CHESAPEAKE BAY PROGRAM LAND USE WORKGROUP

**Meeting Minutes**

January 6th, 2021

1:00 PM – 3:00 PM

**Summary of Actions and Decisions**

**Action:** The LUWG is asked to voice any concerns or issues with the proposed mapping procedures for barren land or lands undergoing construction.

- **KC:** I don't see any major concerns, but we are missing some voices. Just wondering how this compares to CAST. Will be posed as an email as well.
- **Alana:** I think you guys covered Dave's main questions which was: how this affects the states recording ability? But is there a way to share this meeting recording to listen in.
- **Action:** Hilary will share this meeting recording with the Group so they can listen and provide comments, if any.
- **Rachel:** will update methods document and will be sent out to the group for review.
- **Please review methods document, including recent changes from prior decisions, and voice any concerns.**

**Action:** The LUWG is asked to voice any concerns or issues with the proposed roll-up approach.

- Ran out of time, no major concerns were voiced during the meeting.
- Please review the proposed roll-up and voice any concerns.

**Action:** Hilary will share this meeting recording with the LUWG so they can listen and provide comments, if any.

**Meeting Minutes**

1:00 Welcome, Roll Call, Review of meeting minutes, Action Item Update – KC Filippino, Hampton Roads Planning District Commission

1:10 Update on High-resolution Land Cover and Hydrography Production – Rachel Soobitsky and David Saavedra, Chesapeake Conservancy

Rachel and David provided a brief update on the production and review status of the high-resolution land cover and hydrography data.

**Discussion High Resolution Land Cover:**

Renee said she thought dirt and gravel roads behaved like impervious but she may be mistaken. Peter said that if you don't have ancillary data showing it's a road it's hard to know that it's not a barren scar in a field. So that could be a potential area where we are undercounting impervious surface. Once David and Matt are able to map all the roadside ditches then it may be easier to classify dirt and gravel roads. Rachel said that for PA's comment, when they say areas that are misclassified as impervious, she think think they mean constructions areas. KC Filippino said that lots of the southern VA/ Hampton roads region is in the dark purple so if we have particularly picky localities, is there an issue with going right up the May deadline? Rachel Soobitsky answered that this has been talked about before with how quick we can get to that timeline to run land use scripts. We need the corrected data from UCM

to run our scripts on. Part of that will be incorporating feedback and comments through December 21st. We want people to have that review period with the final version in December. Travis Stoe wanted to know about the northern counties that are currently being processed in PA, they are expecting delivery of LiDAR for many of those counties by the 15th of January. Does this change the schedule if we receive high resolution for these counties? Rachel asked if it is for the green and blue counties or is it for pink and Travis replied it is a little of both. Rachel said that Pink would be fine; in the green and blue counties we would need to talk to UVM and see what we can do. Travis said that their deadline was beginning of the year and I double checked again, and it keeps getting pushed back. Peter Claggett replied that the data availability is always a bit of a moving target, when we get around to mapping the 2021 and 2022 data and there is better LiDAR data, we will likely go back and make corrections to the 2013 and 2017 data because the goal is to have accurate data between 2013 and 2021. We could still use this data for the 2021 hydrography.

**Discussion on Hydrography:**
The initial random forest model run on classified hydrography features has been completed. In the plots, the most important variable is at the top. Generally, the further right the circles are, the more important that variable was in the model. The right describes the purity of the model which shows the likelihood of that variable splitting other variables into a single class. The next plot shows variable importance using additional statistics. The confusion matrix indicates that there was roughly 62% accuracy at distinguishing different classes and 81% accuracy when simply distinguishing stream/non-stream. Next steps include consultation with Dr. Baker from UMBC and Kumar Mainali (CC in-house AI expert). For the production schedule: PA north central LiDAR is finished and will be delivered soon. New LiDAR collection for northern/ middle neck VA to be completed soon too.

