inability to attain certain water quality standards. It follows that a reduction in that percentage of impervious cover should presumptively result in the waterbody being able to recover its capacity to attain its prescribed rating.

As strong as this Report is on the math of impervious cover, rigorously detailing the percent of impervious cover per identified watershed and matching that baseline against the presumptive "IC" tolerance level, it is very weak on the math of impervious cover reduction where systems have been or will be implemented to effectively reduce or remove the impervious cover from the watershed. This document refers to such systems as "structural BMPS". What exactly is a structural BMP worth? If a retail establishment's parking lot is designed to accept all the stormwater generated at the site, collected in a sedimentation tank or pond, and only slowly discharge the settled, collected water into the natural soils, does this Report subtract that acreage

from the impervious area tally? Do other stormwater management strategies allow for partial or total “IC” deduction? Does the acreage of “low impact development”, whether implemented previous to or after this Report’s posting, get discounted from the impervious cover analysis?

Having so strongly underscored the correlation between impervious cover and water quality, there is next to nothing in this Report that provides some surety on the part of the regulated municipality that the aggressive reductions in impervious cover that at least some of these impaired stream communities will need to achieve is even remotely achievable. It is only fair that the mathematics of reducing or removing impervious cover (without necessarily tearing it up with a jackhammer) be clearly provided.

Related questions for DEP’s consideration:

5. Would an explanation as to how BMPs will effectively reduce the %IC in the watershed be available for “impacted” communities? Please provide the methodology that will be used by DEP when making that calculation.
6. Does the current condition %IC account for existing BMPs offsets? Is there a listing of different types of BMPs and their effective % IC reduction value (based on area covered) that could be made available to interested parties as part of this Report?

**One-way presumption.** The presumptions that form the foundation of this document are something of a one-way street. It is presumed that high levels of impervious cover in a stream watershed is the cause of the stream’s poor water quality characteristics and it is further presumed that if the impervious cover tally was reduced to a level somewhere between 5% - 16% (with most being at 9%), depending on the stream, the stream’s capacity to reach attainment would be obtained. On that point, it is stated on page two of this document that: *“Impervious cover targets represent the level of imperviousness (in the contributing watershed) at which the waterbody is capable of supporting a benthic macroinvertebrate community that meets aquatic life use goals and criteria in Maine’s water quality standards.”*

Against that backdrop, the Report makes clear that *“(i)f the initial IC target is met but the aquatic life still does not attain criteria of the stream’s assigned class, then the process of identifying and evaluating watershed stressors will be revisited”* (page 14).

To the regulated communities, this kind of one-way-valve regulatory approach (which ascribes the cause of the problem as X but is unwilling to admit that the eradication of X is the solution) paints an entirely uncertain regulatory future. Even if the municipality undertakes every recommended action and implements in good faith all the structural and non-structural BMPs that could be reasonably required, it might still be on the hook for further regulatory actions. It should be noted that achieving the aggressive %IC targets is not an easy task and puts the municipality in conflict with other legitimate economic development and anti-sprawl goals. Therefore, the effort could ultimately be recognized as ineffective and is not what the regulated community wants to hear. That type of regulatory uncertainty and the potential unintended consequences is unfair.

Related questions for DEP’s consideration:

7. Why is 9%IC the standard target for all classes of waterbodies (AA,A, B & C)? Should some consideration be given to the characteristics of the differing classes of waterbodies?

8. If progress towards improving water quality is recognized by DEP, why not have a higher %IC target than 9% in the IC TMDL for some of the “impaired” stream that is reflective of their current condition %IC. This approach may alleviate the concern from some of the communities that the %IC target is an unobtainable or unrealistic goal? As current condition %IC improves over the years, these %IC targets could be lowered until the ultimate goal of 9%IC is reached and/or the waterbody meets the necessary quality standards.
9. What happens when money is unavailable for the “impacted” community to fund the development and implementation of the watershed management plan? Would there be recognition among the enforcement community that there is a lack of available resources to fund the management plan and not claim that no “progress” was made by the community?

**Restorative time periods.** MMA is not qualified with any expertise on the biology or chemistry of stream restoration, but it is obvious from a lay perspective that this document does not readily acknowledge that the restoration of a stream’s capacity to achieve attainment will likely precede that stream’s actual attainment by a significant period of time.

In our view, if a community has taken substantial steps to achieving its impervious cover target, it should be provided some ledge along the sheer wall of ceaseless regulatory attainment upon which the municipality can rest without wondering what the next wave of requirement might be. If this is not the approach taken by DEP, then this exercise of improving water quality through the “effective” reduction of impervious cover in the watershed will be perceived by the affected communities as never ending.

## **Maine Municipal Association Comments #2**

### ***Maine Municipal Association’s comments on Maine Department of Environmental Protection’s Draft Maine Impervious Cover Total Maximum Daily Load Report for Aquatic Life-Impaired Waters (June 2012)***

***Provided July 19, 2012***

MMA’s approach for providing comments to DEP with respect to the June 2012 draft of the IC TMDL Report (IC TMDL) will center on our earlier comments related to the December 2011 draft and what concerns we still have with the latest draft. Overall, we feel that DEP did a good job of answering some of our questions but there are still questions that need answering and MMA hopes that the finalized version of the IC TMDL will accomplish that result.

**Regulation or not.** MMA’s early comments sought to establish the degree to which the IC TMDL is regulatory document. MMA’s understanding related to that question is the DEP considers the Report more as a guidance document that identifies the necessary steps to improve water quality in identified urban streams to the necessary levels that support benthic macro-invertebrate populations. Our understanding is that the semantic distinction protects the availability of “Section 319” grant funds for TMDL-related planning and implementation purposes. If this understanding is not correct, MMA would appreciate a clarification.

Another concern previously identified by MMA that could be better addressed by DEP in the IC TMDL is how specifically DEP and/or EPA staff can assist impacted municipalities with the development of the



watershed management plan and/or the implementation of best management practices to effectively reduce impervious cover. Although the latest draft indicates that DEP will be involved with the process, it would be helpful for communities to be apprised of the range or types of specific activities that the state and/or federal governments would be willing to provide local government when working through the process of improving water conditions in impaired streams.

**Calculating Impervious Cover.** Related to the “mathematics” of impervious cover issue we commented on in the earlier draft, MMA feels that Appendix 3 of the IC TMDL, the Q&A section, provides some helpful information through the links to EPA’s website. For example, the BMP Performance Extrapolation Tool (PET) seems to be a useful application that could provide municipalities with the data necessary to determine what efforts would provide them with the biggest bang for their buck when decided which best management practices to implement in their watersheds.

Questions associated with the BMP PET are:

- Would it make sense to put this information in the body of the document as opposed to referencing a link to this information in the appendices of the document due to its importance in municipalities’ decision making processes?
- Does this application cost anything, and if so, would EPA or DEP have resources available to partially pay for this service for interested municipalities? This assumes DEP will rely on a standard scale for certain best management practices and the associated effective reduction of impervious cover so adequate progress can be gauged.

**One-way presumption.** Our comment on the earlier IC TMDL draft related to the “one-way” regulatory approach (i.e. DEP indicating excessive impervious cover in the watershed is the problem related to water quality issues in urban impaired stream but then not admitting that eradicating impervious cover is the solution) is still a valid concern to municipalities. Since so much effort and time has been allocated on this subject matter, a formal recognition that reducing impervious cover translates in measurable progress needs to be made by the regulators. Without this recognition, this type of regulation could be deemed unfair due to its uncertainty.

