Draft Principles and Protocols for Urban Stormwater BMP Verification

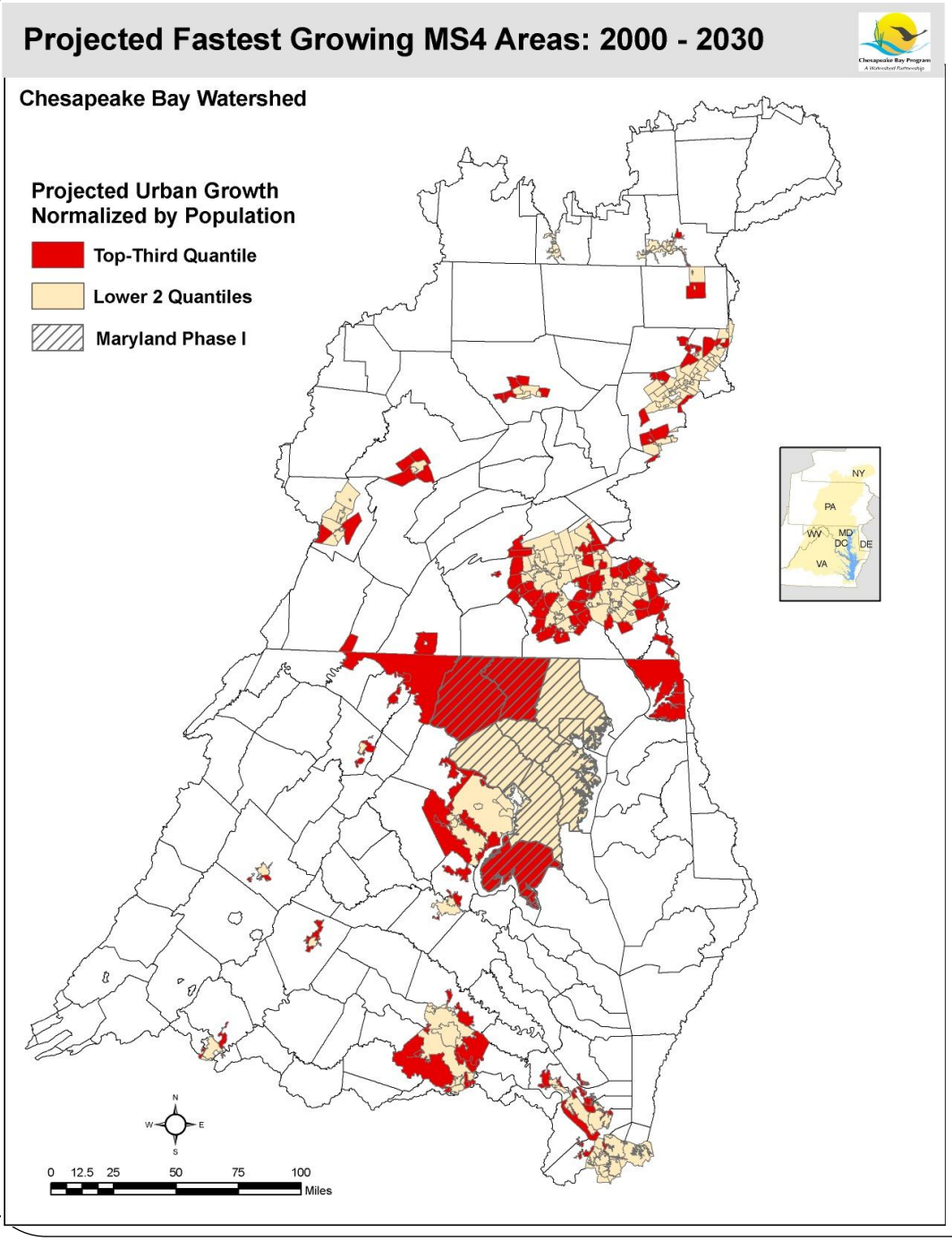
October 16, 2012
Urban Stormwater Work Group

Update on Urban BMP Verification

- Background on the Chesapeake BMP Verification Process
- The Role of USWG so far
- Review of Progress in Developing Urban BMP Verification so far
- Our remaining work to do
  - Non-regulatory situations (non-MS4s)
  - Existing CBP approved urban protocols

Background on CBP Verification

- National Research Council Report Identified BMP Verification as Critical Management Priority to Meet TMDL
- BMP Verification Expert Panel Formed
- WQGIT BMP Verification Work Group
- Wastewater, Stormwater, Agricultural , Forestry and Habitat Work Groups all Invited to Contribute to Verification Strategy



Stormwater Verification must operate in two worlds:

- Regulated Stormwater
- Unregulated Stormwater

Ability to Verify is Often Linked to Whether a community has a MS4 permit or not.

