

MCC Community Resilience Planning Sub-group Recommendations

The Department staff has reviewed each recommendation of the Community Resilience Planning Sub-group in the summer of 2023. The Department staff's initial comments and recommendations are given in separate columns of the table below for the Steering Committee's information.

Please note that **Strategy 1a** includes recommendations for **Chapter 375**. Although the recommendations are intended for Chapter 375, they are related to **Chapter 500** and kept in the document for the Steering Committee's information and review.

Disclaimer: The Department's work on the stormwater regulations continued after the completion of this document. Therefore, some of the Department recommendations and comments may not be up to date.

Specific recommendations evaluated in this document are accessible from the reference given below:

- Judith C. East. 2020. Letter to Maine Climate Council: Community Resilience Planning, Emergency Management and Public Health Working Group Community Resilience Planning Sub-Group Recommendations (Electronic Copy): https://www.maine.gov/future/sites/maine.gov.future/files/inline-files/CommunityResiliencePlanning_FinalStrategyRecommendations_June2020.pdf

Strategy 1a: Improve Site Location of Development Act ("Site Law") Regulations and Rules

#	Specific Recommendation	Brief Evaluation of the Recommendation/Proposed Action	Consider for "Chapter 500" Rulemaking Project (Yes/No/?)
Chapter 375 Section 4. No Unreasonable Effect on Runoff/Infiltration Relationship			
1	Revise flooding standards to utilize best available scientific projections of flooding (precipitation-based and sea level/surge-based)	<p>Evaluation: Neither Chapter 375(4) nor Chapter 500(4)(F) currently addresses coastal or riverine flooding risk associated with a project site. Section 19 of the Site Law application requires the applicants to show "100-year flood elevation" on the site plan (Ref. 2).</p> <p>Proposed Action: Amend Chapter 500 to address coastal or riverine flooding risk associated with a project site based on best available projections. If there is a readily available projection that can be used in Maine, create a standard that uses it. Extend this new standard to cover both Stormwater and Site</p>	Yes

		Law projects. Train DEP staff who will administer the standard.	
2	Require determination of flood risk of proposed development to be based on best available flood projections and flood-prone areas beyond just the FEMA Flood Insurance Rate Maps which frequently are not representative of the true flood risk of an area and are not reflective of future risk associated with climate change	<p>Evaluation: See #1.</p> <p>Proposed Action: See #1.</p>	Yes
3	Update rainfall tables for all storm return intervals (e.g., 25-year storm event)	<p>Evaluation: Chapter 375 does not have any rainfall tables. Currently, Chapter 500 Appendix H contains the rainfall table. It is appropriate to direct the stormwater practitioners to use the best available rainfall data.</p> <p>Proposed Action: Eliminate the rainfall table from Chapter 500. Provide an updated rainfall table in “Stormwater BMP Manual” or direct the practitioners to an authoritative reference, which is regularly updated.</p>	Yes
4	Re-evaluate whether the storm return intervals (2-, 10-, and 25-year storm events) for which pre-development/post-development stormwater runoff conditions are currently assessed and evaluated are sufficient for accounting for climate change impacts and revise as necessary, perhaps to more intense but less frequent events (e.g., 30-, 50-year storms)	<p>Evaluation: Chapter 375(4) refers to 25-year, 24-hour storm whereas Chapter 500(4)(F) refers to 2-, 10-, and 25-year 24-hour storms for peak flow control. Considering Maine’s precipitation trends, re-evaluation of the design storms used for peak flow control is warranted.</p>	Yes
5	Incorporate considerations of future climate conditions in standard dealing with large gas terminals	<p>Evaluation: It is unclear what kind of specific considerations is necessary for large gas terminal projects.</p> <p>Proposed Action: N/A</p>	?

