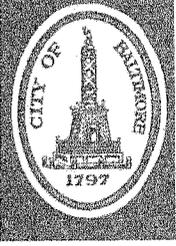


FROM	NAME & TITLE	Khalil Zaied, Director
	AGENCY NAME & ADDRESS	Department of Transportation 417 E. Fayette Street, 5 th Floor
	SUBJECT	MOU- For Stormwater Management Requirements for City of Baltimore Department of Transportation Projects

CITY of
BALTIMORE
MEMO



DATE:

TO

November 2, 2012

The Honorable President and Members
of the Board of Estimates
Room 204, City Hall

Dear Mr. President and Members:

ACTION REQUESTED OF THE BOARD OF ESTIMATES: We request your Honorable Board to approve a Memorandum of Understanding (MOU) between the Baltimore City Department of Transportation (DOT) and the Baltimore City Department of Public Works, Bureau of Water and Wastewater (DPW), for the establishment of Baltimore City Stormwater Management design guidelines, terms, and conditions.

AMOUNT OF MONEY AND SOURCE OF FUNDS: Not Applicable

BACKGROUND/EXPLANATION: This MOU serves to stand as a supplement to the Department of Public Works established stormwater Management Design Guidelines. DPW is required to enforce the Stormwater Management Ordinance, Article 7 Natural Resource Division II: Stormwater Management of the Baltimore City Charter and the newly effective Stormwater Management Act of 2007 as outlined in the Maryland Department of the Environment (MDE) Maryland Stormwater Management Guidelines, which are effective as of May 4, 2010. The outlined guidelines are intended to reduce the adverse effects of stormwater runoff and to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding. DPW and DOT acknowledge the need to define the responsibilities and obligations of each agency with regard to DOT projects as well as to establish the criteria under which non-maintenance, new development and the design and construction of DOT projects shall be reviewed for stormwater management approval. Projects described in this MOU are in the mutual interest of the City of Baltimore and the terms and conditions of this MOU shall govern the stormwater management required for all DOT projects.

MBE / WBE PARTICIPATION: N/A

APPROVED BY BOARD OF ESTIMATES:

Bernice N. Taylor
CLERK _____ DATE
NOV 14 2012

Frank Murphy
FOR _____
KHALIL ZAIED, DIRECTOR
DEPARTMENT OF TRANSPORTATION

KZ:kw

**MEMORANDUM OF UNDERSTANDING
FOR
Stormwater Management Requirements for
City of Baltimore Department of Transportation Projects**

THIS MEMORANDUM OF UNDERSTANDING (MOU) made and entered into this _____ day of _____ 2012, by and between the City of Baltimore Department of Public Works, Bureau of Water and Wastewater, hereinafter referred to as "DPW," and the City of Baltimore Department of Transportation, hereinafter referred to as "DOT."

WHEREAS, DPW is required to enforce the Stormwater Management Ordinance, Article 7 Natural Resources Division II: Stormwater Management of the Baltimore City Charter, hereinafter referred to as the "CODE"; and

WHEREAS, the newly effective Stormwater Management Act of 2007 as outlined in Maryland Department of the Environment (MDE) Maryland Stormwater Management Guidelines, hereinafter called the "SWM REGULATIONS", which are effective as of May 4, 2010, intend to reduce the adverse effects of stormwater runoff and to reduce stream channel erosion, pollution, siltation and sedimentation, and local flooding; and

WHEREAS, DPW has established the Baltimore City Stormwater Management Design Guidelines (2011), hereinafter referred to as the "GUIDELINES" to implement the SWM REGULATIONS; and

WHEREAS, this MOU between DPW and DOT is a supplement to the GUIDELINES, not a replacement thereof, and

WHEREAS, DPW recognizes that DOT is a public agency, not a Developer, and that DOT projects are not typically on sites where the existing land use is not commercial, industrial, institutional, or multifamily residential; and

WHEREAS, DOT's mission is to utilize taxpayer money in a responsible and cost-effective way to provide and maintain a safe, adequate and convenient transportation system for the safety, health and general welfare of the public while minimizing the environmental impacts; and