Verification and USWG so far

In late 2011, CBP launched a comprehensive BMP verification strategy and asked each sector work group to develop principles and protocols

From January to June 2012, the USWG went through 5 Drafts

Several Urban BMP Expert Panels have tackled the subject this year

Reached general consensus on verification principles and protocols for regulated MS4s

Verification and USWG so far

USWG did not reach consensus on how to deal with non-regulated areas (non-MS4s)

Also, have not yet developed verification for existing CBP-approved BMPs that have been installed in the past

Not much work on the issue over the summer (no one volunteered for urban verification subgroup)

EPA has requested USWG finish its work by January, 2013 (see October 2012 Batiuk memo)

10-5-2012 Memo from CBP WQGIT BMP Verification

Requesting USWG reach consensus on urban BMP verification protocols (OK to have minority opinions)

Final decisions to be made by CBP BMP Verification Committee

Matrix to ensure "equity" in verification protocols across sectors and habitats

Recommendations about how to ramp up local and state programmatic capacity for verification going forward

Impediments

- Some urban BMPs are implemented outside the local development review process, and therefore may not be properly counted or reported.
- Most Bay states are just now developing tracking systems to aggregate the BMPs reported by individual localities, and several have not been able to keep up with BMP information submitted by 70 to 400 MS4s in their jurisdiction.
- Up to now, few states have allocated sufficient staff resources to fully enforce MS4 permit maintenance conditions, verify that local BMP information is accurate, and cull out BMPs from the CBWM input deck that are no longer achieving their intended nutrient or sediment removal rate.

Consensus so far on verification in MS4 areas

- As outlined in most recent version of the USWG memo by Goulet which reflects state and local comments through June 2012

Verification for Urban BMPS

The need for verification differs among each type of BMP, but they can be generally classified into four broad categories:

- Traditional engineered stormwater BMPs that were historically installed through a local stormwater plan review process
- New runoff reduction BMPs that will be implemented to meet new state stormwater performance standards in the future and also go thru the local stormwater review process
- Non-structural or operational BMPs that are typically applied by a municipal agency
- Stormwater retrofits and restoration practices designed and installed by localities to treat existing impervious cover.

Role of Maintenance in BMP Performance

Regular inspections and maintenance of BMPs are critical to ensure their pollutant removal performance is maintained and extended over time.

Therefore, the core verification principle is to ensure that BMPs are installed and maintained properly over their design life to qualify for their pollutant removal rates

Utilize Existing MS4 Framework

The existing MS4 inspection and maintenance framework for hundreds of communities in the Bay watershed should be the foundation of any BMP reporting and verification system for the Bay TMDL.

Ongoing BMP reporting and maintenance inspections requirements in MS4 permits may need to be adjusted slightly to verify BMP performance, but the modifications should be limited to reduce the administrative burden for local and state agencies.

Removal Rate Tied to Visual Inspections

The basic concept is that urban BMPs will have a defined time-frame in which the pollutant removal rate applies

Credit can be renewed or extended based on a visual inspection that confirms that the BMP still exists, is adequately maintained and is operating as designed.

It is recommended that these rapid investigations be piggy-backed as part of routine stormwater BMP inspections required under their MS4 NPDES permits.

Sub-Sampling of Local BMP Inventory.

Localities may elect to reduce the scope of their visual inspections by sub-sampling a representative fraction of BMPs in their local BMP inventory (or target older BMPs whose performance may have diminished over time).

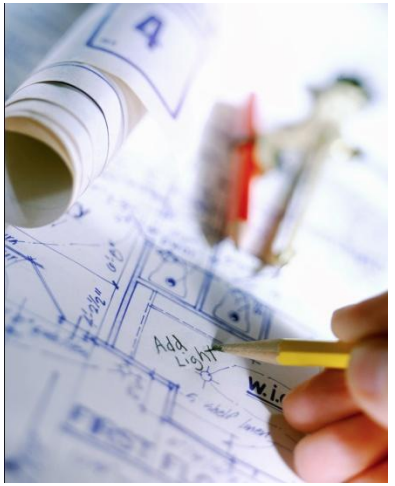
The sub-sampling data can then be used to extrapolate the proportion of BMPs in their local inventory that are performing or not performing.

