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Baseline Options

Concept	Pros	Cons	Recommendation
Stormwater Load Baseline Calculation Options			
Zero Load Baseline	• Would help local jurisdictions meet reduction allocations by providing additional reductions beyond those created by new development. Rationale – past development has resulted in greater loads that now have to be addressed by local jurisdictions. • Calculation is simple and applicable across state • Exceeds the water quality requirement of the Bay TMDL	• Requires developers to meet a higher standard than other sectors • Ignores the actual load being generated by a property prior to development • Eliminates any opportunity for a developer to generate credits. • Disincentivizes land conversion.	
Forest Load Baseline	• Forest cover is the natural condition of the Chesapeake Bay watershed and the Bay had good water quality when the watershed was forested • Calculation is simple and applicable across state • Exceeds the water quality requirement of the Bay TMDL	• Unless the site is 100% forested, it ignores the actual load being generated by a property prior to development • Requires developers of non-forested properties to meet a higher standard • Eliminates any opportunity for a developer to generate credits. • May incentivize development of actual forest because those properties are on an even footing with more polluting uses.	
CB TMDL or Local Baseline, whichever is lower	• Explicitly incorporates the need to meet local TMDL reductions •	• Could promote development in areas with higher existing nutrient loading where for policy reasons growth would not normally be encouraged. • Likely less accurate on any given parcel than other methods.	
Predevelopment land use load	• Reflect load changes • Most accurately accounts for the net change in nutrient loading. • Simple methods already exist for	• Could be contrary to a number of State and local policies dealing with Smart Growth and Agricultural Preservation.	

	estimated the existing loads. • Creates a reasonable opportunity to incentivize developers to understand and implement measures that reduces nutrients. • Could result in large scale conversion of agricultural land to preserved open space in meadow or forest.		
On-Site Disposal System Baseline Calculation Options			
Default is zero	• Simple	• This is true if there are no existing OSDS on site, but often there are OSDS that will be removed as a result of development	
Reduction of baseline load for removal or upgrade (denitrifying) of any existing OSDS	• Takes into account the site conditions	• More complex calculation dependant on OSDS location	
Atmospheric Deposition Baseline Calculation Options			
Zero Baseline Load	• Simple	• There is an existing Atmospheric Deposition load, some of which is not locally derived.	
Existing Atmospheric Deposition	• Does not hold developer accountable for the existing Atmospheric Deposition Load	• Would require information from the Bay Atmospheric Model to determine regional existing loading rates	
Leave out of calculations	• Given the variability in Atmospheric Deposition and remote sources, makes scientifically supportable calculations difficult	• Would not account for a nitrogen source	

Load Calculation Options and Urban Credit Options

Concept	Pros	Cons	Recommendation

Urban Credits – Requirement Calculations - Stormwater			
Default – 50% reduction of nitrogen for ESD to the MEP	• Simple to calculate	• Does not necessarily calculate the actual pollutant load reduction through the installation of ESD • Handcuffs designers/developers from selecting and enhancing individual BMPs that would optimize nutrient reductions	
Use Expert Panel on performance standards for new development	• Would provide a more scientifically defensible load reduction • Would encourage developers to maximize the amount of load reduction through the selection and design of BMPs that provide maximum runoff reduction and treatment	• More complex to calculate, would need to calculate for each practice.	
Urban Credits – Requirement Calculations – Stormwater and Smart Growth			
Default – no credits required for redevelopment defined as 40% Impervious cover	• Definition set by stormwater regulations	• Does not promote smart growth where often the redevelopment/revitalization has impervious cover less than 40% • Does not accurately capture the change in loads, which could potentially generate a credit.	
Provide a sliding scale of amount of offset needed to be provided for sites that have a range of 20% - 40% impervious cover	• Helps smart growth policies by encouraging redevelopment and revitalization of existing urbanized areas. • Provides a gradational change in the amount of offset needed instead of an abrupt change at 40%	• Would require an additional calculation to determine the amount of offset needed, but not a complex calculation Offset owed = 100% - ((Predevelopment Imp % - 20)*X), where X is the amount of reduction in the offset requirement	
Use a different definition that is based on geographical location, relation to PFAs, infill, etc. if the intent is to incent development in targeted areas.	• Easy to identify qualifying properties	• Limited and indirect relation to water quality	
Base requirement on pre-load versus post-load	• Most accurate representation of change in loading	• Perhaps more complicated to derive.	

Urban Credits – Requirement Calculations - OSDS			
Default – 50% reduction in the nitrogen for each BST system installed	• Simple direct calculation	• Does not reflect the actual reductions made to the nitrogen load	
Use MDE nitrogen reduction credits based on type of BST system installed – range 56% to 76% effective	• Scientifically defensible • Promote use of most effective BST systems • Provides incentive for developers of BST systems to develop even more effective BSTs	• Requires additional calculations • Requires verification of BST system types installed	
Use landscape position of OSDS to determine the amount of nitrogen that may be delivered to the stream system	• Used in MAST to determine OSDS loads for existing systems. • Would encourage developers to design sites to provide the least amount of nitrogen delivery from OSDS • Potentially more scientifically defensible • Would provide equability with the reduction requirements for existing OSDS	• Based on stream system used in the Bay watershed model, which does not pick up most 1st, 2nd, and even 3rd order streams. Would have to use the same stream system used in the Bay model. [Why? Most counties have this data, making calculations a bit more conservative, but I think that's probably good.] • Requires additional calculations	
Urban Credits – Requirements Calculations - Atmospheric Deposition			
Default – use urban population density to calculate increase in load by household	• Relatively straight forward calculation	• Dependant on the census track densities, which may change over time and is dependant not only on the population size, but also census track size. May not reflect the actual density within the immediate vicinity of the development • Does not take into account individual choices in terms of transportation, nor the continued improvements in vehicle emissions. • Would need much greater amount of scientific justification than has been provided	
Eliminate Atmospheric Deposition	• Unless able to provide more	• None	

