CHESAPEAKE BAY PROGRAM
LAND USE WORKGROUP
March 31st, 2021
1:00 PM – 3:00 PM
**Discussion Notes**

**David Saavedra Presentation**

James Martin: How is the ditch to stream transition determined? Looked like the ditch should have been extended in the example.

David Saavedra: That's tricky to answer because sometimes they are directly attached to streams and sometimes they are not. If it's directly connected to the stream network, it's a stream. If not, it's a ditch. We have a separate process for mapping ditches.

Dave Montali: Can we talk bigger picture about how this will be used with Land Cover to make continuous water where the land cover doesn't?

Peter Claggett: I can speak to that. Eventually we want these classified streams and the ditches to be incorporated into high res 2013, 2017, and 2021. We will not have that for CAST21. Earliest would be CAST23. But this does not make a big difference because it's a very small portion of the landscape.

Karl Berger: I think I agree with what you said from a  loading standpoint, it is small. So you're saying that the first opportunity for it to have some impact is in CAST23 but it will just be very minor?

Peter Claggett: Yeah, correct.

KC Filippino: This particular data set is not being used for anything, right?

Peter Claggett: Right, it's not being used in anything right now. It's on a different timeline than the Land Use.

David Saavedra: I see a question about the difference between LiDAR acquired and LiDAR incomplete--LiDAR incomplete means I don't have the data. LiDAR acquired means I have that data in hand but I haven't yet mosaiced it all and clipped it so that it can be DEM prepped.

Mark Dubin (chat): The agricultural "ditch" being portrayed appears to me as an abandoned stream channel within the flood plain versus as an intentional drainage ditch. Can we determine a process for identifying managed agricultural ditches versus historic abandoned stream channels which remain in flood plains?

David Saavedra: Difficult to do when you don't have on the ground knowledge of the area that you're mapping. But we're basically trying to set rules that the machines can follow to distinguish between these things. Whether or not it's managed or an abandoned channel, I don't think we could classify it in an automated way.

**Rachel & Jacob Presentation**

Karl Berger: So to recap - the ones left purple and dark purple all showing April and May, assuming that schedule holds, they will go out for local review and have errors identified. The assumption is that there won't really be any new systematic errors that would require you to go back to any of the green counties and redo anything there. So at the end of May, the land cover that goes into the land use will be complete. The little local errors that pop up may not get corrected but from a loading standpoint, they have almost no impact. Did I get that right?

Rachel Soobitsky: Yes, that was a good summary.

KC Filippino: Will the local governments have time to review the LC data before it goes into LU?

Rachel Soobitsky: For June, not all localities will have had all the time to provide all of their inputs on land cover, however, UVM is still doing their QAQC of the counties as well so that will be incorporated into the June LU. In December, once all the localities input has come in, then it will be incorporated into LU and that is what will be published on our website for people to download, but that timeline won't be incorporated into CAST21.

Peter Claggett: We will have enough input across the watershed that there shouldn't be any egregious errors.

Lisa Beatty: Just real quick, a graphic would be really helpful with this, instead of just bullet points. But anyway, those 14 counties that will be used as a prototype for the rest of the counties--are those land cover comments going to be incorporated?

Rachel Soobitsky: I should clarify that UVM is not completely ignoring all of the comments from all the localities. They've been looking at a lot of them, it's really just the ones that have hundreds and hundreds of comments that they don't have the time to look through. But I can make sure that at least they are incorporating the comments from the 14 prototype counties.

Lisa Beatty: We're on the timeline we're on now. But it's important that if we're using the 14 prototype counties to gauge the rest of the watershed, then we should be taking into account those local reviews. Some systematic error that might pop-up, you're then inforcorporating into LU so it's important to have that figured out.

Rachel Soobitsky: Yeah I also want to mention that the LU that is up on the Web Viewer right now is created using the draft LC, so there hasn't been any QAQC by UVM, but it should be okay because while our LU is dependent on what the LC class is, we also have our own rules and methodology to fix issues. We can tweak certain things within LC so once the LC is QAQC-ed, it will run smoothly through LU and should not affect the output.

Lisa Beatty: Okay, thanks for that clarification.

Rachel Soobitsky: I'll check in with UVM to see how much the local comments are being incorporated into Version 1 or if they're just doing their own QAQC.

Lisa Beatty: It makes a big difference for us to go back to our partners and let them know that their input was incorporated.

James Martin: Can you point out the areas that are scheduled for LC review in June and why are some TBD?