6	<p>Incorporate considerations of how large development projects impact existing runoff/infiltration-related infrastructure.</p>	<p>Evaluation: Large development projects can have high stormwater impact depending on their size, type, and location in watershed. The recommendation has merit and must be evaluated further.</p> <p>Proposed Action: Define “large development projects” carefully. Additional submission requirements and standards will apply to these projects (e.g., comprehensive stormwater modeling, monitoring, mitigation fee). This is for very large development projects which may come for the Department’s approval infrequently. Additional requirements to be developed over time.</p>	Yes
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Strategy 1b: Improve Stormwater Management & Erosion and Sedimentation Control Regulations and Rules

#	Specific Recommendation	Brief Evaluation of the Recommendation/Proposed Action	Consider for “Chapter 500” Rulemaking Project (Yes/No/?)
Chapter 500 Section 4(C)(4). Low Impact Development (LID) Credit			
7	Require and/or further incentivize use of low impact development (LID) approaches	<p>Evaluation: Chapter 500 already has LID elements and a voluntary LID credit. LID credit is almost never used. Improving Chapter 500 standards from LID perspective needs to be a priority for Chapter 500 rulemaking.</p> <p>Proposed Action: Several different approaches are being evaluated to require or incentivize LID. Also, new LID standard must consider the LID requirement of municipal MS4 permit.</p>	Yes
8	Consider increasing percentage of stormwater volume required to be managed with LID from 50%	<p>Evaluation: There is no requirement in place to treat 50% stormwater volume with LID in current Chapter 500. Several projects permitted under Chapter 500 already use solely vegetative treatment measures which are consistent with LID.</p> <p>Proposed Action: See #7.</p>	No
9	Revise rules to incorporate maintenance requirements for LID measures and all stormwater measures	<p>Evaluation: Chapter 500 Appendix B has inspection and maintenance requirements for all stormwater measures. Also, Chapter 500 has a five-year recertification requirement.</p> <p>Proposed Action: No action.</p>	No
10	Revise rules to allow developers to get ‘credit’ for the LID measures they implement without needing to do all of the measures noted in this current rule section	<p>Evaluation: Current LID credit in Chapter 500 has not worked and needs to be removed. There can be core and voluntary LID standards in new Chapter 500.</p> <p>Proposed Action: See #7.</p>	Yes

11	Clarify language and required standards to reduce confusion with and ambiguity of requirements and permit process	<p>Evaluation: Clarification of Chapter 500 requirements and related permit process is necessary.</p> <p>Proposed Action: Chapter 500 structure will be streamlined to the extent practicable. More guidance, training, and outreach will be provided on Chapter 500 and related permit process.</p>	Yes
12	Revise language to promote and reflect the benefit of covered parking areas; consider incentivizing the use of porous pavement to address impervious coverage in areas where appropriate (site-specific) and ensure inclusion of appropriate maintenance requirements	<p>Evaluation: Benefit of covered parking areas is considerably high for chloride mitigation. Certain covered parking configurations can be also beneficial for pollutant source control. Chapter 500 already has maintenance requirements; however, five-year inspection and maintenance requirement for porous pavement can be explicitly required in Chapter 500.</p> <p>Proposed Action: This needs to be further evaluated under LID work being performed for Chapter 500.</p>	Yes
13	Consider quantifying LID credits based on specific quantitative standards (e.g., square feet)	<p>Evaluation: Current LID Credits are ineffective and not commonly used. There is value in considering quantitative standards for a potential LID credit to avoid problems in the implementation due to subjectivity.</p> <p>Proposed Action: Chapter 500 will be revised to have LID requirements, rather than credits. There may be an opportunity to offer credits for certain LID practices (like covered parking areas).</p>	Yes
Chapter 500 Section 4(F). Flooding Standard			
14	Consider revising standard to incorporate water volume considerations into standards	<p>Evaluation: A volume reduction standard is a growing topic of conversation in regulations nationwide. Many states already have these standards, but our strict infiltration requirements make incorporating such a standard difficult.</p> <p>Proposed Action: Chapter 500 infiltration requirements are currently being reviewed and will potentially be revised.</p>	Develop Proposal

