CBP Stream Health Workgroup Meeting - April 2019

Denise Clearwater (MDE)	Rikke Jepson (ICPRB)	Claire Buchanan (ICPRB)	Caroline Donovan (UMCES)	MIke Mallonee (ICPRB @ CBP)
Nancy Roth (Tetra Tech)	Scott Stranko (MDNR)	Matt Meyers (FFx Co.)	Sandy Davis (USFWS)	Mike Lovegreen (USC)
Emily Zollweg-Horan (NY DEC)	Dustin Schull (PA DEP)	Chris Arnott (NPS)	Sara Caldes (Severn River Keeper)	Anne Hairston Strang (MD FS)
Emily Bialowas (IWL)	Kip Mumaw (Ecosystem Services)	USGS in VA	Kelly Maloney (USGS)	Someone in for Alana Hartman (WV DEP)
Neely Law (CWP)	Scott Phillips (USGS)	Tom Schueler (CSN)	Sadie Drescher (CBT)	Margot Cumming (CRC)

Action items:

- Be aware we will be asking for Management Strategy comments and review in the summer
- USWG memos will be sent out for comments
    - Verification group memo is open for comment until May 31
- Claire Buchanan will follow up with discussions about getting the 2012-2017 data call
- Neely taking comments on stressor white paper outline

9:00 Welcome and Introductions

9:05 Strategy Review System Update

- Healthy watersheds cohort (including SH) will begin the Strategy Review System (SRS) process this summer
    - Presenting to Management Board on August 15
- **See materials for schedule and timing for material preparation (may be found here)**
- Goals from workgroup: looking for feedback and comments on Management strategy, and Action/Workplan
    - Margot will send out in early summer
- Comments:
    - Neely: Workplan should still be fairly up to date, most of the efforts will be focused on updating the management strategy
    - Matt: if there is anything that someone is particularly interested to work on, please let us know.

9:15 Stream Restoration Ad Hoc Team Progress

- Tom Schueler and David Wood provided an update on the Urban stormwater workgroup committees to review Stream Restoration BMP protocols, to include verification. 4 Groups started to look at 2013 Stream Restoration Expert Panel protocols
    - Group 1: Verifying stream restoration practices:
        - General feedback, that after initial 5 year permitting period, not much guidance for sediment/nutrients monitoring
    - Group 2: Crediting outfall stabilization: new BMP request
    - Group 3: Establish standards for applying Protocol 1 (prevented sediment)
    - Group 4: Adjusting Protocol 2 / 3 to capture floodplain/stream reconnection
- Good representation from a variety of stakeholders, including SH workgroup members
- Update on Group 1:
    - Focus: cost effective system to verify individual projects every 5 years
        - Developing visual indicators to assess for crediting, corrections or failures
    - Status: final draft out for review and comment period
        - **Open until May 31**, approval goal for June
        - https://www.chesapeakebay.net/channel_files/36141/attach_b_april_9_sr_verification_memo.pdf
- Update on Group 2:
    - Focus: decide to establish a new protocol for outfall restoration
        - Goal to develop a “protocol 5” to credit these
    - Status: final discussions and issue resolution
        - Final memo will be released soon for comments (Margot will forward when available)
- Update on Group 3:
    - Focus: guidance for prevented sediment protocols, setting limits on degree of armoring
        - Development of technical protocol and incentives for better on-site data collection
    - Status: still working, timeline for July
- Update on Group 4:
    - Focus: updating protocols related to floodplain reconnection and hyporheic exchange
    - Status: still in the research phase, expected to reconvene in summer and finish in fall
    - Discussion:
        - Anne Hairston-Strang: Are they considering stream side forests / stream side forest loss?
            - David Wood: They will be taking some time to look at “unintended consequences”
            - Anne Hairston-Strang: Forest management can take into account for these impacts but that isn’t happening yet - plan ahead for reforestation if the stream side forest loss is unavoidable

