Criteria Assessment Protocol Workgroup (CAP) Meeting

Tuesday, June 18, 2024
1:00-2:30PM

Meeting Materials
This meeting was recorded for internal use to assure the accuracy of meeting notes.

ACTIONS AND DECISIONS:

✓ Action: Richard Tian will check Maryland's interpolator cells to make sure they are not misplaced based on the current interpolated boundary (as there were with a few Virginia ones and for which he already made corrections).

✓ Let August know if you have additional topics for the CAP in person meeting.

✓ Decision: The US topo boundary will be used consistently for the 3-D and 4-D interpolators.

✓ Decision: A Water Quality Standards Workgroup will not be formed. CAP will stick to issues within its mission and delegate other issues as needed, such as to a short-term action team or a STAC workgroup.

MINUTES:

1:00 PM **Welcome, Introductions & Announcements – Peter Tango** (USGS), Chair

Upcoming Conferences, Meetings, Workshops and Webinars:

- Potomac River Conference – October 17, 2024, Lorton, Virginia.

- Watershed Forum – October 18-20, 2024, Shepherdstown, West Virginia.

- 12th US Symposium on Harmful Algae – October 27-November 1, 2024, Portland, Maine.

- 14th National Monitoring Conference – March 10-12, 2025, Green Bay, Wisconsin.

1:10 PM **Update: 2024 GIT funding proposal supporting monitoring strategy work approved! Next steps.**

Peter shared that two out of three of STAR's GIT funding proposals were approved: "Sampling Strategy and Design for Chesapeake Bay Habitat Assessment" and "Cluster Analysis Code Development" were funded.

Discussion:

Matt Stover (MDE): Someone from MDE will be involved in the Hypoxia Collaborative GIT funded project scoping discussion.

Amanda Shaver (VA DEQ): Someone from VA DEQ will be involved, either Amanda or Cindy. Will the project just be focused on the arrays or additional monitoring beyond that?

Peter Tango (USGS): Other monitoring will be included in the optimization plan as well: shallow water monitoring, community science data, continuous monitoring, long term sites, etc. The goal is to look at coordinating across as many of the monitoring resources as possible in a segment assessment. As for how to get to the assessment there will have to be planning around what is and isn't known around the short duration criteria and put that into guidance around optimizing resources within constraints (such as not being able to be in the mid-channel).

Richard Tian (UMCES): There's a theory for the Bay that there is a convergence zone around the Rappahannock shore. There's a lot of papers about that. It plays a pretty important role in determining the hypoxia in the mid-stem Bay. It might be interesting if we can do something there and verify the theory. Will the deployments ~~would~~ be rotated between locations every 3 years and how easy would it be to deploy the sensor or buoy to a different location?

Peter: There was an attempt to put a profiler in the mainstem Bay but it was too challenging. Doug Wilson's work led to developing a more portable and robust system for the hypoxia monitoring pilot study. The idea of having to move it in 3-year rotations to rotate it through priority segments is part of what we have to work with. The monitoring, modeling and analysis communities indicate there is high value in having consistent high temporal density data from the same locations over time.

Richard: Monitoring Dissolved Oxygen (DO) is one thing and understanding the dynamics is another thing. What kind of things can we measure? Recently, I was looking for wave data because it's a big deal with shallow mixing. But most of the buoys to the north did not provide data that data. How comprehensive of data can we get? Not sure how complex it is.

Peter: We wanted to make sure we had salinity, temperature and DO to set up the habitat boundaries for pycnoclines if they exist and DO concentration needs. How complicated the sensors can get and what you can attach to the buoys, if you're saying that's a missing element and something we might consider, we need to know what it takes to get that information. I'm not familiar with wave sensors but we can talk about that. If it has high value and we can amend the design without compromising the performance of the machinery I'd see what we can do.

1:25 PM   State Boundary in the interpolator – confirmation of decisions.

Peter: There is a proposal for updating the State boundaries in the Bay Interpolator. Richard shared some examples of the update. Through CAP WG, the aim is to indicate new boundary information is available compared with what is presently in the 3D Bay interpolator. We want to ensure the State boundaries are updated as we develop the 4-D interpolator. Today we're asking MD, VA and EPA – do you agree with the updates? If no objections – we'll make the State line changes in the 3-D interpolator, document the changes for our new Technical

Document, run the present year of analysis on the newly mapped 3-D interpolator, and ensure we have these boundaries transfer into the 4-D interpolator framework.