		This will pave the way for a potential volume reduction standard. Detention and retention of higher volumes (e.g. 1.5 inches) on site could help with this problem.	
15	Require and/or incentivize projects between 1 and 3 acres to mitigate flooding/stormwater impacts	<p>Evaluation: Cumulative impacts of smaller development projects can contribute to flooding issues. One challenge is that smaller developments have less space for larger stormwater retention associated with mitigating higher intensity storm events.</p> <p>Proposed Action: Implementing low impact development standards and/or a volume control standard would mitigate the majority of flooding and stormwater impacts. (See 14 above.)</p>	Develop Proposal
16	Require developers to address project flooding impacts that extend beyond property lines and municipal boundaries	<p>Evaluation: The department already has a discharge to municipal/publicly owned system standard. Waivers to the flooding standard already require additional stormwater modeling to demonstrate no adverse impacts downstream of development.</p> <p>Proposed Action: Implement additional modeling standards for very large scale projects with large quantities of impervious area that will require additional modeling to ensure minimization of downstream flooding impacts. The proposal to be developed for addressing Comment #14 will be helpful to address this comment.</p>	Develop Proposal
17	Increase water volume treatment requirement or increase the volume of water that needs to be retained on-site	<p>Evaluation: This is similar to Strategy 14. Some states are looking to increase the design storm from 1 inch to 1.5 inches.</p> <p>Proposed Action: Increase channel protection volume to incorporate 1.5 inches rather than 1 inch. Implement a stormwater volume standard.</p>	Develop Proposal (See #14)

18	Improve clarity of language regarding how DEP will review and consider hydrographs for peak flow during the permit and project review process	<p>Evaluation: What language is unclear? Applicants are already required to submit hydrographs and stormwater modeling to demonstrate compliance with the flooding standard.</p> <p>Proposed Action: More information needed. The hydrograph review method can be clarified during the update of the Stormwater BMP Manual.</p>	Yes
Chapter 500 Section 4(F)(3). Waiver of the Flooding Standard			
19	Reconsider if existing waivers are appropriate and will adequately manage stormwater under future projections of precipitation associated with climate change	<p>Evaluation: This recommendation/comment is unclear as written. Responses to specific waiver-related questions (Comments #20, 21, and 22) are given below.</p> <p>Proposed Action: More information needed.</p>	NA
20	Increase waiver requirements/standards so that they are more difficult to receive and achieve better stormwater management practices	<p>Evaluation: Waivers are already generally difficult to receive (unless the location is discharging directly into a major water body). The department has a lot of discretion when considering granting a waiver and can require additional modeling to support the consideration. The department can improve its technical procedure for considering and approving an 'Insignificant increase' Flooding Standard Waiver (Section 4.F.(3)(b)).</p> <p>Proposed Action: No change.</p>	No
21	Consider eliminating the channel protection waiver, or, if retained, improve clarity of language to minimize potential discrepancies related to how channel protection requirements are handled internally by DEP staff	<p>Evaluation: Channel Protection standard is poorly defined within the Law. This leads to confusion on the application of a waiver.</p> <p>Proposed Action: Define Channel Protection in Chapter 500, Define a specific Waiver.</p>	Yes
22	Consider eliminating the water quality standard waiver and prohibiting use of the treatment waiver to meet the water quality standard	<p>Evaluation: There are two methods to reduce or waive the water quality standard: Sections 4(C)(2), 4(C)(4), and 4(C)(5). These subsections will be</p>	Yes

		<p>reviewed and possibly revised in the Chapter 500 update.</p> <p>Proposed Action: Some of the probable changes may include looping in the developing only a percentage of developable land into the low impact development standard and/or potentially increasing the extra volume treated from 0.05 inch = 1% to 0.1 inch = 1%. Completely eliminating the water quality treatment level exceptions can be counterproductive. Evaluation of the exceptions for potential revision is proposed.</p>	
23	<p>Current practice allows, but does not require, applicants to evaluate whether incorporation of peak matching detention will actually reduce the potential flooding in the stream to which the project discharges. In some cases (e.g., when the stormwater discharge is at the downstream end of the watershed) detention of the peak may actually increase the potential for flooding. This has been a weakness in the flooding standard for long time, but as the intensity of storms increases, it has the potential to become a more significant issue than in the past. Perhaps applicants should be required to do an analysis of the likely effect of detention on instream flows at downstream points of vulnerability for flooding or infrastructure impacts.</p>	<p>Evaluation: This recommendation needs further evaluation. The scenario described in here applies to some but not all projects that require licensing under Chapter 500.</p> <p>Proposed Action: Further investigation and analysis are necessary to come up with a response to this recommendation. It is important to decide which projects will be subject to additional standard(s) to address the concern here.</p>	Yes
Chapter 500. Water Quality Standards (General Standards)			
24	<p>Evaluate whether existing standards are protective enough for addressing projected future storm intensities and precipitation amounts.</p>	<p>Evaluation: Our current regs target treatment for the first flush and the water quality design storm. This is unlikely to significantly change due to climate other than increasing in frequency. Increasing in frequency will</p>	