WHEREAS, DPW understands that DOT is responsible for designing and constructing roadway "non-maintenance" projects and roadway rehabilitation maintenance projects throughout the City of Baltimore, hereinafter referred to as "NON-MAINTENANCE PROJECTS" or "MAINTENANCE PROJECTS". NON-MAINTENANCE PROJECTS and MAINTENANCE

PROJECTS are recognized as having differing purposes and as such shall have separate and distinct stormwater management requirements; and

WHEREAS, DOT is committed to complying with and fulfilling its obligations under the CODE, SWM REGULATIONS, and GUIDELINES; and

WHEREAS, DPW recognizes that Baltimore City is an ultra urban environment and for many DOT PROJECTS there are unique challenges (such as very limited shoulder area, right-of-way and numerous underground utilities) that can prevent the implementation of storm water management facilities or other alternative compliance methods; and

WHEREAS, DPW and DOT acknowledge the need to define the responsibilities and obligations of each agency with regard to DOT PROJECTS as well as to establish the criteria under which NON-MAINTENANCE and NEW DEVELOPMENT PROJECTS shall be reviewed for stormwater management approval; and

WHEREAS, the design and construction of DOT PROJECTS described in this MOU are in the mutual interest of the agencies and of the citizens of the City of Baltimore City; and

WHEREAS, the terms and conditions of this MOU shall govern the stormwater management requirements for DOT projects.

NOW, THEREFORE, in consideration of the premises and of the mutual agreements between DPW and DOT, as set forth herein, the adequacy of which is hereby acknowledged, the agencies hereby agree to the following:

- I. **DEFINITIONS** – Definitions are as set forth in the CODE and GUIDELINES except for the following revisions or additions which shall be applicable to DOT:
 - A. “GREEN CREDITS” are defined as site areas measured in square feet or acres and represent all of the reduction in impervious cover achieved by DOT on a Watershed basis that can be credited to a NON-MAINTENANCE PROJECT where stormwater management requirements cannot be met.
 - B. “GREEN DEBITS” are defined as site areas measured in square feet or acres and represent the net area required to be treated by the GUIDELINES that, to the maximum extent practicable, cannot be achieved through accepted stormwater management treatment practices and therefore are reduced from the SWM BANK (see definition below) for a DOT NON-MAINTENANCE PROJECT.
 - C. “EXPANDED TREE PIT” is defined as an area of impervious removal at each tree pit that DOT has performed with its own funding and/or forces that shall be added to the TREE BANK (see definition below).

- D. "IMPERVIOUS AREA" means any surface that does not allow stormwater to infiltrate into the soil, including gravel cover. Compacted soils or Type D soils are considered pervious.
- E. "IMPERVIOUS REMOVAL" is defined as the excavation and removal of existing impervious surfaces and the installation of top soil, seed, and mulch in accordance with the Impervious Removal Detail (depicted in *APPENDIX C*) for the purpose of reducing stormwater runoff.
- F. Limit of Disturbance for Construction ("LOD-Construction") for NON-MAINTENANCE PROJECTS is defined as the work zone area of construction as delineated on the Erosion and Sediment Control plan sheets. LOD-Construction is usually completely within the public right-of-way. This is not the area of disturbance that is to be used for stormwater management "redevelopment" calculations since this area also includes a safety buffer which actually will not result in any disturbance. The orange safety fence or other safety barrier usually establishes the outer boundary of the LOD-Construction. Pavement resurfacing area are not included in the LOD-Construction. Full depth reconstruction may include earth disturbance and shall be included in the LOD-Construction. IMPERVIOUS REMOVAL area for water quality improvements/mitigation that includes earth disturbance shall be included in the LOD-Construction.
- G. Limit of Disturbance for SWM ("LOD-SWM") is defined as the area of actual pavement excavation (or earth disturbance) that is to be used for stormwater management requirement calculations for DOT NON-MAINTENANCE PROJECTS. The LOD-SWM is established at the saw cut line or limit of excavation where soil is excavated or disturbed. IMPERVIOUS REMOVAL areas or BMP construction (both on site and off site) for water quality improvements that may include earth disturbance shall not be included in the LOD-SWM area.
- H. "Pavement" means any surface that has an impervious material including roads, alleys, sidewalks, and trails.
- I. "Stormwater Management Mitigation Bank" (SWM BANK) is defined as a database to be established for the purposes of tracking all of the reduction in impervious cover area (GREEN CREDITS) and drainage area treated by a water quality BMP or ESD that is achieved that can be credited to current and future DOT NON-MAINTENANCE PROJECTS.
- J. "Tree Pit Bank" (TREE BANK) is defined as a tree pit tracking database maintained by DOT for the purposes of tracking the installation of new tree pits or EXPANDED TREE PITS for the purpose of tracking the reduction in impervious cover area achieved that can be credited to current and future DOT NON-MAINTENANCE PROJECTS (see *APPENDIX D*).