**Financing.** Finally, a question we posed in our earlier comments related to the lack of financial resources and what that does to the requirement that adequate progress be made in improving water quality in impaired streams still needs to be answered. The Department’s recognition of severe municipal financial restrictions have been stipulated by DEP personnel and so we won’t detail all the types and sources of those restrictions here (e.g., loss of tax base, reductions in municipal revenue sharing, reductions in the state share of school funding, reductions in federal funding of certain school services, etc.). Given that recognition, and without financial assistance from another level of government, would DEP and others still recognize progress when watershed management plans and implementation of best management practices have to be delayed due to lack of financial resources?

MMA certainly appreciates DEP’s willingness to hear our comments about the IC TMDL at multiple stages of its development. We want to recognize the Department’s incorporation of language in the latest draft addressing some of our earlier concerns, and MMA hopes that the Department will continue on that path and provide further information that would be beneficial to the regulated communities and answer our questions raised in this commentary. Thanks.

**DEP Response to Maine Municipal Association's Comments**

August 14, 2012

Greg Connor  
Maine Municipal Association  
60 Community Drive,  
Augusta, ME 04330

RE: Response to Comments on Proposed Maine Statewide Impervious Cover Total Maximum Daily Load Assessment (TMDL) for Impaired Streams, June 2012

Dear Mr. Connor,

Thank you for your review of the TMDL, I'll address the questions posed in MMA's Memo #1 & #2 and cover many of the issues that lie outside of the legal and technical considerations required in a TMDL assessment. At its core, the TMDL is a technical document that links impaired streams to pollutant sources and set targets to achieve attainment of water quality standards. The TMDL does recommend future actions to achieve healthy waters, but this information is provided as guidance, not mandate.

Response to related questions for DEP's consideration:

1. *Is the IC TMDL Report a regulatory document? If it is not, then changes to the existing language in the Report need to be made so that it does not sound like a directive.*

No, the TMDL is not a regulatory document in the sense that the recommendations are not directly transferred to discharge permits.

The language was softened in the June Draft from 'implementation' to 'recommended future actions'. While not being a directive, the intention of this report is to provide the framework through which communities may consider actions to improve the impaired waters in their jurisdiction.

**Regulation or not. ... Our understanding is that the semantic distinction protects the availability of "Section 319" grant funds for TMDL-related planning and implementation purposes. If this understanding is not correct, MMA would appreciate a clarification.**

Actions taken to satisfy the recommendations in the TMDL have no bearing on the eligibility of a municipality for 319 funding, which operates under separate criteria. Eligibility of MS4 communities for 319 funding is an issue relevant to the pending MS4 permit language.

2. *What steps does DEP take to ensure the accuracy of its watershed designations and other site specific data?*

A description of the sources of watershed delineations and the GIS impervious coverage is on page 14 of the June draft and the source used for each watershed is in the individual summary. The accuracy of the GIS sources is provided in the metadata associated with those coverages and can be viewed on Maine's GIS website or provided upon request. While satellite imagery and orthophotos can be very good, field derived data is the most accurate. As described in the June draft, DEP has undertaken intensive fieldwork in many of the urban watershed to accurately delineate boundaries and

map impervious areas within the watershed. If a community is about to embark on the watershed management planning process, they should contact DEP and we will work with the community to make sure they have the most accurate mapping resources currently available, since map resources are continually evolving.

3. *By what criteria does DEP allocate its own limited resources, including the distribution of grants or the Department's hands-on technical assistance, when assisting with the development of the watershed management plan?*

This concern is about watershed management plans, which is not a legal requirement of a TMDL. DEP will allocate limited resources as we have done in the past, through a combination of grants to municipalities and providing staff assistance on specific stream projects. Competitive grant requirements for DEP's 319 Program can be found at <http://www.maine.gov/dep/water/grants/319.html>. When sufficient funding is available, DEP may also give out direct grants to communities that are in a position to take action on water quality improvement projects. The majority of Maine's watershed management plans have received DEP's technical assistance. In recent years, many consultants have developed this expertise as well. While DEP staff would like to assist in all impaired watersheds, current demand for limited grant funds will prevent us from meeting demand in the short term.

4. *Does DEP approve the watershed management plan? If so, what is the review process?*

DEP must approve watershed management plans that are 319 funded, or are used to procure 319 grants. These plans are reviewed for compliance with grant requirements under the 319 program, specifically meeting the nine elements of a watershed based plan which are listed on page 27 in Appendix 1. DEP staff is also available to answer questions on the granting process and more information regarding 319 grants can be found at <http://www.maine.gov/dep/water/grants/319-documents/2010/guidelines.pdf>.

There is no approval requirement for watershed management plans that do not seek grant funding.

5. *Would an explanation as to how BMPs will effectively reduce the %IC in the watershed be available for "impacted" communities? Please provide the methodology that will be used by DEP when making that calculation.*

Yes, that explanation is not simple, but it is readily available through the resources are listed on page 32 in Appendix 1. The methodology for calculating reductions in effects of impervious surface linked to complex modeling results, engineering calculations and land use analysis. The degree of complexity associated with these interactions is the reason DEP recommends development of a watershed management plan in order to develop solutions that counteract the effects of impervious runoff. Reviewing a well put together watershed management plan could provide a reasonable understanding of how to apply a methodology. I suggest looking at the Penjajawoc Watershed Management Plan- [http://www.gulfofmaine.org/kb/files/9426/Arter\\_2008\\_Penjajawoc%20stream%20management%20plan.pdf](http://www.gulfofmaine.org/kb/files/9426/Arter_2008_Penjajawoc%20stream%20management%20plan.pdf).

**Calculating Impervious Cover....** *For example, the BMP Performance Extrapolation Tool (PET) (in Appendix , FAQ's) seems to be a useful application that could provide municipalities with the data necessary to ...decide(d) which best management practices to implement in their watersheds. Questions-... put this information in the body of the document ... Does this application cost anything...*

The FAQ's include an example of how compliance might be measured in the future, but DEP may consider other methodologies to estimate BMP effectiveness after further discussions with stakeholders. After further deliberation, it is possible that a consistent methodology will emerge and be helpful to communities as they move forward with planning. Additionally, the BMP Performance Extrapolation Tool for New England can be downloaded for free from the EPA

website- <http://www.epa.gov/region1/npdes/stormwater/assets/pdfs/BMPPETInstructions.pdf> ,and used by interested communities at anytime.

6. *Does the current condition %IC account for existing BMPs offsets? Is there a listing of different types of BMPs and their effective % IC reduction value (based on area covered) that could be made available to interested parties as part of this Report?*

No, the %IC methodology does not account for existing BMPs. Yes, please refer to the resources are listed on page 32 in Appendix 1.

7. *Why is 9%IC the standard target for all classes of waterbodies (AA,A, B & C)? Should some consideration be given to the characteristics of the differing classes of waterbodies?*

Different classes of waterbodies have different targets and this shown in Table 4-1 on page 13 and explained in greater detail in Appendix 2. The targets shown in Table 5-1 reflect the criteria laid out in Appendix 2.

8. *If progress towards improving water quality is recognized by DEP, why not have a higher %IC target than 9% in the IC TMDL for some of the “impaired” stream that is reflective of their current condition %IC. This approach may alleviate the concern from some of the communities that the %IC target is an unobtainable or unrealistic goal? As current condition %IC improves over the years, these %IC targets could be lowered until the ultimate goal of 9%IC is reached and/or the waterbody meets the necessary quality standards.*

In many respects the incremental approach you described would be helpful to communities, but then the TMDL would not comply with Federal standards. The TMDL must link pollutant sources to designated impairments and set targets to achieve attainment of water quality standards. TMDLs take a conservative approach and higher incremental values are not accepted under current interpretations of the law. Conceivably, this approach could be incorporated into a watershed management plan that will be phased in over time due financial resource constraints.