Rachel Soobitsky: Yeah I don't see any June counties, i'll have to check in with UVM to see if they plan to produce any in June, because the issue with that is that we still need time to incorporate the data into our land use script, so maybe that's why there's none. The TBD grey ones are the ones that fall outside of the watershed, so I'm not sure they will be prioritized to have as thorough QAQC as the counties within the watershed.

James Martin: So potentially vulnerability here is that those in Grey are most likely not to have updated data in CAST21.

Rachel Soobitsky: Yes they're the most at risk but I can talk with UVM to see if they will have data for the full counties in time.

James Martin: Even if they haven't made it out for local review, I think that's better than not including it at all.

Peter Claggett: Yes that was taken into account when we decided the timeline. We decided the counties outside the watershed counties are less of a priority so that's why they are grey. We wanted to make sure that all the counties that had a significant portion in the watershed were done first.

James Martin: That makes sense, I was just thinking about it from a communication perspective.

**ACTION:** Rachel Soobitsky will reach out to UVM to determine:
   a) To what extent local comments are being incorporated into Version 1 (if any) or if they are just doing their own QAQC with their own team for Version 1
   b) If any counties are scheduled for LC review in June.
   c) If the "TBD" grey counties and their data will be ready in time to be incorporated into CC land use script.

Jacob Czawlytko: Completed land use for 14 test counties has been completed. We will have 206 counties by the end of June.

Karl Berger: The viewer is a draft land use, right? So can you give an estimate of the degree of change you expect to see between what you have now and the expected? How close will it be?

Jacob Czawlytko: The draft land use is probably 95% there. The draft phase is very close to what the final product will look like. I wouldn't expect the loading rate to be very different at all.

Olivia Devereux: I'm confused about the sequence here. So you're making these changes to the LU, but these include the local gov that already reviewed it or this is what they're going to review?

Rachel Soobitsky: What i'm going to be talking about after this is the instructions for review of the 14 counties that the workgroups and localities will be giving their input into LU. This is different from the LC feedback that every single county has gotten to do on the draft land cover, which is an input into the land use model.

Jacob Czawlytko: Right, and the changes that will happen from the LC review will affect the outcome of this model, but the total tabulations and loading rates are not going to change very much after the review. Once the errors in land cover are addressed and fixed, it will be reflected in the land use.

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KC Filippino: Will this go to localities simultaneously with the workgroups?

Peter Claggett: Yes, I think it should.

Dave Montali: What about the tabular data?

Olivia Devereux: When you send it to the WGs, can you make it clear that it's not the final data that will go into CAST21?

Peter Claggett: Yes, that's a really good point Olivia. For CAST, we're just taking the change between 2013 and 2017 LU. So while it's important to get the 2017 LU as correct as possible, it's the change product that's going into CAST.

Rachel Soobitsky: Peter can you help me distribute all of this to the workgroups?

Peter Claggett: Yes, I can help with the workgroups, and then I think we're relying on the LUWG state representatives to get it out to the localities.

James Martin: Do you mean the 14 counties or all counties?

Rachel Soobitsky: Just the 14 counties.

Karl Berger: Somewhere it needs to be documented so that when we look back on it we know what we did, we know what was successful or a failure, etc.

Olivia Devereux: Jess and I have completed the documentation for what happens after you provide the LU product so we've got everything after that documented and finalized, it's the part before that we need.

Peter Claggett: Okay, thanks.

**ACTION:** Peter Claggett and Rachel Soobitsky will work together to distribute the necessary information to the Workgroups. The LUWG State representatives will distribute to the localities for review.

James Martin: Does the viewer show the updated 2013 or original 2013?

Rachel Soobitsky: That's the original. Once we finalize our methods for the LU, we can work on updating our 2013/14 to match these LU classifications.

James Martin: Is that also the case for VA where the LC was done by someone else?

Rachel Soobitsky: Yes. Also, right now on the Viewer, if you click on a pixel, ideally it would pop up and tell you what LU class it is so that you don't have to guess with the color scheme, but I didn't have time to do that before today. If I can get it updated I will send out an email to let you guys know.

**Peter Claggett's Presentation**

Peter Claggett: Back to timeline--we think we can make it by June. WGs have all of April and a good part of May to review the data, CC will simultaneously work on refining it. Then have the WQGIT approve it by the end of May.

KC Filippino: What is getting reviewed by the LUWG to go up to the GIT?