		<p>have limited impact since the systems are already designed to handle the frequent, small storms that drain in no more than 48 hours. The climate change impact can be more pronounced for the storms in the neighborhood of the 90th percentile storm.</p> <p>Proposed Action: See Response to #17</p>	
Chapter 500. Treatment Requirements and Retention			
25	Incorporate projections of future precipitation and storm frequencies in standards	<p>Evaluation: The Department should always be incorporating the best available precipitation data and projections for stormwater modeling. There is uncertainty associated with future precipitation and care must be exercised on addressing climate change in order not to excessively increase stormwater control measure costs.</p> <p>Proposed Action: Remove Appendix H (precipitation tables) and add language to allow the Department to change which precipitation data is required for design (so that future projections can quickly be utilized rather than require a full rulemaking process).</p>	Yes
26	Consider requiring developers to design stormwater management measures to more intense storm events, beyond 2-, 10-, and 25-year events	<p>Evaluation: Define “design to more intense storm events.” Most stormwater infrastructure (excluding volume control measures) have bypasses for larger storm events to begin with. Treatment is targeted at the first flush rather than the full design storm. There may be a case to require increasing volume control measures in certain watersheds (with CSO problems), but smaller development projects cannot be expected to detain, capture, infiltrate the 10-year storm, let alone 25, 50, 100.</p> <p>Proposed Action: Return periods of the design storms for stormwater control</p>	Yes

		measures that detain significant volumes (e.g., wetponds, subsurface detention systems) can be increased. Non-LID, large development projects can be subject to additional standards.	
27	Consider requiring developments to retain all stormwater volume associated with set storm frequencies on site	<p>Evaluation: Volume reduction standards are being discussed in other states and by the EPA. Maine MS4 LID white paper recommends NH Alteration of Terrain (AoT) infiltration standards for Maine. This is worth considering since volume reduction has added benefits of pollutant load reduction and flow control.</p> <p>Proposed Action: This recommendation can be considered under LID discussion. A fixed volume reduction requirement based on hydrologic soil groups (MS4 LID White Paper) or an event-based approach as proposed in Recommendation #27 can be considered. The volume control storm needs to be small and high frequency (more frequent than one-year return period). Such storm data may not be readily available (see NOAA: minimum return period is one year). Ultimate goal needs to be mitigating the loss of groundwater recharge and evapotranspiration due to the new development as much as possible. “What would be the allowable increase in the annual runoff volume?” is the question to answer.</p>	Yes
28	Revise size requirements for stormwater management strategies, such as buffers and retention ponds, to account for projections of future precipitation amounts and capture more stormwater volume	<p>Evaluation: We don’t have great data reflecting the amount of volume treatment provided by buffers but designing wet ponds using future precipitation projections would accomplish the goal of increasing sizing to capture more volume.</p> <p>It is important to evaluate the effectiveness of the current stormwater treatment measure sizing requirements under future precipitation projections. It is probable that current sizing standards</p>	Yes