9. *What happens when money is unavailable for the “impacted” community to fund the development and implementation of the watershed management plan? Would there be recognition among the enforcement community that there is a lack of available resources to fund the management plan and not claim that no “progress” was made by the community?*

*...would DEP and others still recognize progress when watershed management plans and implementation of best management practices have to be delayed due to lack of financial resources?*

DEP’s intent in promoting the watershed planning approach to address stormwater management challenges is to encourage communities to undertake the hard work of stream restoration by laying out the details of what needs to be accomplished and how it might be funded. Developing a mechanism for communities to report on progress towards reducing the impact of impervious cover is described in Appendix 3 in the ‘Frequently Asked Questions’ section. The FAQs presents an example of how compliance might be measured in the future, and DEP will investigate the available options after more in-depth discussions with stakeholders. Many of the pursuant projects will be eligible for Federal grant funds and the long term planning process should allow for reasonable financing options. DEP will recognize community progress that is made in accordance with an approved plan and past performance demonstrates DEP’s willingness to work with communities to find reasonable and feasible solutions to challenging problems.

Will regulators “acknowledge that the restoration of a stream’s capacity to achieve attainment will likely precede that stream’s actual attainment by a significant period of time”... “if a community has taken substantial steps to achieving its impervious cover target”?

...then this exercise of improving water quality through the “effective” reduction of impervious cover in the watershed will be perceived by the affected communities as never ending.

... a formal recognition that reducing impervious cover translates in measurable progress needs to be made by the regulators. Without this recognition, this type of regulation could be deemed unfair due to its uncertainty.

These statements on the difficulty of pursuing water quality standards express the concerns of many communities. Under the Clean Water Act, DEP and communities need to establish that they have made all feasible efforts to restore a waterbody. Like many new challenges, it is difficult to predict the outcome of the various efforts. The practical limits of stream attainment will emerge over time as we gain experience with restoration practices and evolving technological solutions. The pace of developing solutions and the lag time for a biological response will be a consideration when looking at compliance issues, as well as the degree to which nonpoint sources are contributing to non-attainment. Once all reasonable structural and non-structural solutions, including voluntary actions, have been applied then questions regarding the attainment of water quality standards may need to be revisited.

Sincerely,



Melissa Evers  
Environmental Specialist III

**Maine Turnpike Authority Comments***Maine Turnpike Authority*2360 Congress Street  
Portland, Maine 04102Daniel E. Wathen, Augusta, Chairman  
Diane M. Doyle, Saco, Vice Chairman  
James F. Cloutier, Portland  
Gerard P. Conley, Sr., Portland  
John E. Dority, Augusta  
Robert D. Stone, Auburn

Bruce A. Van Note, Deputy Commissioner MaineDOT, Ex-Officio

Peter Mills, Executive Director  
Douglas Davidson, Chief Financial Officer & Treasurer  
Peter S. Merfeld, P.E., Chief Operations Officer  
Jonathan Arey, Secretary & General Counsel**VIA EMAIL**

July 19, 2012

Ms. Melissa Evers  
Department of Environmental Protection  
State House Station #17  
Augusta, Maine 04333**SUBJECT: Proposed Maine Statewide Impervious Cover Total Maximum Daily Load**

Dear Ms. Evers:

Maine Turnpike Authority (MTA) would like to thank Maine Department of Environmental Protection (DEP) for the opportunity to provide comment on the most recent draft (June 2012) of the Impervious Cover (IC) Total Maximum Daily Load (TMDL) Assessment for Impaired Streams.

As you know, MTA and Maine Department of Transportation (MaineDOT), along with numerous additional regulated entities that may be affected by this proposed TMDL, participated in an informal stakeholders process in 2011. Subsequently, both transportation agencies have previously provided written comments in consultation with one another, which are provided as an attachment to this document. To date, these comments do not appear to be addressed by DEP in either the latest draft of the TMDL document or the Frequently Asked Questions (FAQs) posted to DEP's website in June 2012. In fact, the FAQs raise additional questions, such as:

- **Standard "to determine credits toward attainment"** on Page 5 of FAQ – Unless DEP is prepared to provide a standard method, tool or reference for calculating these credits, there may not be consistent and accurate progress measured from watershed to watershed or across the State. This may be particularly important to DEP for progress reporting to EPA, as well as MTA which traverses numerous watersheds and consistency is particularly important for planning and regulatory compliance purposes.
- **Funding of Best Management Practices (BMPs) and other controls** on Page 6 of FAQ – Unless DEP and/or EPA are prepared to provide funding for the controls required by this TMDL, the transportation agencies who traverse each of these watersheds will be perceived as the primary source of funding in each watershed, thus unfairly targeting MTA and MaineDOT public funds, especially during these times of economic hardship. Furthermore, watershed management plans (WMPs), which are a requirement of this TMDL, are estimated to cost \$100,000 to \$300,000 to develop. Implementation of all the controls identified in each WMP



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is not generally less than \$1Million (M). Therefore, to serve all 32 watersheds identified in the TMDL, a minimum of \$36M must be allocated to implement this TMDL. Please reference Comment #2 in MTA's previous comments attached and submitted to DEP on 5/31/12.

- **Regulatory impacts of the TMDL** on Page 7 of FAQ – Although the approval of this TMDL as a stand-alone document may not constitute rulemaking by DEP, any TMDL coupled with a regulatory/enforcement mechanism, like the Municipal Separate Storm Sewer System (MS4) permit that is referenced throughout the FAQ, impacts the regulatory burden borne by the permittee. In this case, the regulatory burden and financial impact within each MS4 community is fairly significant. Because the transportation agencies traverse numerous impaired streams and MS4 communities listed in this statewide IC TMDL, the regulatory burden and financial impact is significantly multiplied for MTA and MaineDOT. Considering the recent executive order from the Governor's office regarding DEP rulemaking, has this TMDL received appropriate review and approval?

MTA respectfully requests that DEP consider the comments and questions raised herein, as well as the previous comments attached before moving forward with approval, especially since this statewide approach is especially burdensome to the transportation agencies that presently maintain and operate IC as public thoroughfares in the impaired streams identified in this TMDL.

If you have any questions, please call me at my office telephone number (207) 871-7771 ext. 359.  
Thank you.

Sincerely,



John M. Branscom  
Environmental Services Coordinator  
Maine Turnpike Authority

**Attachments:** MTA Comments submitted to DEP on 5/31/12  
MaineDOT Comments submitted to DEP on 5/31/12

**CC:** Jon Arey, MTA  
Steve Tibbetts, MaineDOT  
Judy Gates, MaineDOT  
Robyn Saunders, GZA GeoEnvironmental, Inc.



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**Maine Turnpike Authority**  
2360 Congress Street  
Portland, Maine 04102

# Memorandum

To: Don Witherill, Director, Division of Watershed Management, DEP  
Melissa Evers, DEP

Cc: Steve Tibbets, MaineDOT  
Peter Merfeld, Steve Tartre, Jon Arey, Conrad Welzel, MTA

From: John Branscom, Environmental Services Coordinator, MTA  
Robyn Saunders, GZA GeoEnvironmental, Inc. (GZA)

Date: May 31, 2011

Re: DEP's Preliminary Draft of Impervious Cover (IC) Total Maximum Daily Load (TMDL)

Maine Turnpike Authority (MTA) appreciates the opportunity to provide the following comments on the proposed statewide IC TMDL during this informal process. MTA looks forward to DEP's response to the general and technical comments presented below.