        - David Wood: this will be important to stay involved and keep that discussion going. We hope that these insights will inform these protocol groups. Please stay involved as the biological lift/functional lift experts
        - Denise Clearwater: this is something that MDE is also really concerned with
        - Matt Meyers: Many studies have shown that there are secondary losses of wetlands as channels incise, so when reconnecting, planning a plant community that can deal with the water is important
- Next Steps:
    - There will be continued review and comment periods going forward for all groups
        - EPA, WQGIT, stream health WG...etc.
    - Tom Schueler and David Wood plan to roll all 4 of these memos into one large guidance document by the end of the year
    - **Send comments on Group 1 (until May 31)**, Group 2 (will release for comment period shortly)
- Discussion:
    - Claire Buchanan: How will people submit or share data? Is there a database design in mind?
        - David Wood: That is a big issue in restoration design in general, but we don't have anything in mind. Chesapeake Bay Trust has started to look at the data coming from verification, but we don't have much to look at yet.
            - We are considering the new erosion curves in development. One discussion will be related to incorporating this data into the curve development but that is as far as we have gone so far.
            - It is difficult because there is so many different kinds of data being collected.
        - Claire Buchanan: It may be helpful to review the states database structures that the states may already be using to see if there are commonalities.
        - Tom Schueler: one of the key recommendations from the Group 1 memo is including post construction designs so after many years have passed someone will know what to look for.
        - Claire Buchanan: You are primarily concerned with physical structures of the restoration, correct?
        - Tom Schueler: Yes - it would be things like % of banks eroded, bank height measurements, selected cross-sections, photo stations. The memo lays out options that the field crews to measure if there are persistent problems.
        - Claire Buchanan: So it sounds like the data would have a mapping component, but there is also potentially quantitative data that could go into a database.

        - Tom Schueler: Yes, the states all have the opportunity to decide how to manage their data. But the memo goes through various data storage systems, local maintenance and asset management templates. Fairfax has a great template that should be available next week, and we will be including other local record keeping options in the appendices of these memos.
        - Matt Meyers: For Fairfax County, as an the MS4, we are tracking all the BMPs and ultimately that data is transferred to the state natural resource agency eventually. I think it is a great idea to look across the states to how this data is being shared.
    - Scott Stranko: Is there interest to standardize the inspections and data collection across states?
        - David Wood: Yes - but there is flexibility because the Bay Program gave states the space to develop their own process. But in providing this guidance, we are hoping that there will be a minimum consistency across the watershed that these projects are functioning well into the future.
    - Matt Meyers: Another aspect of this group has been to think about permitting requirements across states. Monitoring is built into most of these permits, BUT that requirements only go out 2 or 5 years and there is variety across states and depending on the permits. This built in monitoring is unique compared to other BMPs. We are seeing that after these monitoring periods, the vegetation has taken hold and we don't need to revisit. Ultimately, it will be more important to look at where the next project will be going in the ground, bc there are other degrading streams that will be much worse than the formerly restored reach.
        - Monitoring outfalls will be important for Fairfax county, we are excited about protocols for monitoring those before they are in bad shape.

9:40 Measuring Progress in Restoring Stream Health

- Stream health Chessie BIBI workshop was convened by ICPRB (Claire Buchanan) after the April 2017 AMAAB meeting to update the baseline metric
- Discussions at that workshop related to defining a baseline for the Chessie BIBI given the revised SHWG outcome of the Bay Agreement
    - Decided on 2006-2011
        - This encompassed most of the county, state and some federal monitoring periods
    - Recommendations approved by the SHWG provide methods that will combine a model and monitoring approach to develop a baseline metric for the entire watershed
        - Model relates land use, water use and a variety of other factors
        - After initial analysis, current conditions have 60% of watershed area is supporting streams that are fair and above
- Measuring trends:
    - Important to be able to look at trends over time