- K. "Watershed" is defined as the total drainage areas contributing runoff to the different drainage basins in the City of Baltimore as per *APPENDIX A*, attached hereon. The SWM BANK (see definition above) shall be applied on a Watershed basis.

II. DESCRIPTION OF DOT NONMAINTENANCE PROJECTS

- A. DOT NON-MAINTENANCE PROJECTS shall consist of DOT projects that are intended to promote economic growth and development by encouraging investment and/or are intended to improve the aesthetics in a certain area within the public right-of-way.
- B. Examples of DOT NON-MAINTENANCE PROJECTS and other specific work examples include:
1. Beautification projects
 2. Roundabout projects (unless necessary for public safety)
 3. Trail projects
 4. Roadway widening projects (new impervious area is classified as new development instead of "non-maintenance")
 5. Reconstruction of a road whereby a lane(s) use is changed (for example, converting a parking lane to a travel lane or a median to a left turn lane), even if it is for safety reasons
 6. Sidewalk widening for non-ADA purposes
 7. Impervious curb bump outs
 8. New roadway projects (may be classified as new development if the existing site is pervious)
 9. New brick sidewalks (if existing sidewalks are concrete)
 10. New brick crosswalks (if the existing crosswalks are not brick)
 11. New granite curbs (if the existing curbs are concrete)
 12. Rehabilitation of roadways that are needed for a special event (such as the Grand Prix) that would not otherwise be needed for the general public
 13. Building construction for DOT facilities (some projects could be classified as new development instead of "non-maintenance")
 14. Roadway widening due to bridge widening
 15. Roadway reconstruction required to tie in smoothly with a new bridge deck that gets raised or reconstructed due to code requirements
 16. Bridge abutment, pier, and/or foundation excavation due to bridge widening or aesthetic bridge enhancements.
- C. DOT NON-MAINTENANCE PROJECTS are not required for the health, safety, and welfare of the public. In other words, DOT, the Planning Department, elected officials, stakeholders, etc. want to do these projects, they do not have to be done.

- D. DOT is obligated to comply with the stormwater management requirements as stipulated in the GUIDELINES for DOT NON-MAINTENANCE PROJECTS.
- E. A quantitative control waiver may be granted for NON-MAINTENANCE PROJECTS if the project does not increase the existing impervious cover, discharges to an adequate storm drain system, or discharges directly to tidal waters. All waivers must be approved by DPW.

III. DESCRIPTION OF DOT MAINTENANCE PROJECTS

- A. DOT MAINTENANCE PROJECTS shall consist of DOT projects that may involve sub-base or subgrade disturbance or expose erodible earth but are necessary for the good of the public welfare.
- B. The existing land use at the project site is not commercial, industrial, institutional, or multi-family residential.
- C. DOT MAINTENANCE PROJECTS do not result in an increase in impervious area. The project returns the disturbed area to the predevelopment runoff condition.
- D. DOT MAINTENANCE PROJECTS do not alter the drainage patterns of the pre and post conditions.
- E. DOT MAINTENANCE PROJECTS are required for the good of the public welfare. In other words, DOT does not want to rehabilitate the roadway but needs to since there is a significant amount of pavement base failure that is beyond the resurfacing repair option and the roadway is in such poor condition that it compromises the safety of the public, i.e. it is necessary to save the roadway or preserve and improve public and pedestrian safety, maintain the roadway surface or loading capacity.
- F. DOT MAINTENANCE PROJECTS shall be exempt from stormwater management treatment requirements as per the CODE and GUIDELINES since water quality and water quantity waivers are warranted.
- G. Examples of DOT MAINTENANCE PROJECTS and other specific work examples include:
 - 1. Sidewalk repair projects
 - 2. Roundabout projects if required to improve the safety of a dangerous intersection
 - 3. Resurfacing projects (mill and overlay)
 - 4. Full depth roadway pavement spot patching
 - 5. Rehabilitation or reconstruction projects that may include excavation to subgrade and expose erodible earth but are required to repair the roadway due to pavement base failure (save the roadway)