*Confusion Matrix:* 3559 features that the students called other, the model also called other, but for 355 the model predicted gully instead. This matrix is only for the lower Susquehanna huc- 8. Peter Claggett asked if he was reading the chart correctly: 89% streams were classified correctly and 11% weren't. David said that there were some errors and used Wetland classification as example (one student classified wetlands way more often than others). Peter asked what his level of confidence in automating some of those features. David said that the goal is to isolate those features that are more ambiguous. Labeeb asked how they defined the floodplain. David said that in the chart it's not actually floodplain, it's actually floodplain scars (looks like a floodplain. Is there a timeline to make these feature available to us? David said we some of that available if you get in contact with him. Nicole Christ asked what the threshold to determine if you were to investigate further. David did not have a clear answer at this time, but it should be considered at some point.

1:20 Mapping Lands Undergoing Construction – Rachel Soobitsky, Chesapeake Conservancy
Rachel presented new methods for mapping barren lands undergoing construction.

The methodology started with running all other land use class methods first and capturing the remaining barren lands . Remaining barren lands are considered "bare developed." This would capture new neighborhoods, baseball diamonds, and industrial sites, anything under construction, etc. KC asked how is this different than what was done in the past? Peter replied that this would have been considered mixed open in the past. KC then asked how does this compare when jurisdictions report construction acres in CAST, for example? Peter said this data will not be used to supplant that data. There is no implied intent here to use it for bare construction. It's capturing a different thing in many places. Everything has to have a class and these areas fall through our classification unless we have a class for them. Rachel followed up that she did try to mess with if a neighborhood was under

construction- but some were only partly developed, and it was hard to find a shape or side that would fit.

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- **Alana:** I think you guys covered Dave's main questions which was: how this affects the states recording ability? But is there a way to share this meeting recording to listen in.
- **Action:** Hilary will share this meeting recording with the Group so they can listen and provide comments, if any.
- **Rachel:** will update methods document and will be sent out to the group for review.
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1:40 Initial Prototype of Full-County Land Use data – Jacob Czawlytko, Chesapeake Conservancy

Jacob presented some of the first draft of a full county land use map for Cumberland County, Pennsylvania

**Discussion/ Summary:** Jacob ran into some challenges in getting the full county done. In the next 2 weeks he is planning to refine some of the USGS-CIC workflows and integrate things to make it more seamless, finalize order of operations, integrate all code modules, and develop color schemes.

- *Tree Canopy:* developing the automated workflows and is 75% done. Working on some contextual rules for TC over turf buffers. There are 3 contextual rules: 1. Densely developed (20m buffer→ TC over TG), 2. Less Densely Developed (10m buffer → TC over TG), 3. Forested Parcels (10m buffer → TC over TG). This will all be in the document that Rachel passes around. KC wanted to clarify that the example is a slight change. Jacob said this was correct. There haven't been any major changes just the contextual rules and the impervious borderings. Rachel said she would do track changes or bullets at the top so that people know what changes have been made. It would be best if with each revision Rachel provides summary bullets of changes made. Sally asked TC v TC over turf and does TC equate to forest here? The forestry workgroup was supportive of having a single forestry class, but as Jacob has looked into this, we realized that we needed two different classes because if we don't have the two classes it diminished the value. Sally Claggett said there was a lot of comments in December regarding the importance of small patches in urban areas and we will just bring this back up with the forestry folks and explain where you are headed. Peter suggested that they get on the agenda in February.
- *Hydrography:* added classes (stream ditches, TC over stream, and TC over ditches) and still need to assess other features and shaded features. Peter mentioned improving ditches might help and Renee asked if these features- road ditches and ag ditches- are separate in the model? Jacob said this was correct and that if a ditch is running parallel to a compact road it may be a road, but it's not currently in the plan. David said that in a lot of the landscape the entire drainage system has been modified and it becomes a little unclear what becomes an ag ditch vs. a stream. In general, we look to see if the ditch is connected to a stream or if there is water in the ditch. But it is ambiguous at times. Mark Symborski said that if it is a stream it looked ditch and if it is a stream, it could be ephemeral, and if that's the case we wouldn't be normally interested in regulating or putting buffers around. There are obviously ditches along roads that aren't connected to the stream network, and we have models that have those in them. Lee Epstein said that much of this is more ditch like is the angles and that they are all the same width. David said this is incorporated in