- ICPRB would like to look at repeat visit sites - but there are not that many of these types of sites
- Trends could also come from next 6 year time period: 2012-2017
    - Database and process of QAQC is ready for Bay Program data processing
    - R processing package will soon be out for review for processing the Chessie BIBI data
        - (will be released for review soon)
- **Is this a good time to ask the Bay counties and states for this set of data?**
    - Maryland: Yes!
    - VA is downloadable, not sure if Fairfax Co. is on that datasite - but publish independent reports
        - Matt Meyers: How did the original data call go?
        - Claire Buchanan: we had most of the data for the original Chessie BIBI refinement. We would need to go back to our data providers and let them know if we're missing any data from this time period, and it should be pretty straight forward.
    - PA (from zoom chat comments): Also prepared to provide data
    - Emily Bialowas (Chesapeake Monitoring Cooperative/Izaak Walton League): is this call only for family? Or would you be interested in Order?
        - Claire Buchanan: well the order level data has performed pretty well and could be useful preliminary tool. So yes we will take the Order level data.
    - Caroline Donovan: I have been working with Claire to put together a map of the data - has anyone done anything like this before?
        - Claire Buchanan: The idea with the original map was to color the HUC12 if there were 3 or more points in that watershed. At that point we didn't want to average anything less than 3 points. I think this is still a reasonable way to go about it. Kelly - could you use the catchment data and aggregate it up to HUC 12?
        - Kelly Maloney: Sure. I'm not sure if we've tried that already, but we ran the update in December so it would be easy to aggregate it and take an average to the HUC12.
        - Caroline Donovan: I'll follow up on email.
        - Nancy Roth: I would also be very interested to see any of the maps that get put together.

Next Steps: reach out to the data providers and let them know which data is still needed

- Discussions:
    - Neely Law: Point data to stream miles - any thoughts?
        - Claire Buchanan: There is no way to measure stream health in every stream in their jurisdictions - there will have to be some assumptions to go from points to stream miles. We have been estimating on watershed area.
        - Kelly Maloney: We are currently testing the high resolution layer. We are linking points, which represent a stream reach, to a length of streams.

We're attributing some mileage there. Reconciling actual data and modeling data is tricky, but we're still working on it.

- Neely Law: I think that is a good reminder to everyone about the challenges of extrapolating from your database and the level of comfort to make broad assumptions as we translate the point data to stream miles and watershed area. We want to be very transparent and ensuring that we are relying the trends as accurately as possible.
    - We also had discussed using case studies in areas where we have a good amount of data to highlight trends. This can help bolster our claims.
    - Kelly Maloney: I agree. I think additionally HUC 12 was agreed upon as a summary level. The challenge that we are currently working on is representing stream miles at a HUC12 level - area is easier, but stream miles is more difficult.
    - Nancy Roth: I think it is also important to go back to the individual programs to look at how the sites are selected. Some could be selected randomly, so may not be.
    - Claire Buchanan: That is correct - and it is more difficult than you think to get that information from the data provider.
    - Scott Stranko: I worked with Zach to document how MD selects sites. We worked with Nancy to select streams that could be extrapolated to stream miles, and we also did various power analysis to determine how many sites would be necessary to see the level of change that we are interested in observing.
        - For Maryland, the repeat sampling of our random sites are actually 2014-2018 - so slightly different than the 2012-2017 range that we've been talking about. But just keep in mind that we have the extrapolated stream mile method for the 2007-2009 and this later period. However useful that is, we can dig into it separately.
    - Claire Buchanan: Using multiple models to predict trends is still useful - you can see different versions and decide which is most likely based on using different tools to see if you can come up with a common answer. I think we should use all the methods for trying to detect trends.
    - Scott Stranko: The model gives a similar answer. Kelly, what was the variance?
        - Kelly Maloney: We added an uncertainty value of 5-10% - so if it was outside of that range, we were very confident that it was classified correctly, and if it was within, we called it uncertain.
        - Scott Stranko: How does this variance compare with the sampled data?
        - Claire Buchanan: Uncertainty with the sampled data is hard to measure. How do you detect that?
        - Scott Stranko: We are working to create a range like that for our actual data. Kelly, how did you do that for the model?