6. Rail excavation
7. Curb and gutter repair, including removing and resetting granite curbs
8. Repair to inlet and manhole structures
9. Installation of Americans with Disability Act (ADA) pedestrian ramps for public safety and mobility as required to comply with federal law
10. Replacing existing sidewalks and driveways including excavation to subgrade to address pavement failure
11. Sidewalks and driveways reconstruction to meet ADA compliance including widening sidewalks up to one foot to meet ADA compliance
Water quality treatment must be provided for the widened portion only
12. Bridge deck repair or replacement
13. Bridge abutment, pier and foundation excavation due to structural deficiency or code requirements
14. Culvert repair or replacement
15. Trenching and patching for utility work
16. Landscaping

H. DPW and DOT will establish which projects qualify as DOT NON-MAINTENANCE PROJECTS and which projects qualify as DOT MAINTENANCE PROJECTS on a case-by-case basis during the Stormwater Management Concept Review Stage.

I. DOT MAINTENANCE PROJECTS consist of DOT projects ONLY and the terms and conditions of this MOU shall not apply to project activities undertaken by Developers or other Non-City entities whereby the activity involves work as may be described under Section III, Item G. 1-14 (i.e. this MOU is not transferrable to other entities).

IV. TECHNICAL PROCEDURES

For all DOT NON-MAINTENANCE PROJECTS, DOT shall address the stormwater management requirements as established in the following order of importance:

1. Provide a 50% reduction in impervious area within LOD-SWM.
2. Provide environmental site design (ESD) to the maximum extent practicable (MEP) as stipulated in the GUIDELINES (“ESD to the MEP”).
3. Where ESD to the MEP cannot reasonably be met, the next goal is to provide a stormwater management Best Management Practice (BMP) on site.
4. Where ESD and/or a BMP cannot reasonably be provided, the next goal is to remove impervious surface or install a BMP offsite but within the same Watershed as part of the scope of the DOT NON-MAINTENANCE

PROJECT. The location of the off-site BMP does not have to be within the public right-of-way or on property where DOT is the responsible agency.

5. Where DOT cannot identify a site within the same Watershed to remove impervious, the next goal is to expend GREEN DEBITS from the SWM BANK, provided there are sufficient GREEN CREDITS available.
6. Where DOT has exhausted all reasonable opportunities for meeting stormwater requirements using the methods (or combinations of methods) outlined above, a waiver may be granted by DPW in the form of a Fee-in-Lieu.

DPW understands that the stormwater management facilities as defined and outlined by MDE may not be practical in an ultra-urban environment like Baltimore City. DPW reserves the right to grant approval to DOT to be credited with implementing modified stormwater management facilities that shall be used as pilot projects. These modifications to the MDE standards will be considered on a case-by-case basis¹.

V. METHODOLOGY, IMPLEMENTATION, AND RESPONSIBILITIES

- A. Stormwater quality treatment requirement computations shall be based on LOD-SWM as defined in Section I of this MOU. The LOD-SWM area shall exclude areas disturbed solely for the purposes of constructing stormwater management facilities and/or IMPERVIOUS REMOVAL areas and/or maintenance activity areas such as full depth patching.
- B. The SWM BANK shall function as a tool to enable DOT to fulfill its obligations under the GUIDELINES such that DOT NON-MAINTENANCE PROJECTS, for which 50% reduction of impervious area, site specific ESD and/or BMP is not feasible, can be offset by stormwater management achieved under other impervious removal areas constructed within the same Watershed.
- C. Stormwater management mitigation efforts implemented within a given Watershed shall be tracked using an accounting system of GREEN CREDITS and GREEN DEBITS as per the format provided in **APPENDIX C**. GREEN CREDITS shall be applied toward the SWM BANK for all of the reduction in impervious cover achieved. GREEN DEBITS from the SWM BANK shall be used to offset the net area required to be treated that cannot be achieved through physical stormwater management treatment practices for DOT NON-MAINTENANCE PROJECTS.
- D. To offset part or all of the Fee-in-Lieu, DOT may request GREEN DEBITS from the SWM BANK for DOT NON-MAINTENANCE PROJECTS where it has been determined that:

1. The provision of site specific stormwater management treatment practices is not feasible.
 2. The balance of GREEN CREDITS in the SWM BANK is sufficient such that the remaining balance after GREEN DEBITS have been applied is not negative.
- E. DOT shall be credited with the impervious removal from their EXPANDED TREE PIT program on a Watershed basis whereby 100% of this area can be credited to current and future DOT NON-MAINTENANCE PROJECTS.
- F. DOT shall be credited in the SWM BANK on a Watershed basis 100 square feet for every tree that they plant that is not required for mitigation of trees removed. For DOT NON-MAINTENANCE PROJECTS, the impervious area required for stormwater management treatment shall be reduced by 100 square feet for each new tree planted as part of the project.
- G. Redline revisions during the construction stage of DOT NON-MAINTENANCE PROJECTS due to minor field changes that increase the limit of disturbance by less than 5000 square feet do not require a resubmission of the stormwater management report or the erosion and sediment control plans to DPW. DPW may always request a copy of the final As-Built plans.
- H. DPW and DOT shall coordinate stormwater management activities via the SWM BANK. DPW and DOT will establish, maintain, and manage the SWM BANK and update each other on the changes.
- I. DOT has the right to over-mitigate for stormwater management as part of their projects so that GREEN CREDITS may be applied to future DOT NON-MAINTENANCE PROJECTS.
- J. Fee-in-Lieu for DOT NON-MAINTENANCE PROJECTS shall be computed at a rate of eighty thousand dollars (\$80,000) per acre of area of pavement removal requirement. This rate cost is the representative of the approximate cost for the DOT Maintenance Department to remove an existing impervious surface of one (1) acre and install topsoil, seed and mulch. Past fee in-lieu computation methodologies (such as the cost of a theoretical underground sand filter) will no longer be utilized as of the effective date of this MOU.
- K. For federally funded DOT projects, DOT has the right to use federal funds to pay for the stormwater management fee-in-lieu. DPW will not receive payment of the fee-in-lieu until DOT has approval to use federal funds (1240 form) from the Maryland State Highway Administration (SHA). This is received after the PS&E submission to SHA. DPW shall not hold up approval of the stormwater management report or erosion and sediment control plans if the fee-in-lieu payment is the only outstanding item.

- L. DOT projects can get delayed due to right-of-way issues after approval of the stormwater management report and erosion and sediment control plans. If the scope of work has not changed, DOT may proceed with the construction of their project with the original DPW approvals once right-of-way is cleared and approved, regardless of the duration of the delay.
- M. The disturbance due to impervious removal area by DOT to construct bioretention facilities, green medians, green alleys, rain gardens, green bump outs, EXPANDED TREE PITS, stormwater management BMP's, IMPERVIOUS REMOVAL, and other mitigation projects (both on-site and off-site) shall not be considered "non-maintenance" or "disturbance" since this specific work is being performed for stormwater management/water quality improvement mitigation purposes. As such, the entire area of mitigation disturbance (both on-site and off-site) will be applied as a GREEN CREDIT to the DOT NON-MAINTENANCE PROJECT and additional removal area and drainage area treated in excess of the required area of pavement removal shall be added in the SWM BANK for that Watershed.
- N. For the construction of ESD or SWM BMP's (both on-site and off-site) that treat more than the required area, the excess can be applied to another drainage area or be added in the SWM BANK for that Watershed.
- O. The installation of new bioretention facilities including but not limited to retrofits of existing storm drain inlets will qualify for GREEN CREDITS, subject to approval by DPW. The whole drainage area treated which is in excess of that required area of pavement removal shall be applied as a GREEN CREDIT and shall be added in the SWM BANK for that Watershed.
- P. DOT may implement at its own expense innovative stormwater management technologies including non structural practices for GREEN CREDITS. DPW may review and approve the implementation of such technologies as pilot programs.
- Q. Soil borings are very expensive and shall only be required for stormwater management facilities which are actually proposed for construction and if MDE regulations require a boring (as listed in Appendix D of the Maryland Stormwater Design Manual, Volumes I and II, revised May 2009).
- R. The stormwater management plans must be signed and sealed by a Professional Engineer that is licensed in the State of Maryland. The As-Built certification must also be signed and sealed by a Professional Engineer that is licensed in the State of Maryland. Once the As-Built are signed and sealed by a Professional Engineer, DPW will review to confirm that the proposed stormwater management practices were installed as proposed. If there is a deficiency that is not remedied, DOT will pay a penalty fine, the amount of which will be determined by DPW. DOT will scan the As-Built to DPW and provide one full-size copy (bond paper) for DPW to submit to MDE. DOT will retain the original As-Built drawings. DPW may also request a hard copy of the As-Built.