		<p>are (highly) conservative for certain regions of Maine even under the future precipitation projections.</p> <p>Proposed Action: Continuous stormwater modeling using representative development scenarios will be helpful to understand how the stormwater measures/systems sized using the current Chapter 500 standards will perform under the future climate projections. Stormwater modeling can be the objective and defensible approach for updating the sizing requirements of the stormwater treatment measures.</p>	
29	Evaluate and ensure rule changes account for potential impacts of greater on-site stormwater retention on groundwater quality and consider more stringent requirements for holding stormwater on-site	<p>Evaluation: The pollutants (e.g., chloride) that remain relatively inert as stormwater infiltrates through the soil column may degrade the groundwater quality. It is unclear what the recommendation specifically refers to about the “more stringent requirements on holding stormwater on-site”; potential temperature impact associated with surface storage of stormwater?</p> <p>Proposed Action: Groundwater recharge/infiltration is not a “silver bullet”. There are stormwater pollutants which are not removed during infiltration. Any new standard promoting infiltration (groundwater recharge) will be developed with this limitation in mind.</p>	Yes
30	Investigate channel protection storage as a strategy for addressing increased stormwater volume	<p>Evaluation: Channel protection volume (CPV) storage is for mitigating the stormwater impact on the stream channels. Increasing CPV does not necessarily mitigate the negative stormwater impacts since it will result in elevated flow durations unless post-development stormwater volume is not reduced by groundwater recharge/evapotranspiration.</p> <p>Proposed Action: Increasing CPV to mitigate the impact of increased</p>	Yes

		stormwater volume can be considered for receiving streams which have more stable (e.g., rocky) stream bed and channel which have a tolerance for extended flow durations. Increasing CPV across the board may have unintended consequences on the receiving streams.	
Appendix H. 24-hour Duration Rainfalls for Various Return Periods			
31	Update rainfall tables with best available precipitation data and projections of future precipitation and storm frequency	<p>Evaluation: See recommendation #25 & Cody’s proposal on indexing precipitation with climate change</p> <p>Proposed Action: See Recommendation #25.</p>	No (Addressed in #25)
32	Currently, regulations reference specific and static rainfall numbers and data that are external to DEP, which is limiting if the external data gets updated – the reference should be updated to cite and link to the data source rather than list static data	<p>Evaluation: We agree with this recommendation.</p> <p>Proposed Action: Reliable external data sources need to be referenced in the next version of Chapter 500.</p>	Yes
33	Revise regulations to allow, and possibly encourage, the use of rainfall data that exceeds the minimum required storm event and/or rainfall volume	<p>Evaluation: Benefits of this recommendation can be marginal, particularly for improving the stormwater quality. From the stormwater quantity control (peak flow control) standpoint, this approach can be useful in certain watersheds where there is critical downgradient infrastructure and/or frequent flooding problems downgradient a project site.</p> <p>Proposed Action: Benefit of this recommendation can be rather limited. The Department has been giving credit for overtreatment to the projects. Same practice can be continued.</p>	No
34	Amend regulations to ensure that ‘pre-development’ conditions used for evaluating pre- vs. post-development stormwater impacts accurately reflect the true pre-development conditions of an area.	<p>Evaluation: Pre- and post-development condition analysis is currently performed for the Site Law projects only. For the Site Law projects, the site condition existed around 1970 is used to represent the pre-development condition. It is not clear what “true pre-development</p>	Yes

		condition” means in the recommendation. Proposed Action: Considering pre-development condition can be a useful approach for developing a new stormwater standard addressing volume control. Stormwater volume under the pre-development condition can be the “baseline”.	
Chapter 500. Other			
35	Consider revising Chapter 500 to modify exemptions from rules for agriculture and forestry land uses and consider developing standards for those specific land uses	Evaluation: Agriculture and forestry exemptions are in the statute. Modifying these exemptions are up to the legislature. Admittedly, agriculture and/or forestry land uses may have significantly higher stormwater impact as compared to the land development activities currently covered under Chapter 500. Proposed Action: This recommendation is beyond the scope of Chapter 500. Input from DACF is necessary for this recommendation.	No (Probably)
36	Consider increasing the required design storm size for emergency spillways	Evaluation: Current design storm for the emergency spillways is 25-year 24-h storm as given in Chapter 500 Appendix E(3)(b). To increase the climate resiliency of the stormwater ponds under increasing extreme precipitation events, it may be appropriate to increase the return period of this design storm. Proposed Action: The low hanging fruit is increasing the return period from 25-year to 50-year. In general, design storms and sizing criteria of the non-LID stormwater ponds can be increased to increase the climate resiliency of these measures and disincentivize them.	Yes
37	Consider and improve incentives for redevelopment projects	Evaluation: Chapter 500 currently has a popular “redevelopment” section (i.e., Section 4(C)(2)(d)). Redevelopment incentives can be further improved for certain projects considering the proposed	Yes