The proposed updates are shown on the map in the slides. They are in the Upper Pocomoke, Middle Pocomoke, Eastern Tangier, Western Tangier, CB5MD/VA. Green = old boundary, red = new proposed boundary.

Discussion:

Richard: Tish and Matt have talked about this a bit. For the current interpolation cells, some of the cells were misplaced even based on the current stated boundary. Tish found that. Tish sent me the corrections for this and I fixed the interpolation cells. The new boundary is based on the 2020 census data, and the older one is based on some other kind of boundary. Seems that the 2020 census is not the current boundary that that the data are using so we stuck with the older boundary instead.

Tish: Is the green one the current one in the interpolator now or is that the US topo boundary? Peter: The green is in the interpolator and the red is the update with the newer info Richard plotted in there.

Tish: I had found I can't really find the basis for the boundary that's in the interpolator now. At DEQ we tend to default to whatever is the US topo boundary and I think MD does that as well. That's what I used to tell me which cells were correctly classified or misclassified. If we want to go with a definitive boundary the US census 2020 layer makes sense. DEQ is neutral on whichever boundary we go with. There's an argument for going with US topo since that's what we've always done, but if CBP wants to go with census 2020 we'll support that as well. One advantage of the US topo boundary is that whatever is the basis for the interpolator is much more like the US topo boundary than the 2020 census boundary so if we want to minimize corrections we have to make in the interpolator it may be a reason to go with the US topo but not sure if that's strong enough reason.

Matt Stover: A lot of our boundary layers more closely match the topo boundary so that's where we'd lean, don't have strong opinions. What makes the census boundary more definitive? Looking at the Pocomoke it doesn't look like a center line (the census boundary) which makes me wonder if that's really accurate because I think the boundary is supposed to be the center line of the Pocomoke.

Richard: CBP doesn't have a preference. The 2020 census data layer is what we found in our files. But it doesn't necessarily mean we prefer a push to use that boundary. It's really up to the states.

Tish: One point in favor of the census layer is that when I was comparing the census and topo boundaries to the different boundaries that are in the Esri system (they have a lot of different

base maps) and it seems like the census boundary is more aligned with the Esri boundary than the US topo. But in terms of our institutional policies the US topo is the definitive boundary.

Richard: In the Pocomoke, the census data boundary is not really the middle. It's very clearly towards one side. Is this real in real life or a boundary that's not in the middle? We know that's true in the Potomac but for a small stream I don't know. That's a practical question we need to think about.

Peter: I can do some more research, but I'm recognizing the census side but hearing the regional interest that the topo boundary is amenable and would go forward with that. Even looking at the census just the upper Pocomoke one gives me pause.

Maryland and Virginia agreed to go with the topo layer. With the caveat that Richard is correcting the cells that Tish pointed out corrections are needed on. Tish said it wasn't a whole lot of cells. She didn't do a review of MD's cells. If Richard is doing some cleaning up at the interpolator it may be good to look at MD's classification to make sure that MD's cells are all lined up too.

Richard: That's a good suggestion and will check and let the group know if he finds anything.

1:45 PM [**Proposal for a revived (20 years later) Water Quality Standards Work Group under STAR.**](#)

The CAP WG formed in 2007. There was technical documentation following the 2003 documents. CAP WG exists under STAR and has provided a forum for the Chesapeake Bay Program partnership to ensure the development and implementation of consistent Bay-wide water quality criteria assessment procedures, factor in new scientific findings, and address and resolve issues. CAP WG has made a long list of contributions to the CBP. Evolving interests of the CAP WG include Protocols supporting criteria assessment, details of 3-D and tracking 4-D interpolator development; boundary conditions of segments important to the interpolator; the question of do we climate adjust our criteria (this may not be a question for the CAP WG); and Water Quality (WQ) Standards applications (also not really a CAP WG question).