- S. The DOT inspector(s) on-site will be responsible for inspecting the construction of stormwater management facilities that are part of DOT projects. However, DPW has the right to send their own inspector(s) to the site to inspect the materials and workmanship of the stormwater management facilities. Any deficiencies or other problems that are identified by the DPW inspector(s) will need to be reported to DOT immediately. DOT will be responsible for ensuring that the deficiencies are corrected.
- T. DPW shall be responsible for maintaining all stormwater management facilities and impervious removal areas that were performed by DPW's own forces or contractors. DOT shall be responsible for maintaining all stormwater management facilities and impervious removal areas that were performed by DOT's own forces or contractors. DOT has the right to make a separate maintenance agreement with a third party for stormwater management facilities or impervious removal maintenance. DPW may furnish DOT with standard operating procedures for maintaining stormwater management facilities.
- U. DOT will maintain a Maintenance Schedule of all stormwater management facilities that are constructed by DOT or their contractors. DPW shall be responsible for inspecting all stormwater management facilities in the City of Baltimore on a regular basis as required in the City's NPDES Municipal Separate Storm Sewer System permit. DPW will notify DOT two (2) working days prior to the inspection to coordinate access to the facilities.
- V. Upon construction completion of the impervious removal by DOT and approval by DPW (if DPW chooses to inspect), DOT shall apply GREEN CREDITS and update the SWM BANK. DPW and DOT will manage the SWM BANK that applies to DOT projects.
- W. DOT shall obtain permits for Erosion and Sediment Control as required for sites disturbing more than 5000 square feet or 100 cubic yards and submit to DPW for approval, regardless of whether the project is classified as a DOT NON-MAINTENANCE PROJECT OR A DOT MAINTENANCE PROJECT. DPW may desire DOT personnel to determine which projects qualify for exemptions, with the understanding that DOT will provide a report to DPW of exempted projects on a quarterly basis. DOT resurfacing projects do not require Erosion and Sediment Control approval unless the full depth patching area is more than 5000 square feet or disturbance exceeds 100 cubic yards.
- X. DPW has the right to evaluate existing impervious sites identified by DOT as suitable for conversion to pervious cover and determine whether impervious removal of each site qualifies for GREEN CREDITS.
- Y. For DOT Design Build Projects, Concept Stormwater Management approval must be obtained by DPW prior to advertisement.

- Z. DOT shall be credited in the SWM BANK on a Watershed basis for every ton of dirt/debris that they remove from bridge scuppers and clogged inlets on an annual basis. The collection of 1 ton of debris per year (wet weight) from the bridge scuppers and clogged inlets shall equate to 0.12 acres (5,227 square feet) of SWM area credit. Similar to street sweeping and other activity based BMPs, debris collection is quantified by the baseline collection.

Footnote:

1. An example of a modified stormwater management facility might be a swale where the back slope and fore slope are slightly less wide than required by MDE to be considered a "swale". The City of Baltimore has less right-of-way to work with than the Maryland State Highway Administration but DPW may approve this as a stormwater management facility on those grounds since the intent is to improve the water quality and the calculations show that it will function properly.

IN WITNESS WHEREOF, the parties hereto have caused this Memorandum of Understanding to be executed by their proper and duly authorized officers, on the day and year first above written.