		<p>impervious cover reduction, imperviousness of the project watershed.</p> <p>Proposed Action: Additional redevelopment incentives can be considered in the context of LID: replacing existing conventional development with new development consistent with LID principles.</p>	
38	Incorporate redevelopment standards in the current regulations (see City of Portland regulations for example)	<p>Evaluation: Chapter 500 already has a redevelopment provision (exception) under the General Standards. This provision is frequently used in the Stormwater Law and Site Law applications.</p> <p>Proposed Action: Existing redevelopment exception can be improved. For instance, minimum treatment level requirement can be significantly reduced for the Site Law redevelopment projects that will result in significant high pollutant load impervious cover reduction.</p>	No (Addressed in #37)
39	Consider revising statute to require flooding standards and water quality standards for projects smaller than the 3- and 1-acre threshold triggers	<p>Evaluation: This recommendation attempts to address the “cumulative stormwater impact” of urbanization/land development. Its implementation may deliver positive stormwater management results in certain watersheds which are threatened by land development.</p> <p>Proposed Action: This recommendation and its potential environmental benefits need to be discussed with the stakeholders.</p>	Yes
40	Consider requiring ‘Permit By Rule’ (PBR) projects to treat more than 50% of the development site area	<p>Evaluation: See Recommendation #39.</p> <p>Proposed Action: See Recommendation #39.</p>	Yes
41	Consider lowering the statutory threshold for when a full permit, not just a PBR, is necessary	<p>Evaluation: See Recommendation #39.</p> <p>Proposed Action: See Recommendation #39.</p>	Yes
42	Amend requirements for DOT and Turnpike Authority projects to be	<p>Evaluation: MTA and MaineDOT comply with Chapter 500 through their stormwater Memorandum of Agreement</p>	Yes

	consistent with requirements for other permit applicants	(MOA) with DEP. The MOA provision is in the state’s stormwater statute. There are ambiguities regarding how Chapter 500 applies to the transportation agencies’ projects which are mostly linear projects. Proposed Action: Minimum/core standards that apply to the transportation projects need to be clarified in new Chapter 500.	
43	Investigate the inclusion of underground injection and groundwater requirements into existing regulations	Evaluation: The state has regulations related to underground injection and groundwater which are cited in Appendix D of existing Chapter 500. This recommendation appears to go beyond the scope of Chapter 500 rulemaking project. Proposed Action: There will be discussions related to this recommendation in the context of LID and stormwater infiltration. Regulation of underground injection and groundwater is beyond the scope of Chapter 500.	No (Addressed in #29)
44	Investigate the impacts and unintended consequences of infiltration on groundwater quality	Evaluation: See Recommendation #29. Proposed Action: See Recommendation #29.	No (Addressed in #29)
Erosion and Sedimentation Controls			
45	Revise and update best management practices (BMP) (sizing of control structures, dewatering practices, etc.) to ensure they account for projections of future precipitation and storm frequency	Evaluation: Among the temporary ESC measures, only temporary sediment basins are sized Proposed Action: This recommendation will be considered in the scope of the manual update project (see Recommendation #46).	Yes
46	Update the BMP design manual	Evaluation: Both “Stormwater” and “ESC” BMP manuals need to be updated to reflect “new” Chapter 500 standards and include cutting-edge practices, technical guidelines for the use and benefit of the stormwater practitioners in Maine.	Yes

		Proposed Action: As authorized by the DEP Commissioner, a request for proposal (RFP) will be advertised to hire a qualified contractor for the manual update project.	
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