## GENERAL COMMENTS:

**Comment #1** – Moving forward simultaneously on all 29 watersheds concurrently as proposed in this statewide IC TMDL may overextend or exhaust the resources of public agencies to respond appropriately. For example:

- **MTA:** As you may know, MTA operates and maintains a linear right-of-way (ROW) from Kittery to Augusta that traverses several of the 29 watersheds that DEP has proposed to list as part of this statewide IC TMDL. To date, MTA has taken a proactive approach with respect to the watershed management planning efforts for many of the urban impaired streams (UIS) that MTA traverses by participating in stakeholders' processes, such as those convened by municipally-led partnerships in Hart Brook (Lewiston), Long Creek (South Portland), Capisic Brook (Portland) and Red Brook (Scarborough). However, MTA may not have the resources available to (1) respond concurrently in the additional watersheds listed in this IC TMDL, as well as those in progress; and (2) maintain the proactive and positive partnership established to date.
- **Maine Department of Transportation (MaineDOT):** Although MTA only traverses a subset of the proposed watersheds in the draft IC TMDL, it is likely that MaineDOT ROW may traverse most (if not all) of the 29 watersheds. Therefore, MaineDOT may face similar demands on available resources to respond concurrently in all of the watersheds listed in the IC TMDL. Please see comments submitted by MaineDOT for more information regarding the anticipated impact on resources and response efforts for MaineDOT.
- **Municipalities:** In addition to MaineDOT and MTA being challenged to respond concurrently on a statewide basis, all of the municipalities within which the 29 watersheds are located would be challenged to finance the development and implementation of the watershed-based management plans that are currently recommended as next steps in the proposed IC TMDL.



With little to no funding allocated or available to support the municipalities' efforts, this proposed IC TMDL virtually becomes an unfunded mandate for the municipalities to prioritize amid a time of budget shortfalls/cutbacks and general economic hardship.

***Suggested Response:***

1. Instead of "batching" all of the proposed 29 watersheds together simultaneously with a similar timeframe for concurrent implementation, it may be more prudent for the DEP to stagger the timing of the TMDLs to allow MTA (and other statewide stakeholders, like MaineDOT) the opportunity to make a more meaningful contribution to partnership opportunities in these watersheds. Additional support for suspending the release of the IC TMDL is also provided in **Comments #2, 3 and 4**.
2. Since this IC TMDL may virtually constitute an unfunded mandate for the public sector to comply, we respectfully request that DEP prepare a financial impact statement to understand and quantify the full affects of this proposed statewide IC TMDL. Additional information regarding the financial impacts of this proposed TMDL is provided in **Comment #2**.

**Comment #2** – At the public meeting held in the Portland area on April 21, 2011, the DEP presented this proposed statewide IC TMDL to be both:

- (1) An egalitarian approach for all communities/watersheds listed based on the criteria for inclusion in the TMDL (i.e., impairments for aquatic life and %IC calculations within watershed); and
- (2) A streamlined approach for state resources to "batch" the TMDL efforts for the 29 watersheds.

However, the grouping of all of these watersheds in a statewide IC TMDL merely transfers the regulatory and financial burden of compliance for these watersheds from the State level<sup>1</sup> to the municipal level with limited funding and data to address the impairments, which may limit the chances for successful restoration. For example:

- Development of a watershed-based management plan to date in Maine ranges from \$35,000 to at least \$100,000;
- Implementation of the recommendations within the plan start at \$2,000,000 (i.e., Whitten Brook in Skowhegan); and
- Assuming each of the 29 watersheds require development of a plan (i.e., median cost of \$50,000 per watershed) and implementation of recommendations (i.e., minimum of \$2,000,000 per watershed), the total statewide cost would be roughly \$60 million with little to no funding allocated at the present time.

Furthermore, the "egalitarian" presumption inferred by DEP does not account for the fact that many of these watersheds are located within Urbanized Areas (UA), where regulated municipal separate storm sewer system (MS4) permittees are compelled to comply with the proposed IC TMDLs (which further limits the availability of funds for the MS4 municipalities<sup>2</sup>), while non-MS4 watersheds do not share the same potential non-compliance implications.

<sup>1</sup> According to Section 319 of the Clean Water Act, the DEP shares in the responsibility to restore impaired waters of the United States; therefore, the transference of responsibility from the DEP to the municipalities appears irresponsible since the municipalities lack the scientific, engineering and human resources that the DEP has available to them through the expertise of their staff.

<sup>2</sup> Although the DEP may offer some funds (i.e., less than \$100,000 per year on a statewide basis) to municipalities and other non-profit organizations through the DEP's 319 grants program, MS4 communities are not likely eligible for grant funding since most grant money cannot be used to meet regulatory permit obligations and therefore becomes a financial burden for the municipality and the respective stakeholders to bear.

***Suggested Response:***

DEP should postpone finalization of the IC TMDL in order to re-evaluate the recommendations relative to MS4 permit requirements. DEP should also include additional guidance in the proposed statewide IC TMDL pertaining to these two issues: (1) identifying MS4 permit obligations relative to this proposed IC TMDL; and (2) addressing DEP's (and perhaps EPA's) supporting role and expressed commitment of resources (i.e., human, financial, technical) relative to implementation of this expensive statewide TMDL.

**Comment #3** – There are many places within the current proposed IC TMDL where the following occurs:

- The TMDL is incomplete (i.e., missing Appendix 3, missing information in narrative text, figures or Appendices);
- Some of the watershed specific information is not complete or accurate (e.g., watershed summary for Thacher Brook in Biddeford); and/or
- The term “professional judgment” is used to explain certain assumptions.

***Suggested Response:***

In order to provide the most complete and accurate data to support successful restoration, DEP should consider postponing the finalization of this proposed statewide IC TMDL to provide:

- (1) DEP the opportunity to coordinate and communicate with local contacts regarding the specifics and accuracy of each listed watershed summary (i.e., accurately delineated watershed, comprehensive review of qualitative and quantitative data);
- (2) Stakeholders and municipalities the opportunity to review complete and accurate TMDL information before the formal public process begins; and
- (3) DEP the ability to support or provide additional information where “professional judgment” is relied upon, instead of scientific data.

Furthermore, as you may know, the EPA is undertaking a national rulemaking initiative to expand stormwater programs throughout the United States. This initiative began in August 2009, which included exploring efforts to manage and address UIS issues. EPA's recommendations for this initiative are anticipated to be released in September 2011. Therefore, it may be beneficial to understand and integrate the EPA's proposed national approach before the DEP embarks on an unprecedented effort to manage IC on a statewide basis, instead of on a specific watershed basis where a thorough understanding of the impairments are presented.

**TECHNICAL COMMENTS**

**Comment #4** – The proposed IC TMDL establishes a 10-year timeframe for development and implementation of a watershed-based management plan that incorporates Best Management Practices (BMPs) and Low Impact Development (LID) techniques to achieve restoration and attainment of water quality standards. However, there appears to be no real “case study” available to demonstrate that BMPs and LID techniques can be used to reduce the effective IC and achieve restoration and attainment. The case studies provided in the proposed IC TMDL do not appear to demonstrate successful restoration/attainment, instead they merely demonstrate the successful development of a watershed-based management plan.

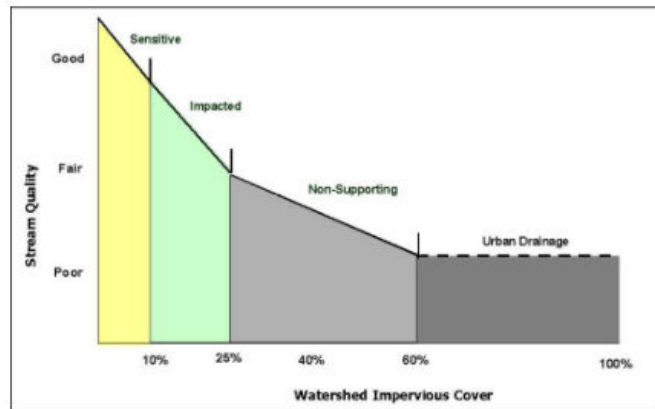
***Suggested Response:***

Please clarify that the three case studies provided in the proposed IC TMDL (i.e., Whitten Brook in Skowhegan, Penjajawoc Stream in Bangor and Long Creek in South Portland) have or have not achieved restoration and/or attainment of water quality standards for aquatic life.