        - Kelly Maloney: The model gave a cut-off value to determine if it is poor or not. In some areas it is very good, and in some areas it is weak, and there have been call outs to improve areas that are weak. Such as the Coastal Plain.
        - Claire Buchanan: We did a lot of work to ensure that our classification efficiencies were above 80% - I think that the coastal plain was the only one below, which is why we have been thinking about a refinement effort. These methods are included in the report.
    - Scott Stranko: We have a coastal plain index in Maryland that has a pretty high classification efficiency - you are welcome to use that to test out any further efforts.
        - Claire Buchanan: The problem with the Coastal plain portion is that we were only working with the coastal plain data within the basin, which is pretty limited. That is why it is appealing to use NJ and NC data to put it all together.
    - Neely Law: Could you give us some next steps and a timeline?
- **Next Steps: Follow up with call**

10:08 Stressor White Paper Outline Discussion

- Provide recommendations on co-benefits/ lift achieved from addressing other stressors
    - Considering additional metrics beyond sediment and nutrients
- Other related actions:
    - identify metrics beyond the Chessie BIBI and WQ that may be useful to tracking of stream health improvements post-restoration
    - Look at complementary metrics to evaluate functional improvements in overall stream health while verifying that the restoration projects are still functioning as designed
- Workplan performance Targets on stressor identification:
    - Coordinate with toxics workgroup
    - Review biological stressor identification
    - Identify stressors used by each jurisdiction and how they relate to stream function
- Goals:
    - Develop white paper to summarize key information
    - Develop recommendations that may be useful for GIT funding proposals
    - **Set expectations for stream health recovery following implementation on management actions (restoration and upland BMPs)**
        - **Improve understanding and recognition of stressors**
        - **Identify and recommend how design interventions and watershed actions can address stressors**
    - Outline will be posted - looking for comments.
        - Section 1: Introduction of Issues
            - Define stressors, restoration protocols, etc.

    - Section 2: Background on Stream Health
        - Factors and processes affecting SH, STAC workshop findings etc.
    - Section 3: Chesapeake Bay wide summary of methods and data
    - Section 4: Watershed case study
    - Section 5: Recommendations
- Discussion:
    - Scott Phillips: relate stream health to fish habitat as well - include Fish Habitat STAC efforts
        - Neely Law: Kelly is working closely on that effort, so we will stay connected.
    - Anne Hairston Strang: I think this is a good way to address many of the long-standing problems that have been hard to address. This could be a good way to bring a landscape context into many of the metrics we already have.
        - Neely Law: We agree - landscape condition is essential for impacting recovery. You recently presented a long-term monitoring dataset at the MD water quality monitoring council.
        - Anne Hairston-Strang: Some of those sites were handed off to MBSS to continue that record
        - Neely Law: I think we need to keep in mind this is a gathering of relevant topics that can result in useful management recommendations. It is important to get this on the radar at the Bay Program, so we can address them more directly with the management actions for 2025
    - Scott Stranko: One challenge that I foresee is addressing a stressor without addressing the landscape condition will throw off our estimations of stream condition because the estimations are based on the landscape condition.
        - Claire Buchanan: Landscape conditions connections haven’t been as strongly identified, and I see this project as a way to make those connections more concrete. The landscape is indirectly affecting stream conditions, and connecting them better would be very useful.
        - Anne Hairston-Strang: I see this project as putting some bounds on where the limiting factors could be. I see this as a way to manage expectations.
        - Denise Clearwater: Recognizing how headwaters and mainstem behave differently will also be important to consider in the landscape context.
        - Nancy Roth: Going beyond looking at stream restoration, it will still be important to keep in mind this is all happening in a larger context of land use change and climate change. Tetra Tech is working with Renee Thompson on a project that is looking at

watershed conditions - including vulnerability indicators. This could also inform the stressor conversation.

- Matt: We can continue this discussion at the larger HGIT meeting at the end of May.

Member Updates:

MDE:

- Interagency subgroup on restoration looking at mitigation and adapting metrics and measurements for pre/post restoration to measure uplift
    - Denise Clearwater is specifically looking at the riparian area
    - NRCS has expressed interest to develop rapid soil metrics for riparian area
- EPA grant to work with DNR to produce restoration recommendations on stream-wetland complexes (help to address resource trade-off concerns)

UMCES:

- Chesapeake Bay report card coming in May
- Will be requesting review of stream data

USGS:

- Evolving science focus to look at recreation and habitat

PA:

- Releasing WQ index that looks at stressors related to land use
    - Developing a tool that will be able to identify likely stress sources on water samples
- The integrated report is a good source for that stressor project