Witness

By: [Signature] 10/16/12
Alfred H. Foxx Date
Director
City of Baltimore Department of Public Works

Witness

By: [Signature] 9/7/12
Khalil A. Zaied Date
Director
City of Baltimore Department of Transportation

RECOMMENDED BY:

By: [Signature] Rudolph S. Chow, Head Bureau Head Bureau of Water & Wastewater City of Baltimore Department of Public Works
By: [Signature] 9/13/12
Kimberly L Burgess, Chief Date
Surface Water Management Division
City of Baltimore Department of Public Works

By: [Signature] 9/5/12
Bimal Devkota, Chief Date
Transportation Engineering and Construction Division
City of Baltimore Department of Transportation

ATTEST:

APPROVED:

Alternate [Signature]
Custodian of the City Seal

[Signature] 10/24/12
Charlemayne N. Walker Date
Assistant Solicitor

APPROVED BY THE BOARD OF ESTIMATES:

[Signature]
CLERK Date NOV 14 2012

APPENDIX A
WATERSHED MAP

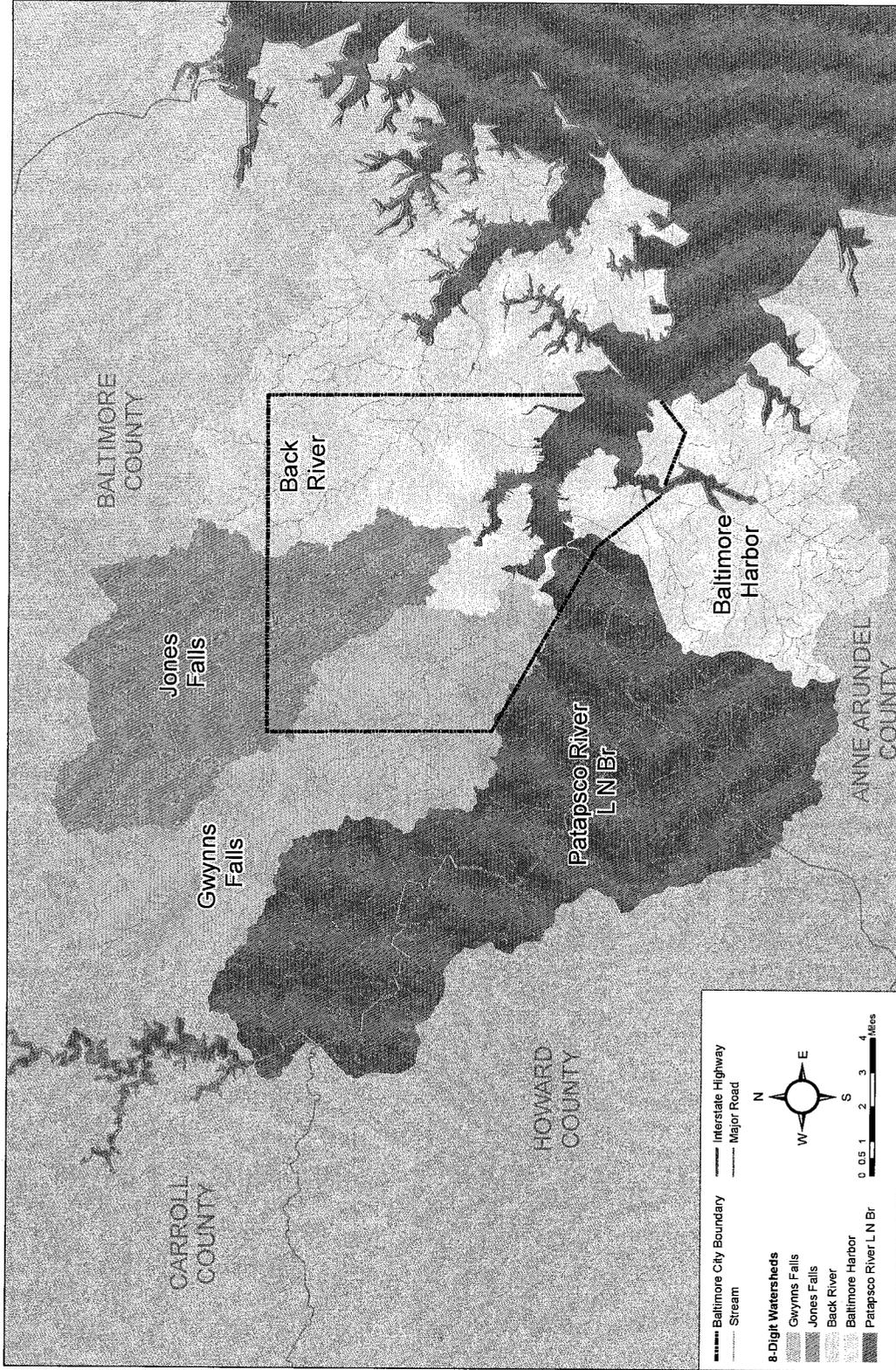


Figure 2-4: 8-Digit Watersheds

APPENDIX B

