Worcester NPDES Stormwater Monitoring Comments
October 5, 2008
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The re-opening of this comment period for input on the monitoring plan is much appreciated, as I intended to comment but missed the original comment period. As a volunteer with multiple watershed associations in the Boston area, I have collected approximately 3000 samples in the last decade. This was 90% bacterial samples for tracking sewage bacteria to specific source pipes; but also included phosphorus, cyanobacteria, and hydrocarbon TPH-PHI sampling. All samples since 2002 were accompanied by meter data collection of temperature, DO, and conductivity readings. All sampling done was after training and in compliance with QAPPs approved by EPA & DEP.

While I have no direct experience in Worcester, a large portion of my time has been spent on problems originating in Boston, which is the other Phase 1 NPDES permittee in Massachusetts. While I have read the draft permit and all comments so far as posted on the EPA website, I have not reviewed the full file or seen any annual reports. My comments will be based on my perceptions of what should be required in Boston, and I hope they are seen as applicable in some part for Worcester and other future permits.

I strongly support two comments made by the City:

For the IDDP, allowing a bottom-up approach to fixing problems makes sense, IF progress is being made at an acceptable rate. In Boston, my impression is that rigid adherence to a top-down protocol has evolved into a method for avoiding finding problems as long as possible - seemingly to avoid spending the monies needed to fix said problems.

Secondly, on the list of parameters to be sampled, I agree that simple DO meter readings should suffice in place of BOD analysis. Similarly, conductivity should suffice as a chloride indicator.

Now for my own comments, which may be a bit haphazard in order...

Bacterial testing should be for E. coli, not fecal coliform.

TPH samples should only be required if there is a visible sheen, but analysis should include PHI - Petroleum Hydrocarbon Identification 'fingerprinting'.

Receiving-waters monitoring should be required at the boundaries of the city on all waterbodies flowing into or out of the city. This should eventually be required of all NPDES stormwater permittees and may present a way for cities to save money by cooperating with neighboring towns or approaching said monitoring on a watershed basis - possibly with the cooperation and buy-in of Watershed Associations.

My major concern is the removal of Sewage from stormwater. Since fecal bacteria is strongly associated with particulates and settles out and dies off quickly with

distance from a discharge point, I see little sense in intensive receiving-water sampling away from the city borders as my objective is much better met by more rigorous outfall sampling. The only exception might be for ponds and lakes where dwell-time is greater and the major concern may be Phosphorous and other nutrients.

Where pipes carry stormwater across city boundaries, either in or out, those crossing points should be considered outfalls and subject to sampling under the IDDE protocol.

Ideally, a single NPDES permit would integrate all sampling and reporting required for stormwater, CSOs, and SSOs. Similarly, an integrated report would foster greater understanding of where one problem may be masking others, and of the totality of progress made - both in expenditures and in actual change in water quality.

All monitoring results and stormwater, CSO, and SSO reports should be promptly available on the city website and maintained for a minimum of the duration of the current and next permits.

Hopefully Worcester is further along than Boston in IDDE work, but last Friday's meeting showed only a fraction of Worcester's outfalls have been sampled even once in wet weather. To understand if IDDE is progressing faster than infrastructure deterioration, wet weather sampling must be included to help prioritize work and attack the largest problems first.

This permit should require inspection, dry-weather sampling where flow is present, and at least one round of wet weather sampling at ALL outfalls on an expedited basis.

Each storm is different, every point in time in every storm is different, antecedent conditions and time of year vary continuously... So more wet-weather sampling is ALWAYS better than less in some manner... However, because of all the inherent replicability problems - and keeping in mind fiscal constraints - attempting to gather multiple outfall samples over time to composite a sample for wet-weather seems to be too much to ask. I would rather see single grab samples taken from as many outfalls as possible during a storm, rather than spending an hour or more at each outfall waiting to collect the requisite number of samples.

A single-sample wet-weather survey of ALL outfalls should be required every 4-5 years of this (10yr) permit. Ideally, this would be in the 1st, 5th, and 9th years. If droughts occur, These slots may be enlarged to two-year periods 1-2, 4-5, and 8-9 permit years.

As flows are complicated to measure and vary throughout a storm, for prioritization of IDDE work, drainage areas should be multiplied by concentrations of pollutant seen to generate metrics for investigation prioritization.

The National Urban Stormwater Database fecal bacterial concentration of ~30,000cfu/100ml as 'normal' for urban stormwater does not seem applicable to Massachusetts. Under the first Alewife/Mystic River water quality Variance; Cambridge, Somerville, and Medford were required to pick several of their stormdrains to characterize for bacterial concentrations. Each of the drains selected is KNOWN TO ME to be specifically contaminated with sewage, in addition to the clean rainwater and groundwater which should be contained. Even so, the bacterial concentration produced by this study was only 12,000cfu/100ml - approximately 1/3 of the national study. In my wet-weather sampling I have seen that there actually are a large number of stormwater pipes which are relatively free of fecal contamination and which can pass the state swimming standard even in wet weather. The 'breakpoint' where sewage contamination becomes likely just from the bacterial concentration is in my opinion about 2,500cfu/ml.

There are, of course, exceptions. A first flush may carry dog feces which have been fermenting in a catch basin since the last rain, or a roof may collect large deposits of gull or pigeon waste which can raise readings for a period in any storm. I have no problem with a sample plan which specifically avoids the first 1/4" of each rain for outfall sampling. This will be seen in receiving-waters sampling where the first-flush from hundreds of pipes will be spaced along the watercourse so will be present for sampling for several hours of flow in the waterbodies.

After each round of outfall testing I expect a report on prioritization and scheduling for further IDDE work.

In between years where all outfalls are sampled, I would like extra information to be gathered for outfalls which fail the state swimming standard in dry weather or have a wet-weather E. coli number over 2,500cfu/100ml. This would be in years 3 and 7 of the new permit and would include wet and dry weather sampling just as in the first year. This will build a more robust data set for fine-tuning the prioritization schedule for IDDE.

While Phosphorus reductions are needed to meet TMDLs to address Eutrophication, sewage is such a large source of phosphorus that faster work on IDDE is what I see having the greatest effect for the life of this permit. LID will be a large part of the solution, but seems beyond the direct purview of this permit. I would urge that garden shops, home centers, etc. be urged or required to carry only Phosphorus-free fertilizers and soil amendments. I would agree with the city that end-of-pipe treatment should not be required at any point during the life of this permit while IDDE is vigorously pursued.

I would like to see public notice and input to ANY changes made to the inspection and monitoring plans during the life of the permit.

Thank you for the opportunity to comment.
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