calculations from the calculations	detailed scientific justification, it could be assumed that any potential increase due to vehicle atmospheric deposition is accounted for in the margin of safety.		
On-Site Urban Credits			
Site design credits, such as, fingerprinting of layout	• Minimizes disturbance on-site	• Credits may actually be granted through other on-site practices, such as, forest preservation; unless a clear cut scientifically defensible method for credits can be developed	
Credit for preservation of forest beyond the requirements of the Forest Conservation Act.	• Would encourage developers to preserve more forest on site. • Would minimize local watershed impacts	• Would require calculation for amount of forest preserved beyond the FCA requirements. • Would require additional land to be placed in reservations of easement • Would be enforced by local jurisdictions	
Credit for reforestation/afforestation beyond the requirements the Forest Conservation or local riparian buffer requirements	• Would result in additional forest being planted with resultant reduction of impacts to local water quality, or local water quality improvement	• Would require additional calculations, with credits being dependant on location of the planting • Would require longer term maintenance agreements with the developers to ensure viability of the plantings.	
Credit for on site stream restoration. Would need to be approved by local jurisdiction to assure that it fits in with local policy and restoration efforts	• Would result in improvement of local water quality and aquatic habitat. • Measurable correlation between nutrient reduction and linear feet of stream restoration	• Requires coordination with local jurisdiction on acceptability of stream restoration • Requires additional permitting	
Credit for treating offsite runoff	• Would incent developers to provide treatment from runoff that otherwise flows off of other properties onto and across their properties if economically viable to do so.	• Would require documentation and engineering analysis as part of the developer's stormwater management plan.	
Credit for enhanced BMPs (additional	• Would incent developers to	• Would require documentation and	

filtration media, use of sorptive materials to enhance phosphorous removal, enhanced vegetation for nitrogen uptake, etc, etc)	enhance their BMP designs to maximize nutrient removals if economically viable to do so	engineering analysis as part of the developer's stormwater management plan.	
On-site/Off-site Urban Credits			
Credit for capturing offsite drainage and providing treatment (retrofit). Credit based on loading to the new facility and the type of facility installed using the CBP document on stormwater retrofitting credits	• Would help local water quality and result in limited impacts from the new development	• Would require additional the developer to provide additional stormwater engineering design and calculations, as well as, permitting and construction	
Expand and convert a SWM facility that is immediately adjacent to the project, would need land on the project to achieve the expansion	• Would help local water quality and result in limited impacts from the new development	• Would require the developer to enter into negotiations with facility owner • Would require additional the developer to provide additional stormwater engineering design and calculations, as well as, permitting and construction	
Offsite Credit Urban Credits – Would require approval of local jurisdiction to assure that the crediting systems does not conflict with the needs to meet the CB TMDL			
Conversion of existing stormwater facilities for greater pollutant removal. This would need to be approved by local jurisdictions, but would probably involve the conversion to privately owned facilities	• Can provide improved water quality in the local vicinity of the project.	• Requires additional stormwater engineering and permits • May be constraints in the ability to upgrade a facility • Would require prior local jurisdiction approval. • Would likely require a local stormwater utility to ensure long-term maintenance.	
Installation of denitrifying OSDS systems. Need to be sure it does not conflict with local TMDL requirements. Have owners register their systems as available for installation	• Would accelerate the upgrades to OSDS to BST. • Since fresh waters a usually not impaired by nitrogen, could target OSDS in watersheds that have higher nitrogen delivery to the bay. • Could be a means to address problem OSDS where the owner has financial constraints.	• Would require prior local jurisdiction approval.	

Possibility for a variety of offsite reforestation offsets	• Could accelerate the increase in forest cover	• Would require prior local jurisdiction approval. • Would require additional planting plans, easements, and maintenance agreements to assure survivability.	
Generate credits through exceeding the requirements for redevelopment by installing greater SWM or planting. Maybe not available for revitalization projects	• Would encourage developers of redevelopment sites to go beyond the legal requirements of development resulting in acceleration of water quality improvement	• Additional engineering, permitting, maintenance, easements, etc.	
Other local jurisdiction identified urban credit options (connection of package treatment plant to WWTP with ENR, installation of spray irrigation for OSDS problem areas, etc.)	• Could result in water quality improvements that go beyond what the local jurisdictions is required to do. Would allow the local jurisdiction to identify other options that could address TMDLs other than those associated with nutrients	• May have variability in what local jurisdictions identify as additional options. • Would potentially need State approval.	