WHAT GAPS STILL EXIST THAT HAVE NOT BEEN ADDRESSED BY THE PROJECTS DISCUSSED IN THE MORNING, AND WHAT OPTIONS SHOULD WE EXPLORE TO FILL THEM?

Integrating water quality models with ecological and social vulnerability models under future climate conditions

Evaluating the hydrologic/hydraulic impact of stormwater BMPs.

BMP performance metrics for UHI

Have there been comparisons of southern estuaries to predict what the Chesapeake may become? Bay of the future?

Shifts in habitats and the confounded impacts on loads and load reductions. ie tidal marsh shift to nontidal adjacent and forested buffet

How to continue the pace of progress after this pulse of federal funding expires.

an understanding of how BMPs function with respect to climatic and or hydrologic drivers.

Connecting stormwater resiliency BMPs to water quality credit. Many urbanized area's are having to prioritize resiliency

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WHAT GAPS STILL EXIST THAT HAVE NOT BEEN ADDRESSED BY THE PROJECTS DISCUSSED IN THE MORNING, AND WHAT OPTIONS SHOULD WE EXPLORE TO FILL THEM?

It was mentioned, but I want to emphasize the importance of understanding cumulative BMPs and their feedbacks upon each other

There is a need for a better inventory of urban BMPs.

Reframe the conversation to focus on habitat first and the ancillary wq benefit to address CESR

Longevity of BMP performance and function in future climate, AND the role of maintenance as vital to their resilience as BMPs. We talk a lot about design etc and not enough about maintenance.

There is a need to improve the knowledge of the "true" urban BMP efficiencies..
Use WEF Inte BMP DB

Habitat condition, esp. with respect to potential vulnerability/resilience and likelihood of natural land uses to continue to provide wq benefits under future climate conditions

Multiple benefits. We've heard about water quality, quantity (flooding), and some about ecosystems, but there is a need to connect to broader socioeconomic and natural benefits.

Determine the Local effect of flow/Stormwater run-off on SAV density and acreages and options for targeting BMPs that would protect priority SAV areas.

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WHAT GAPS STILL EXIST THAT HAVE NOT BEEN ADDRESSED BY THE PROJECTS DISCUSSED IN THE MORNING, AND WHAT OPTIONS SHOULD WE EXPLORE TO FILL THEM?

Develop models that increase understanding of habitat change from sea level rise and use these models to develop criteria for targeting restoration for maximum ecosystem services and benefits.

There is a need to understand the urban BMP Operation & Maintenance practices & impact on efficiency

Evaluating the ability of BMPs to mediate climate impacts (including both stormflow and temperature)

Gap in understanding exactly when we need detailed quantitative data to model or estimate something versus when we may only need qualitative information for planners, advocates or decision makers.

Groundwater-surface water exchange and its impact on ecosystem?

Better define the pollutant removal efficiency of stream restorations projects and update protocols

an understanding how BMPs alter hydrology can be important for better simulating future climate scenarios -- perhaps we aren't fully accounting for the benefits that they provide?

Some BMPs might act as heaters/cooler depending on the context and time of year. So might be hard to classify them.

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WHAT GAPS STILL EXIST THAT HAVE NOT BEEN ADDRESSED BY THE PROJECTS DISCUSSED IN THE MORNING, AND WHAT OPTIONS SHOULD WE EXPLORE TO FILL THEM?

quantifying and crediting cobenefits of urban stormwater BMPs

Carefully classify BMP heaters/coolers. Many wet ponds are not "heaters" - draw water from bottom

the extent of deep and shallow groundwater to improvetemperature-based estimates of climate refugia locations at finer spatial scales

It's implied in a lot of the comments here, but it'd be nice to be explicit about the importance of high resolution models, at the scale of community adaptations at least

Pull the most implemented BMPs data and evaluate those.

if performance of BMPs change with future climate, an understanding of if, which ones, and how their performance can be improved?

I think we need more regionally based climate planning. Each physiographic region has its own challenges.

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HOW SHOULD THE RAND TEAM PRIORITIZE WORK - WHICH BMPS ARE MOST IMPORTANT, ARE SOME TOOLS NEEDED BEFORE OTHERS, WHAT SITES/REGIONS SHOULD BE ASSESSED?

BMPS that maximize habitat while providing wq benefits.... so Wetlands

As part of knowing which BMPS are most important, particularly in urban settings, it would be equally important to underscore the limitations of the selected BMPs.

Pull the data on the most implemented BMPs and asses those.