There used to be a water quality standards coordinators team developing the 2003 documentation and setting up the criteria and implementation procedures. Peter requested input on a proposal for the CBP to be home for a new water quality standards workgroup or similar workgroup. Who would be in it, who would you like to lead or create co-leads? What is the vision for the group to separate it from CAP WG? Who are the recommended members? Does the group reside under STAR, or, is this more appropriate under the WQGIT?

Insight from CBP Beyond 2025 Steering Committee is there is a sense that CBP needs to "reduce complexity" – do we revise the CAP WG to be something more than the CAP WG and rename the new group? Perhaps create co-chairs position with a more expansive agenda? However, creating a new WG under STAR expands the work of the staffer support and we have been adjusting staffer workloads to accommodate meeting expectations. A new WG stretches staff

support for the moment if nothing else changed under STAR as a result of decisions and actions after the Beyond 2025 process is blessed and guidance implemented that might "reduce complexity" of the structure of the Chesapeake Bay Program Partnership.

Peter: A third option would be an action team. And/or a workshop. Peter thanked Tish for pointing out the need for this kind of discussion.

Discussion:

Richard: Can this be done within the framework of CAP? In addition to some kind of STAC meeting to make a decision or recommendation. When this is in place, can we discuss the decimal place issue.

Matt Stover: I'd want to understand what issues we're going to address specific to water quality standards before creating a whole new group. Of the options you laid out it would be nice to reconstitute the CAP workgroup as a group that considers the standards development side of things as well as the assessment of criterion and standards more generally. It will be mostly the same people anyway so it will be convenient to have communications come through the same group. It will be easier to have one group discussing the same set of issues. In terms of another group looking at the standards for the Bay, I see your GIT funded proposal being one of the biggest needs right now. I think criteria are difficult to monitor already and making them more complex won't make life easier or get us more in terms of protection.

Amanda Shaver: I want to second what Matt said about focusing more on the data and making sure we're using the data per our 303d requirements. We have a lot of data and want to make sure we're consistent in how we assess them when it comes to reporting for 303d and 305b. As far as we're concerned I don't see any major issues to go down the road of making another workgroup when we're still looking at trying to fully assess all the criteria that we have, and looking at clarity as well as DO.

Tish: One concern about having a consolidated group, we have a lot of things we want to tackle on the assessment side, and if we have an expanded mission that fills in criteria development, will that divert attention and resources away from the assessment stuff we need to work on? Would we have more frequent meetings? Longer meetings? how do we keep our focus on assessment stuff from being diluted with criteria stuff if we have just one group.

Peter: We do have capacity limitations. I'm sensitive to the concern of dilution of resources and capacity. The capacity issue comes up in Beyond 2025. To do more, promote and accelerate the recovery in the Bay, we need more capacity.

Tish: I'm not opposed to an expanded workgroup building off of this one, but we do good work in this workgroup on assessment stuff and I don't want it to be lost in the chaos that is known as criteria development.

Peter: Criteria development would involve our group, but what path do you think we would go down to address narrative criteria for chlorophyll in a broader sense? It took about 10 years for James to review, refresh and make strategic scientific decisions. The 2003 criteria as a whole built on work that was a decade to 15 years in the making prior to that. Not to take it lightly if we go down the path of chlorophyll criteria that's more broadly applicable, it's a significant undertaking depending on whether we feel the science out there gives us a sufficient answer or if we need to do more science. We could lay the ground work here.

Tish: I think the chlorophyll narrative criteria is a perfect example of something that is really assessment, not criteria development. When we implement narrative criteria, we're coming up with assessment tools, thresholds, they are not actually numeric criteria. I think tackling the chlorophyll narrative criteria is a perfect fit for cap, it fits in the mission of cap. It's not criteria water quality standards, it's more implementation of criterion that already exists.

Amanda: It's identifying the surrogate and we do that just through the assessment processes rather than through any kind of regulation.

Tish: Looking at monitoring data and trying to come up with relationships between chlorophyll and Harmful Algal Blooms (HABs), which we haven't been doing, those would be perfect for the cap to work on because we're monitoring and assessment experts, we know what data is out there. the satellite data at vims would help us come up with thresholds. Salinity based thresholds is how we'd want to do it. We wouldn't have to go into the complication of a rule making with the chlorophyll narrative criteria. Making proposed changes to DO criteria, proposing temperature based criteria, is a much weightier process. We should determine what belongs in cap and what is more water quality standards.