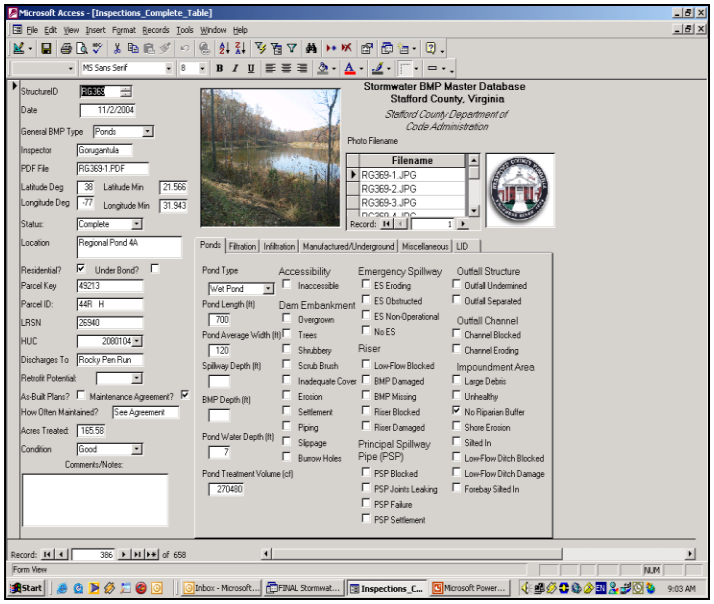
Initial Verification of BMP Installation

- Localities to verify that BMP:
  - Installed properly
  - Meets/exceeds design standards
  - Functions hydrologically as designed
- Initial verification should be provided by the designer or local inspector as condition of project completion.
- Localities to indicate in MS4 annual report that they have BMP review and inspection procedures in place and to implement them

Local Record-Keeping

- Localities to maintain comprehensive project file for each project
- File to be maintained for the entire time that the removal rate will be claimed
- Localities encouraged to develop GIS-based BMP tracking system





Recommended Cycle for Field Verification of Urban BMPs

Local inspectors should perform field verification at least once every other inspection cycle mandated under their MS4 permit

The typical inspection cycle in MS4 permits ranges from 3 to 5 years.

It is recommended that these rapid investigations of visual indicators would integrated as part of routine stormwater BMP inspections required under their MS4 NPDES permits

Suggested Process for BMP Downgrades

If the field inspection indicates that a BMP is not performing to its original design, the locality would have up to one year to take corrective maintenance or rehabilitation actions to bring it back into compliance.

If the facility is not fixed within a pre-defined time frame, the pollutant reduction rate for the BMP would be eliminated, and the locality would report this to the state in its annual MS4 report.

If corrective maintenance actions were verified for the BMP at a later date, the locality could take credit for it then.

Remaining Work

- **Non regulatory situations (non-Ms4s)**
- **Issue:** Urban BMPs are installed in non-regulated areas in the watershed. Many of these localities may not have all of the legally required BMP inspection and maintenance provisions found in MS4 localities.
- BMP verification may be challenging in non-MS4 communities, particularly in smaller localities with limited staff resources

Non-regulated Stormwater -Thought Process-

- Urban BMP Verification Committee
  - Staffs Overcommitted
- Chair and Coordinator Developing Principles
  - Locality performs equivalent to MS4:
    - BMPs receive credits according to MS4 Principles
  - Locality reports initial Install w/Inspection but no follow-up actions:
    - BMPs receive full removal credit for first 5 year period
    - Reduction in removal credits over 5 year blocks with no inspection reporting
    - BMP eventually falls off

Non-regulated Stormwater - Other Options -

- Use Verification Data from MS4 to set the compliance rate for non-MS4s
- Same as above, but apply a additional discount
- Use EPA Grants to get third party who sub-samples MS4s in a state
- Use any survey method that can provide 80% confidence estimate that reported BMPS exist and are working (the ag sectors)
- Others ?

Remaining Work

- Existing BMP Rate
- **Issues:** What duration of removal rate credit should be offered for CBP-approved BMPs installed and reported in the last two decades ?
- How do we cull out the BMPs that have failed
- How do we credit older BMPs that were never reported to CBP in the first place

Class 1 Traditional Stormwater BMPs

Existing CBP-Approved Structural l Urban BMPs	
Wet Ponds	Filtering Practices
Constructed Wetlands	Bioretention
Dry Detention Ponds	Permeable Pavement
Dry ED Ponds	Grass Channels
Infiltration	Bio-swales

Class 3 Non-Structural or Operational BMPs

- Urban Fertilizer Management
- Street Sweeping
- Tree Planting
- Illicit Discharge Elimination

Some Options

- 1. Follow the same protocols as for new BMP performance standards (i.e., every BMP visually inspected in two MS4 permit cycles)
- 2. Do # 1, but make sure all pre-2000 BMPs are assessed in first permit cycle, and all pre-1990 BMPs are assessed by 2014.
- 3. Sub-sample BMPs by CBP-type and year installed and extrapolate over entire BMP inventory in next permit cycle
- 4. Other options?

Next Steps

- Finalize Principles and Protocols by end of 2012
- Continue to develop Principles and Protocol into Urban BMP Expert Panels