Furthermore, if there is available information regarding case studies that successfully demonstrates that the implementation of BMPs and LID techniques to reduce the effective IC will ensure restoration and/or attainment, then please provide information relative to the following:

- The location of these successful watershed restoration and/or attainment case studies;
- The “rebound curve” for the impairment in %IC versus health of the watershed<sup>3</sup> (as seen in Figure 1 below); and
- The kinetics for this “rebound curve” to achieve restoration.

**FIGURE 1 – Impervious Cover Model (Centers for Watershed Protection, 2008)**



**Comment #5** – Generally, a TMDL equation consists of four terms:

$TMDL = \sum WLA + \sum LA + MOS + BG$  where:

- WLA = waste load allocations (i.e., point sources);
- LA = load allocations (i.e., non-point sources);
- MOS = margin of safety; and
- BG = ambient or naturally-occurring background demand.

However, in this draft IC TMDL, DEP appears to have:

- (1) Neglected to account for the fourth term (i.e., BG – background load expressed from ambient conditions and aquatic communities);
- (2) Assumed the MOS for most of the 29 watersheds to be equal to 1, but in several circumstances the MOS is assumed to be equal to 2 (i.e., Kimball, Nasons, Phillips and Red Brooks) with little to no expressed reason supporting this differentiation; and
- (3) Assumed the Target TMDL to be:
  - 10% for most Class B streams, except Card Brook (i.e., 8%); and
  - 10-15% for Class C streams with little to no expressed reason for the differentiation other than “professional judgment.”

As you may know, according to 40 CFR 130.7, a proposed TMDL must include a description (including magnitude and location of sources) for both WLA and LA. Therefore, the statewide

<sup>3</sup> There appears to be ample information regarding the connection between the degradation of the watershed’s health versus the %IC; however, there may be a lack of scientific data to demonstrate how or when the health of the watershed will rebound following effective IC reduction techniques, like BMPs and LID.

approach in this proposed IC TMDL appears overly generalized and presumptive. However, in order for the DEP to release the proposed TMDL to the public, one would assume that the EPA has reviewed the methodology and provided feedback (i.e., positive or negative) on the document and its methodology.

***Suggested Response:***

Please provide (a) a summary of the EPA's review of this proposed TMDL methodology (i.e., whether it meets the standards set forth in 40 CFR 130.7); and (b) clarity and supporting information in consideration of DEP's apparent assumptions mentioned above, which include the following:

- (1)  $BG = 0$  (i.e., Does DEP propose eliminating this fourth term from the TMDL equation or combining it with the LA term of the TMDL equation?);
- (2)  $MOS = 1$  versus 2 (i.e., four streams listed above); and
- (3) TMDL = range from 10-15% for Class C streams and 8% for one Class B stream.

**Comment #6** – The TMDL appears to be based on a fairly small data set (i.e., 43 samples in 32 watersheds), of which 29 of the 32 watersheds were included in this proposed IC TMDL.

***Suggested Response:***

Please provide information with respect to the high correlation between the number of watersheds sampled (i.e., 32) and the inclusion within this proposed TMDL (i.e., 29). For example:

- Were there certain assumptions or criteria developed to identify the streams to be sampled and considered for inclusion in this proposed statewide IC TMDL? If so, please explain.
- Are there additional watersheds that the DEP anticipates sampling and including in this proposed IC TMDL since there is language within the document that enables the DEP to add additional watersheds at any time?



**Maine Department of Transportation**  
Environmental Office  
Child Street  
16 State House Station  
Augusta, ME 04333-0016

## Memorandum

To: Don Witherill, Director, Division of Watershed Management, Maine DEP  
Melissa Evers, Maine DEP

From: Stephen Tibbetts, Senior Environmental Engineer, MDOT, Environmental Division  
(207) 557-3471

Cc: John Branscom, Environmental Services Coordinator, MTA  
Robyn Saunders, GZA GeoEnvironmental, Inc. (GZA)

Date: May 31, 2011

Re: Maine DEP: Preliminary Draft of Maine Impervious Cover Total Maximum Daily Load  
(TMDL) for Aquatic Life-Impaired Waters, March 2011

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The Maine Department of Transportation (MaineDOT) has reviewed the “Preliminary Draft, Maine Impervious Cover Total Maximum Daily Load (TMDL) for Aquatic Life-Impaired Waters”, dated March 2011. The Maine Turnpike Authority (MTA) is also submitting their comments to the report. MaineDOT concurs with their recommendations and submits the following supplemental comments. Please contact Stephen Tibbetts for any questions/clarifications of MaineDOT’s comments.

### **Impervious Cover-TMDL Science General Comment**

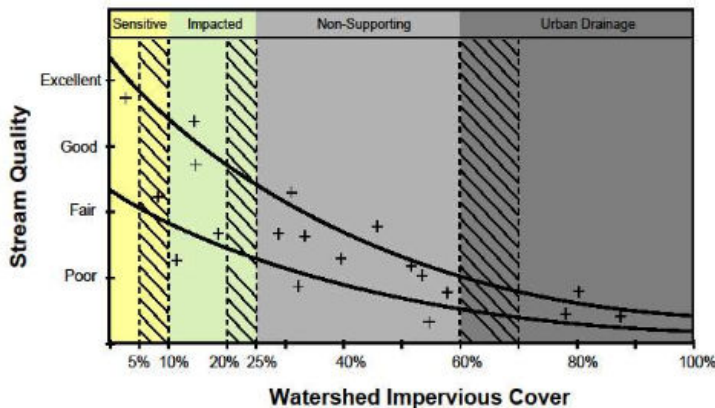
The science behind the impervious cover model (ICM) has been verified through rigorous research. However, the model has been revised in the past years to show more variation in the effective impairment thresholds than originally predicted.

The ICM has been reformulated to show a broader range of IC as reported in Chesapeake Stormwater Network Technical Bulletin No. 3, “Implications Of The Impervious Cover Model: Stream Classification, Urban Subwatershed Management And Permitting”. The following excerpt highlights some of the relevant findings of the study:

The reformulated ICM is best used as an urban stream classification tool to set reasonable expectations for stream quality indicators over broad ranges of subwatershed IC. In general,

the predictions of the ICM are as follows: Stream segments with less than 10% IC in their contributing drainage area continue to function as high quality streams, and are generally able to retain their hydrologic function and support good to excellent aquatic diversity. Stream segments that have 10 to 25% IC in their contributing drainage area behave as Impacted

### The Reformulated ICM (aka “The Cone”)



Streams and show clear signs of declining stream health. Most indicators of stream health will fall in the fair range, although some segments may range from fair to good as riparian cover improves.

The decline in stream quality is greatest towards the higher end of the IC range. Stream segments that range between 25 and 60% subwatershed impervious cover are classified as non-supporting streams (i.e., no longer supporting their designated uses in terms of hydrology, channel stability habitat, water quality or biological diversity). *These stream segments become so degraded that any future stream restoration or riparian cover improvements are insufficient to fully recover stream function and diversity (i.e., the streams are so dominated by subwatershed IC that they cannot attain pre-development conditions)*

This study makes the point that watershed plans (WP) need to reflect this variation in impervious cover in all of the subwatersheds and place planning priorities on those areas that can be restored to target goals. There are 10 watersheds with greater than 25% impervious cover included in DEP’s preliminary draft, yet these watersheds have a TMDL target of 10%. As the TMDL process moves forward, MaineDOT believes that *these TMDL goals will be not only extremely difficult to attain, but also prohibitively expensive to accomplish in these watersheds because the only design option available to MaineDOT and other stakeholders are expensive retrofits to their existing impervious areas.*

To quote again from the Chesapeake Stormwater Network Technical Bulletin No. 3:

-The management goal for both stream classes (non-supporting and urban) is to limit the extent of degradation, while at the same recognizing these subwatersheds are an intense human habitat, both in the uplands and the remaining stream corridor.