Peter's summary: There may be some issues that fall outside CAP. A lot of work that needs to get done now includes chlorophyll narrative criteria, making use of all the data, and monitoring plans (GIT funding project). There may be workshops for other questions that come up. We may delegate things that don't fit within our mission rather than create a new group or expand what we have.

2:20 PM   Next Steps

Topics for in person meeting:

Peter: The binomial decision structure. Clifton Bell presentation on criteria development in high rock lake in North Carolina.

Clifton: I'd be glad to share that, I can summarize what North Carolina does for educational purposes. It's a slightly more sophisticated version of the 10% rule that uses binomial statistics to estimate probabilities like type 1 and type 2 errors and requiring a certain confidence level for calling something impaired for putting something off or on the 303d list.

Peter: Other things we're talking about, the water clarity assessment, Dave Parrish at Vims evolving the types of approaches we use. If we can get a contribution from him to talk about water clarity that would be outstanding. Tish how did you feel about CB6/7 boundary updates? Do you feel comfortable in including that?

Tish: We haven't initiated the rule making for that yet but plan to by the end of the year. We may not be ready to present on it by August but I'll let you know when we get there.

Richard: As the CBPO we did a lot of analysis on the attainment deficit. This provides a time series better than the attainment measurement itself because we can see where progress has been made. I was wondering if we are making this officially part of the criteria assessment.

Peter: Often we're put in a position of making a binary decision. Folks want to see can we do more with the data. Attainment deficit and buffer, looking at trends in a system, are we seeing systems responding and is that a way to prioritize where we put array resources. We can add that to the agenda as a topic for the agenda.

Matt: Maybe go through a specific segment scale assessment as the 4-D interpolator would run it. I still have a lot of questions how that actually works. If that's something we'll lean on heavily in the future.

Rebecca: I worry that we wouldn't be ready to do that by August. We're still in the middle of development. We could certainly give an update and clearly address any questions but unfortunately I don't think the tool will be ready for that. But it's something we want everyone's ideas to make sure the best approach is built.

Matt: I don't need a full run of a segment, just going through it conceptually. Where the stations are, what data has been collected at what depths, how the interpolator would run each chunk of data through and break it down to a granular level. Ultimately when we make these assessments we have to be able to explain it to the public. If you can go through the steps even if they haven't been figured out that would be helpful too.

Rebecca: That makes sense.

Gary: Matt, when you were saying you wanted an example, once we have the interpolation you want to know how we are going to do criteria assessment after that. But you also want how to get the interpolation? Do you also want how we do the assessment once we have the interpolation or just how do we get to the interpolation? (Both conceptual.)

Matt: Both would be great. Fishing Bay is about as densely sampled as I think we're going to get. We want all that data to be used because it's probably the closest representation of reality of DO in MD until arrays get cheaper to deploy. How will the 4-D interpolator take that data and come up with the same answer? I reviewed a number of the minutes from the Bay Oxygen Research Group (BORG) and CAP, it sounds like a lot of continuous monitoring data will be used for building the model but not doing the assessment? We want to incorporate all the

community science data, there's a lot at tier 3. My comfort level is with the actual data. I hope to gain greater understanding of the interpolator and how it uses the data so I can explain that to a stakeholder.

Peter: Thanks for that context, we'll keep that in mind with prepping how we cover the topic.

Tish: We're going to need repeated lectures on the 4-D interpolator and hear the same thing over and over again.

2:30 PM   Adjourn

Participants:

August Goldfischer (CRC), Peter Tango (USGS), Andrew Keppel (MD DNR), Gary Shenk (USGS), Matt Stover (MDE), Becky Monahan (MDE), Amanda Shaver (VA DEQ), Doug Austin (EPA), Rebecca Murphy (UMCES), Clifton Bell (Brown and Caldwell), Mark Brickner (PA DEP), Melinda Cutler (MDE), Joseph Morina (VA DEQ), Tish Robertson (VA DEQ), Richard Tian (UMCES), Breck Sullivan (USGS), Leah Ettema (EPA), Jillian Adair (EPA), Lew Linker (EPA)