Please consider using the ASCE/WEF BMP Classification System (categories) to ensure consistency among states. It was used in the recent update of the VA Stormwater Management Handbook

Site/regional prioiritization should incorporate social dimensions that are often sidelined - equity/justice considerations instead of solely outcome-driven prioritization.

For the list of BMPs: Suggest a hybrid approach. Top BMPs from both WIPs and the progress runs (maybe look at multiple recent progress years to account for fluctuations)

Figure out how to deal with BMPs that face important thresholds in future climate projections (i.e. they won't work at all after x amount of temp increase)

if performance of BMPs change with future climate, an understanding of if, which ones, and how their performance can be improved?

HOW SHOULD THE RAND TEAM PRIORITIZE WORK - WHICH BMPS ARE MOST IMPORTANT, ARE SOME TOOLS NEEDED BEFORE OTHERS, WHAT SITES/REGIONS SHOULD BE ASSESSED?

For the sites and regions: suggest using different areas or sites for ag vs urban BMPs (and maybe natural BMPs across both sets). Split it by the populatio/growth and production areas, respectively.

Forecast the human landscape out as long as the climate models (i.e. where will agriculture and impervious surface be in 2100?) to help decide the where

Aggregate BMPs response to changing climate.

BMPs in the most precarious and at-risk situations might be worth prioritizing. I.e., things like buffers, shorelines and wetlands that always exist in transition points of landscape and water.

Design and mgmt will impact a BMPs efficacy under a different climate regime i.e., online vs offline --> maintenance obligation reqs

Express change in BMP effectiveness in terms of climate metrics rather than year

SW conveyance between BMPs can be an important consideration if localized flooding is part of the scope. This is challenging because it necessitates a watershed-level assessment.

Practices like AWMS are probably worth omitting despite their relative WIP and progress reductions. Focus on practices that are more influenced by climate conditions, vegetation, hydrology.

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HOW CAN THE CBP BETTER INCORPORATE LIVING RESOURCES AND LANDSCAPE CHANGE INTO THE CLIMATE 3.0 WORKSHOP?

Can we better account for projected climate-driven changes in habitat condition (both aquatic and terrestrial)?

Focus on multiple suitability provision for habitats including nesting, reproduction, forage, nursery, refugia. Stack these services for multiple habitats to assess risk and shifts.

ultimately we eventually have to find balance between fear of sticking our necks out for voluntary and difficult LR outcomes and the safer path or focus on legal TMDL

Be sure that someone from SAV workgroup is there?

important ecological linkages and functions as a means of bringing in other ecosystem concepts that are socially or policy relevant

Incorporate land-use/land-cover change along with climate to inform future scenarios of aquatic habitat processes (e.g., flow) & effects on fishes

Examples/speakers of structured elicitation approaches to fill data needs or gaps, whether used for modeling or qualitative communication needs

Links between future climate and current or future invasive species

HOW DO THESE EFFORTS ALIGN WITH PROJECTS GOING ON IN EACH STATE BOTH IN TERMS OF TIMING AND/OR OVERLAPPING PRODUCTS.?

Virginia is just now finishing an update to it's Stormwater Handbook so it will be a while before that is updated again. Permits are on a 5 year cycle so they cannot keep pace with model changes

Atlas 14 is specified in Virginia regulations and will require a legislative change

One of the most used references for IDF curves are the state DOTs' drainage manuals. It would be great to align update of those manuals with the RAND project

NYS DEC finished soliciting stakeholder input regarding potential changes to the SPDES general permit for stormwater discharges for construction activity that would address climate change impacts

VA DCR is also updating their Flood Protection Master Plan (inland) to complement their Coastal Plan. Coordination with that team will be important.

Nuisance flood plans, comprehensive management plans are also updated periodically, as a potential use for outputs

Any interested person may attend a USWG meeting when these topics are discussed. Agenda's are published in the CBP Calendar page

HOW DO THE WORKGROUP MEMBERS WANT TO ENGAGE WITH THESE EFFORTS MOVING FORWARD?

Maybe simple email updates for interested parties or advisory group at reasonable frequency? (Monthly or every other month)? Presentations at workgroups as needed maybe 1x or 2x a year max?

Perhaps when the BMPs are binned, conjoined meetings of modeling with other workgroups.

WQGIT and STAR have periodic newsletters, maybe project team can feed brief written updates to those staffers

Everyone is welcome to attend the USWG meetings when these subjects are discussed. Meetings are the 3rd Tuesday of the month, Agenda's are posted ahead of the meeting on the CBP Calendar page.