-The best prospects for improving stream quality indicator scores occurs in sensitive and impacted watersheds, whereas the cost and feasibility of restoration climbs rapidly in non-supporting and urban drainage subwatersheds.

Recommendation: DEP should revisit the TMDL targets for those watersheds with greater than 25% impervious cover to assess whether the proposed targets are attainable considering anticipated stakeholder costs to retrofit their impervious cover and/or conveyance systems. Watersheds in the 20 to 25% range should also be revisited to insure that their proposed targets are realistic. Effective watershed management should be based on recent research that develops management plans based on the current and anticipated watershed impervious cover and stream type: Sensitive, Impacted, Non-Supporting, and Urban Drainage. (“The Impervious Cover Model Revisited: review of recent ICM research”, Tom Schueler and Lisa Fraley-McNeal, Symposium on Urbanization and Stream Ecology, May 23 and 24, 2008).

#### **IC-TMDL Implementation Comments**

From “Adaptive Implementation of Water Quality Improvement Plans: Opportunities and Challenges”, Nicholas School of the Environment and Earth Sciences, Nicholas Institute, Duke University, September 2007:

-As the multiplicity of stressors increases, there is more uncertainty about the predicted effects of pollutant load reduction actions on attainment of standards.

-One problem in establishing an implementation plan to secure a TMDL is the large uncertainty in quantifying the contributions of and effectiveness of controls on non-point sources.

- Adaptive implementation means that over time there is an organized and well supported program that uses new knowledge to continually re-evaluate the effectiveness of possible actions to meet the TMDL.

The DEP report emphasizes that future development in the watersheds will require adequate planning and design controls to ensure that no further increase in IC occurs. MaineDOT is charged with providing a safe and efficient transportation system, which may require increasing impervious areas to meet federal highway engineering and safety standards. Existing impervious areas, however, will require a strong emphasis on retrofitting and/or disconnection of impervious surfaces from direct discharge into the receiving waters utilizing engineered BMP’s and LID techniques.

No reduction in effective impervious area can be obtained without retrofitting. This will pose a difficult and expensive challenge for the MaineDOT and other stakeholders. With our limited rights of way it is very difficult and costly to install state-of-the-art retrofits or to disconnect our drainage systems and discharge them into vegetated buffers.

There is a great deal of uncertainty as to the effectiveness of many of the BMP options available for retrofits. As new watershed plans are developed, implementation emphasis should be based on a “build and learn” process, where a few high priority sites are identified, BMP’s designed and installed, then monitored for their effectiveness in improving stream health. Once the monitoring results are clarified, more retrofits can be installed based on the findings. Also, as BMP science progresses, this approach leaves open opportunities to adapt new technologies into the watershed plan.

It is with this approach in mind that *MaineDOT recommends that DEP not set 10 year attainment periods for the watershed IC-TMDLs*. The overall goal of stream restoration should remain, but the time frame should remain flexible, allowing for fine-tuning of retrofit practices to the various watersheds, developing funding mechanisms for implementation, and getting all of the various stakeholders involved in the process.

In this era of diminished funding, MaineDOT and other stakeholders will find it beyond their financial means to meet their obligations proposed in the various watersheds included in this report. All of the watershed reports should emphasize fairness in their implementation plan. Least expensive practices that achieve the best stream restoration results should be emphasized, such that there is a balance between the cost of TMDL attainment and overall implementation costs, shared amongst the stakeholders.

**Note:**

MaineDOT is currently reviewing their Drainage Connection Policy to include water quality pretreatment as a precondition to connection to MaineDOT drainage systems for all impervious cover that triggers Chapter 500 or MS4 permits. Municipalities should consider this addition to their existing policy for stormwater system connection. This would insure IC treatment for future projects discharging to State/Municipal conveyance systems.

MaineDOT looks forward to working with the DEP in the future on this important subject and appreciates the opportunity to participate in the report’s review process.



**DEP Response to Maine Turnpike Authority Comments**

August 14, 2012

John Branscom  
Environmental Services Coordinator  
Maine Turnpike Authority  
2360 Congress St.  
Portland, ME 04102

RE: Response to Comments on Proposed Maine Statewide Impervious Cover Total Maximum Daily Load Assessment (TMDL) for Impaired Streams, June 2012

Dear Mr. Branscom,

Thank you for your review of the TMDL, I'll address the issues raised in the MTA's letter and memo based on current interpretations of TMDL requirements. The TMDL is a technical document designated to link impaired streams to pollutant sources and set targets to achieve attainment of water quality standards. Many of the issues raised in your comments are directed at potential future measures needed to achieve the water quality standards described in the TMDL and lie outside of the legal and technical considerations required in a TMDL assessment.

- ***Standard "to determine credits towards attainment" on page 5 of FAQ...***

The FAQ's provide provisional answers to many questions posed on potential future actions, which are not technically required in a TMDL assessment. The 'credits towards attainment' is an example of how compliance might be measured in the future, but DEP may consider other reporting options after more in-depth discussions with stakeholders.

- ***Funding of Best Management Practices (BMPs) and other controls on Page 6 of FAQ***

Funding of BMPs is not required to be part of a TMDL report nor does the TMDL dictate how an impaired water will be restored. The next recommended step is to develop a watershed management plan that lays out the details of what needs to be accomplished and how it might be funded. Any requirements placed on contributors to the impairment would occur not through the TMDL, but through separate regulatory authority. Otherwise, funding would happen through other means, including the possibility of some grant funding.

- ***Regulatory impacts of the TMDL on Page 7 of FAQ...Considering the recent executive order from the Governor's office regarding DEP rulemaking, has this TMDL received appropriate review and approval?***

The TMDL was reviewed for compliance with the Governor's executive orders by the Policy Director in DEP's Office of the Commissioner. This report is issued to satisfy the requirements of Section 303(d) of the Clean Water Act and of 40 CFR § 130.2 that the State of Maine provide an estimate of the total maximum daily load of pollutants for those impaired waters previously identified in the State. Because the results of the estimates may be subsequently considered and/or utilized in regulatory programs such as the MS4 program, the Department includes in the appendices examples of ways to utilize the information in the report, and recommendations regarding addressing the impaired waterbodies. This report does not impose any regulatory requirements.

The Stream Appendices may provide beneficial tools and information for MS4's that want to begin the long term watershed management planning process.

- ***Comment #1 – Moving forward simultaneously on all 29 watersheds concurrently as proposed in this statewide IC TMDL may overextend or exhaust the resources of public agencies to respond appropriately***

There is no requirement to move ahead concurrently on all 29 watersheds and exhaust public resources. As previously stated, DEP intends to consider public resources while taking a reasonable approach towards achieving the recommendations. The value of developing TMDLs for 29 streams at once is to inform communities regarding the water quality impairments on streams in their jurisdiction and have them incorporate this issue into their planning process.

- ***Comment #2 – ...a statewide IC TMDL merely transfers the regulatory and financial burden of compliance for these watersheds from the State level to the municipal level...***

Responsibility for restoring impaired streams is not confined to specific level of government and any successful restoration effort requires a partnership among a spectrum of stakeholders. Over time, DEP has found that restoration in lake watersheds is the most successful when initiated by local stakeholders. It is in the municipality's best interest to spearhead watershed planning because they have the local knowledge needed to integrate economic growth and community needs with water quality improvement projects.