the geomorphic outputs. Peter asked David if they were going to produce/ attribute/ buffer those connections where the rastor skeleton lacks, so they have a 2-D high res connected data set? David said that where you see these gaps in it those would be classified as roads. We have the potential to map culverts, but the other issue is that where there is dense canopy the 2-D disappears. It may be worth us prioritizing buffering those connections, so we have a full 2-D hyper res network.

- High- Res for Wetlands:
    - Terrene Wetlands are geographically isolated features (wetlands not near streams or floodplains).
    - Non- tidal Wetlands: wetlands intersecting and hydrologically connected to fluvial features.
    - Going to meet with Wetlands WG Jan/ Feb to further define the criteria for headwater and floodplain wetlands.
- Low vegetation sorting is still presenting some challenges( ex. Filling existing LU gaps and in agricultural lands). Hope to sort this out within the next two weeks.

2:00 Rolling-up ~60 high-resolution Land Uses to the 13 Phase 6 Land Uses – Peter Claggett, USGS
Peter presented current plans on how to roll-up the ~60 high-resolution land classes to the 13 Phase 6 land use classes. Included was a discussion on how these new data will be incorporated into CAST-21 and the implications to nutrient and sediment loads.

**Discussion/ Summary:**

- Rolling up: taking 54 classes and moving them to 13 Phase 6 Land Use Classes.
- There will be no more land use/land cover updates after CAST 2021 unless CBP can fund it. We wouldn't see that data in our hands till 2027. 2013 Baseline is fixed and will not be updated. How do you know what you're fixing in 2013 is real change or just better mapping? Peter said it's not completely set-in stone how this is going to happen. Likely, they will look at change in land cover over the years and only focus on those areas.
- Some of the details/ nuances have changes but nothing has shifted dramatically.
- Next meeting: solar fields, prototype data, more updates

**Action Requested:** The LUWG is asked to voice any concerns or issues with the proposed roll-up approach.

- Ran out of time, no major concerns were voiced during the meeting.
- Please review the proposed roll-up and voice any concerns.

2:45 Wrap-up/Upcoming Meeting Schedule – KC Filippino, Hampton Roads Planning District Commission
The next meeting could be lengthy and will discuss ancillary data to help classify and roll-up solar fields, and will include more prototype counties for review and discussion.

3:00 Adjourn

**Next conference call:** February 3rd (1:00pm-3:00pm) - Land Use Workgroup Meeting.

**Call Participants**

Karl Berger, MWCOG
Peter Claggett, USGS
KC Filippino, HRPDC
Alana Hartman, WV DEP
Cassandra Davis, NYSDEC
Arianna Johns, VA DEQ

David Saavedra, CC
Ken Choi, MDP
Nicole Chris, MDE
Shannon McKenrick, MDE
Lee Epstein, CBF
Deborah Sward, CC
Dorothy Morris, OFC State Planning
Lisa Beatty, PA DEP
Ted Tesler, PA DEP
Travis Stoe, PA DEP
Loir Brown, DNREC
Allie Wagner, NOVA
Katie Brownson, USFS
Labeeb Ahmed, USGS
Rachel Soobitsky, CC
Mark Dubin, UMD
Sally Claggett, USFS
Mary Gattis, Bay Journal
Renee Thompson, USGS
Erik Fisher, CBF
Jacob Czawlytko, CC
Jennifer Miller Herzog, CBF
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Justin Smith,
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