**STORMWATER MANAGEMENT BANK
TRACKING FORMAT**

5/17/2011

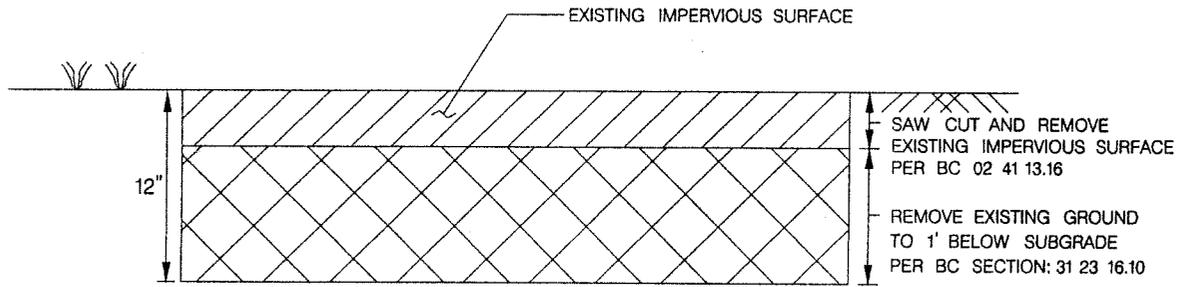
**Baltimore City Department of Transportation
Impervious Pavement Removal Credit Listing**

<u>Site</u>	<u>Credit (sf)</u>	<u>Used (sf)</u>	<u>Total (sf)</u>	<u>Date</u>
1. Barclay Development (Alley)	10,000.00	7,500.00	2,500.00	5/17/2011

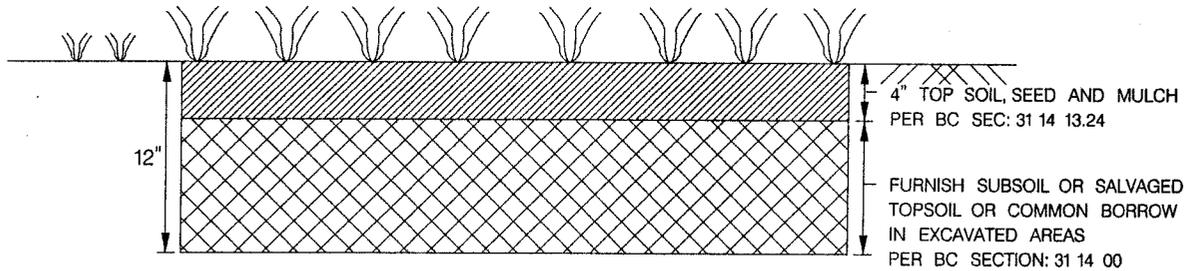
TOTAL CREDITS AVAILABLE: 2,500.0

APPENDIX C

IMPERVIOUS REMOVAL DETAIL



EXISTING CONDITION DETAIL



PROPOSED REPAIR DETAIL

NOTES

1. FILL 8" OF EXCAVATED AREA WITH FURNISHED SUBSOIL OR SALVAGED TOPSOIL OR COMMON BORROW TO A DEPTH 4" BELOW EXISTING GROUND.
2. FILL REMAINING 4" OF EXCAVATED AREA WITH FURNISHED TOPSOIL, SEED AND MULCH PER BC SECTION: 31 14 13.24.

	APPROVED :	CITY OF BALTIMORE DEPARTMENT OF TRANSPORTATION	ISSUED	REVISED	REVISED
		IMPERVIOUS REMOVAL DETAILS	STANDARD NO.		
			SCALE: NONE	SHEET 1 OF 1	

APPENDIX D

**TREE BANK
IMPERVIOUS REMOVAL
TRACKING FORMAT**