- ***Comment #3 –***
  - *Describes editing errors in an earlier draft...*
  - *-The term "professional judgment" is used to explain certain assumptions.*
  - *-... it may be beneficial to understand and integrate the EPA's proposed national approach (to expand stormwater programs) before the DEP embarks on an unprecedented effort to manage IC on a statewide basis...*

The editing errors in earlier drafts have been corrected. The 'best professional judgment' assumptions used to assign targets in a few watersheds has been fully described in the watershed specific summaries. EPA has delayed changes to the MS4, Stormwater Program several times since this comment was first made and there is no need to couple the TMDL to potential national program changes.

- ***Comment #4 – ... there appears to be no real "case study" available to demonstrate that BMPs and LID techniques can be used to reduce the effective IC and achieve restoration and attainment. The case studies provided in the proposed IC TMDL do not appear to demonstrate successful restoration/attainment, instead they merely demonstrate the successful development of a watershed-based management plan.***

The case studies are provided for reference and educational purposes and are not a legally required element of the IC TMDL report. MTA is correct that Maine does not have examples of successfully restored urban streams to include in this TMDL. Maine began to identify impairments in urban streams during the last 15 years and efforts to restore these streams are just beginning. With time, we do expect to have successful examples as we have had through DEP's 319 Program on Maine lakes- <http://water.epa.gov/polwaste/nps/success319/> . In the meantime, we see no reason to hold back on implementing new practices and projects that are known to benefit water quality.

- ***Comment #5– Questions on whether the IC methodology meets TMDL technical requirements.***

The IC methodology has been thoroughly reviewed and approved by EPA in three previous IC TMDLs that Maine submitted. The MOS is used in way consistent with the guidance cited in the TMDL.

- ***Comment #6 – The TMDL appears to be based on a fairly small data set (i.e., 43 samples in 32 watersheds), of which 29 of the 32 watersheds were included in this proposed IC TMDL.***

The technical basis for target setting in the TMDL has been revised to include a larger data set and this is fully explained in Appendix 2: Percent Impervious Cover TMDL Guidance for Attainment of Tiered Aquatic Life Uses.

Sincerely,



Melissa Evers  
Environmental Specialist III

## Frequently Asked Questions

### CLEAN WATER for MAINE'S SMALL URBAN STREAMS

#### *What is DEP's role in improving water quality of impaired waterbodies? Who has the "burden" of restoration?*

As the first phase in the complex process of restoring degraded waterbodies, DEP develops the TMDL report, which sets water quality goals, describes the problems, and estimates the reductions needed to attain Maine's water quality standards. This information and guidance from DEP's TMDL program is intended to initiate a meaningful watershed planning process that will educate the community and ultimately result in measurable water quality improvements in these small urban streams. This next recommended step requires the collective process involved in developing a comprehensive **Watershed Management Plan (WMP)**, with further guidance from the Department's Non-Point Source Program. The WMP will involve many stakeholders, will define the site-specific sources of stormwater through additional fieldwork, and will develop a set of concrete recommendations. Local stakeholders (municipalities, businesses, landowners) have critical local knowledge, and the community needs to take ownership of this process to sustain long-term restoration goals.

#### *Why has DEP chosen to develop a statewide or "umbrella" IC TMDL?*

The Department's goal is to find an effective and efficient mechanism to fix these impaired streams where it's appropriate to use **impervious cover (IC)** (or impervious surface) as a surrogate for the suite of observed stressors related to excessive stormwater runoff. DEP chose the %IC TMDL method, applied to similarly-impaired streams in one report as an efficient, cost-effective way to expedite the TMDL modeling and report development phase, and move quickly into the watershed planning phase.

In each IC TMDL, the Department presents the basic level of site assessment needed to develop the TMDL (watershed delineation and land cover maps). Within this "umbrella" TMDL, addressing several streams at once, the Department also takes the opportunity to provide examples of two site-specific steps associated with the TMDL, the *next* phase of stream restoration: (1) results of stream surveys and watershed surveys to identify preliminary locations of site-specific BMPs for a couple of streams, and (2) a full watershed management plan developed for Whitten Brook (please see the Whitten Brook Watershed Based Plan at <http://www.maine.gov/dep/water/comment.htm#tmdl> )

## **WATER QUALITY MONITORING & ASSESSING the IMPACTS OF STORMWATER RUNOFF & WATERSHED RESTORATION EFFORTS**

### *How are stream reaches deemed impaired?*

The Department assesses a stream segment as impaired if monitoring results show that Maine’s water quality standards are not met. The impaired waters addressed in this TMDL have been found to fail criteria for aquatic life use (based on benthic macroinvertebrates for streams, and/or habitat for streams). See impaired listing methodology in current *Integrated Water Quality Monitoring and Assessment Report*, Chapter 4.

<http://www.maine.gov/dep/water/monitoring/305b/>

### *Why does DEP rely on the health of macroinvertebrate communities to assess stream water quality?*

DEP uses benthic macroinvertebrates as indicators of stream health because the community integrates environmental conditions over a long period of time. Results are direct measurements of aquatic life response to the suite of observed stressors linked to excessive stormwater runoff (e.g., low dissolved oxygen, high temperatures, presence of heavy metals and excessive nutrients, high flows). (See the following link for more information on the value of this type of monitoring, with more links to DEP’s biomonitoring program, sampling protocols, history, and data:

<http://www.maine.gov/dep/water/monitoring/biomonitoring/> )

For these impaired streams receiving excessive stormwater runoff, DEP also relies on observations of stream channel condition (eroding banks, geomorphic instability), evidence of excessive sediment transport and deposition, and diurnal temperature and dissolved oxygen variations, all of which are useful indicators of habitat suitability.

### *Why are streams not on the 303(d) list included in the IC TMDL?*

The Department had monitored two streams whose assessment results (showing impairment) were not available in time to be included in Maine’s 2010 §303(d) listing cycle, but were available in time to be included in the TMDL development process. The streams were included in the TMDL for reasons of efficient report production. DEP intends to list these streams as impaired in Maine’s 2012 *Integrated Water Quality Monitoring and Assessment Report*. The IC TMDL will also apply to any future listings (just as the “umbrella” bacteria TMDL does).

### *How will DEP determine if the TMDL is being met? When is each stream due for another assessment?*

The Department will monitor streams to determine if they attain water quality standards of their assigned class. Streams are routinely visited by the DEP on a 5 year monitoring cycle. DEP will be looking at indicators of aquatic health, such as conditions of the macroinvertebrate community and habitat suitability to assess whether or not water quality standards are attained (as was done to assess the streams for §303(d)-listing in the first place). DEP may conduct testing sooner than the routine cycle, based on need (which is defined as either a catastrophic event or application of significant BMPs), as Department resources allow.

### *What happens if the IC target is reached but the stream still does not attain water quality standards?*

If the IC target is reached, but the stream does not attain WQS, then more BMP installation and stream restoration work is needed, because the TMDL endpoint is attainment of **water quality standards (WQS)**. Conversely, if the WQSs are attained, but the IC target is not yet reached, then compliance with the TMDL and stream restoration is achieved.

## **TMDL DEVELOPMENT**

### *How were the TMDLs derived for each watershed?*

These IC TMDLs address streams with impaired aquatic life communities that are linked to excessive stormwater runoff. The specific TMDL for each stream was set within a range of values appropriate for the stream's designated water quality classification (see appendix \_\_\_ for DEP's updated report on Impervious Cover Targets for Stream Restoration and Watershed Management (July 2011 draft). Each stream's TMDL includes a margin of safety, and is based on information that correlates attainment of aquatic life and habitat standards with impervious surface in Maine watersheds.

## **MARGIN OF SAFETY and ALLOCATIONS AMONG SOURCES.**

### *Why are % reductions based on the WLA not the TMDL target?*

The TMDL for each impaired water must be set to meet water quality standards, and the TMDL must incorporate sufficient margin of safety to demonstrate that application of the WLA or LA target will insure attainment of water quality standards; otherwise, the TMDL will not meet the legal requirements of the Clean Water Act. For this reason, the WLA or LA %IC value (not the larger TMDL value) is used to calculate the estimated % reductions needed to meet water quality standards, and is the target used in watershed restoration.

This WLA and LA target can be viewed as setting a hydrograph target in the impaired stream segment that would approximate an X% developed watershed. While the levels may seem impossible to attain, especially in more highly developed watersheds, using an adaptive approach of applying well-designed BMPs over time, the *impact* of the impervious surface can be reduced to appropriate levels of stormwater runoff.

## **IMPERVIOUS COVER ESTIMATIONS & REDUCTION CALCULATIONS**

### *What impact does calculation of % IC in watersheds have on the TMDL? (if inaccurate, what are the impacts?) Can the determinations of impervious cover used in the June 2010 draft IC TMDL report be improved to give more accurate estimates of existing IC in the impaired watersheds?*

The estimation of %IC in each watershed and the calculation of estimated % reductions needed has *no* impact on the TMDL itself, which is a water quality goal linked to aquatic life use attainment and the stream's water quality classification. If the %IC calculations are inaccurate, then the calculation of % reductions needed to attain the TMDL would be a less reliable estimate of watershed work remaining.

IC estimates for the draft TMDL report were initially calculated from land use maps developed from satellite photo interpretation at a five-meter resolution, providing an estimate using the best available tools at the time. DEP has revised the IC calculations and maps for each site using newer satellite images at a one-meter resolution. These newer photo interpretations provide much greater detail for interpretation which, in turn, results in a more refined calculation

of % reductions needed, but will not change the process of BMP installation needed to restore the stream. Future on-the-ground reconnaissance surveys will be essential to planning the selection of more detailed restoration recommendations. These surveys can locate hot spots for priority attention, and can determine whether or not impervious cover with stormwater runoff is directly connected to the stream (hydrologically).

While the TMDL targets may seem impossible to attain in more highly developed watersheds, the impact of the impervious surface can be reduced to levels approaching or meeting the targets through the application of watershed management plans. While the BMPs will not result in actual reduction of impervious surface in most cases, their effective use in treating runoff will cause the watershed to resemble a watershed with a smaller percentage of impervious cover. With progress toward these goals and periodic retesting for compliance, DEP expects the water quality goals will be achieved in most watersheds before the %IC target is reached.

## **TMDL & WATERSHED PLANNING & RESTORATION**

### *How are the general build-out analyses useful?*

The general build-out analyses provide a simple visual comparison between current estimated % IC in the watershed, compared to what the full extent of %IC in the watershed could become, under current zoning regulations. Adding more development and pavement in these impaired watersheds is a concern and needs to be addressed in the watershed management plan. New development can be constructed using low impact design criteria and have virtually no noticeable impact on the stream. The general build-out analyses in this report are intended to highlight the need for many communities to revisit their local ordinances governing development.

### *How do BMPs reduce the “impact” of impervious surface?*

BMPs reduce the “impact” of impervious surface by being applied in the watershed in an incremental manner to achieve runoff characteristics that resemble a watershed with the target amount of impervious cover (not by physically reducing pavement).

### *How can BMPs be calculated as reducing IC?*

Engineering tools are available to calculate the flow volume or pollutant load reductions of different types of BMPs. For example, BMPs that allow infiltration (green infrastructure and low impact development) are very efficient at reducing the volume of stormwater from running off-site, and different types of BMPs have varying efficiencies for pollutant removal. (For regional BMP Performance Evaluation Tool & instructions, go to:

<http://www.epa.gov/region1/topics/water/swtoolsresources.html> )

### *If DEP can only conduct biological monitoring roughly once every 5 years for a given site, how can progress in water quality be tracked following the installation of BMPs, and other changes having an effect on the stream?*

One option for tracking interim progress is to conduct an inventory of existing BMPs already installed on properties prior to any new stream restoration projects, and track the installation of new stream restoration projects. Use engineering calculations for each BMP in the inventory to determine credits toward TMDL attainment.

### *How can stakeholders plan for the least expensive practices to achieve the best stream restoration results?*

Engineering models are available which can optimize choices of BMPs for highest effectiveness and least cost for a particular watershed. (For regional pilot report results, go to:

<http://www.epa.gov/region1/topics/water/pdfs/OptimalSWMngtPlanAlternativesUpperCharlesPilotStudy.pdf>

### **NEXT STEPS**

- *How can we tell what specific measures (BMPs?) need to be done for our individual stream?*

- *How do communities pay for these controls, [3] while fairly sharing costs among all stakeholders?*

These are excellent questions and need to be addressed through the development of a detailed **Watershed Management Plan (WMP)**, the next critical step in the larger process of watershed restoration, which is outside the scope of the TMDL. The planning process described in the TMDL involves watershed management planning and BMP application over time, and will be initiated by towns and community organizations located in the watersheds of these impaired streams, with support from DEP's Nonpoint Source and Stormwater Programs. Stormwater runoff and activities that influence downstream portions of these streams have no regard for town boundaries, so cooperation and collaboration among towns with shared watersheds is encouraged, for effective stormwater management as well as equitable cost-sharing. Active participation in the BMP planning process will include opportunities to negotiate how to best restore the stream, track progress of BMPs, and identify the most appropriate funding mechanisms.

### **REGULATORY IMPACTS?**

*A. How will the timing and potential requirements of EPA's national stormwater proposed rulemaking affect communities faced with a watershed in the IC TMDL?*

The fact that EPA intends to propose new federal stormwater regulations will *not change* the water quality-based targets in the TMDL, or the ultimate goal of meeting Maine's aquatic life criteria. The proposed regulations will be technology-based (instead of the more restrictive water quality-based TMDL requirements). The federal proposal will be subject to considerable debate and revision throughout the public review process, which has been delayed, and the timing of when the regulations will be final is uncertain.

*B. What effect will the TMDL have on development? How will the Maine Chapter 500 waivers for redevelopment, in an effort to curb sprawl, be affected by the TMDL?*

DEP expects MS4s will still favor redevelopment over green-field development. The Chapter 500 waiver of general standards for redevelopment will not be affected directly by the TMDL. A municipality with a regulated MS4 will need to identify how it will make progress on priority waters, which could mean either more stringent local requirements, or a more broad-based approach such as a storm water user fee to fund retrofits. See discussion in C. below.

*C. What are the regulatory impacts of the TMDL on MS4 and non-MS4 communities? How will the current MS4 permit requirements change once EPA approves the TMDL?*

The Department recognizes that municipalities and state transportation agencies have limited resources that will preclude them from addressing all impaired watersheds concurrently. The Department has required each regulated MS4 to identify primary and secondary urban impaired watersheds within its boundaries, and to identify measures that



are being or will be taken to address the impairments in these. For the existing MS4 permit, the DEP has already negotiated with each MS4 what constitutes adequate progress in addressing the impairments. Provided the MS4 continues with measures as previously agreed to and to the Department's satisfaction, then the Department will deem stormwater discharges for the MS4 to be consistent with the IC TMDL once it is approved.

It's very possible that a water body could meet water quality standards even before a target set in an IC TMDL is reached, in which case, a stormwater discharge would be deemed to be in compliance. Conversely, a stream might not meet water quality standards, even though the impervious cover target is reached, in which case, further work would likely be required.

The Maine Stormwater Management Law includes a provision whereby the Department, through rule-making, may regulate existing stormwater discharges that are found to be causing or contribution to the impairment. In both regulated MS4 and non-regulated MS4 communities, the department would prefer, however, to see existing stormwater sources addressed through development and application of a watershed management plan. Watershed management plans will map out and measure progress toward meeting water quality standards, in most cases, will be guided by ME DEP's Nonpoint Source Program.