Peter Claggett: The characterization of 2017 and the change. We have the LC change for the 14 counties. We don't have the LU change consistent with the 2017 classification, that's being worked on right now, but not sure when it'll be finished (earliest probably would be end of this month). But we have LC change now, which dictates what's going to happen in LU aside from turf. This is evolving but the challenge is getting the predevelopment LU correct and doing better at that.

Rachel Soobitsky: Yeah our LU method relies on imagery segments that UVM creates so I think we should be careful in looking back at 2013 without image segments from then. So, like Peter said, we are looking at the land cover change, kind of filtering out the 2017 LU based on what LC changed, and then looking back to 2013 to map backwards in time.

Dave Montali: So when you say we don't have the 2013 LU done, that confused me.

Peter Claggett: In the viewer now you can compare side by side what we mapped previously for 2013 and what we're mapping now for 2017 for land use. What we don't have is a revision of the 2013 yet which will refine our interpretation of change. But in the meantime, the default is the look into what's there now and see what changed although we would like to improve on that.

Dave Montali: Okay, I'd like to see the spreadsheets and stuff that you've done and i'll probably have a lot more questions after I can really look at this.

Rachel Soobitsky: Keep in mind also that these numbers are in draft data products from 2017/2018 land use.

Peter Claggett: Can they download the data from the Web Viewer Rachel?

Rachel Soobitsky: If anyone wants to do analysis on the data then email me and I can send out the ArcGIS server link so if they want to pull it up in GIS Pro they can, but I think the Viewer is just for viewing.

James Martin: Today is the first time that the deliverable into CAST is a change product. Is that something new? I thought 2017 LU fed into CAST and then CAST built from there.

Peter Claggett: No it's the change that goes in there. If you take the 2017 data you will have an abrupt step change in data and acreages that will throw everything off. So to make sure progress and implementation BMPs, it would be the least disruptive to the process would be the change.

James Martin: Yes, but it would be less accurate. The best data we have is the 2017 product. If you use a change product as your deliverable, then it has to be based off of the original data, not the revised data.

Peter Claggett: No, as long as we give it 13 classes of change. We may not have the absolute acreage correct, but we would have the delta correct.

Olivia Devereux: Peter showed this on the earlier slide, that CAST23 would have all years in it and not just a changed product. Is that right?

Peter Claggett: Currently it's always going to be a change product, all the way out to CAST25. It will just be incorporating more data, from 12 to 17 to 21. Unless people decide otherwise, but that would take a significant amount of analysis and could change the planning targets. It would take a lot of time to think that through and swap data.

Olivia Devereux: It's fine if we stay true to the calibration.

James Martin: Well calibration doesn't go beyond 2013.

Olivia Devereux: But if it's a complete change in methodology and data sources, stuff goes all over the place and BMPs are not accredited properly.

James Martin: Yeah, and I'm okay with going that way, it's just surprising that we set up the schedule for reviews and approvals perhaps looking at the wrong product. If change is what's going in, then that's what we should be spending our time focused on reviewing.

KC Filippino: That was my question too, James. If we are only going to review the 2017 data and we may or may not see the change product until the end of April, how is this going to work?

Peter Claggett: I can share the LC change product because I have that already and that will not be altered. And the LU change would be derived from that. The reason we are reviewing the 2017 product is because the ideal process is to map 2017, apply that new methodology to 2013, and then you have the LU change between those dates with a consistent methodology. Now the question is how fast can we develop a 2013 data set. What I've been working on is figuring out if something goes wrong with that process or it takes more time than we think, then are there other ways of using the LC products to infer LU change to have something for CAST and something to be reviewed.

Karl Berger: I think we need to split up the issues. By May, I think we can look at all the comments from the Viewer review done by localities and states and anyone else. We can look at those and see how they were addressed, and then say if the 2017 is an improvement on our

other data, but I'm not sure how we address the other review steps other than the localities in time for the CAST21 deadlines.

Peter Claggett: Okay, how about this--this month, the sector WGs and the localities look at LU data. We will have their feedback at the next LUWG meeting where we'll make a decision about whether or not we think the 2017 data is an improvement. And then the focus at the May meeting should be characterization of LU change. Maybe we will have an extended meeting.

Karl Berger: Will we have that delta change available at the beginning of May?

Peter Claggett: I don't know.

KC Filippino: Okay, recap-- in May, a decision on 2017 LU data is possible, given the fact that we're going to see the Viewer and it's all going to get sent out to the Workgroups. Rachel is going to provide that feedback that she's gotten on the new LU and be able to present it and coordinate all of that by May. When will we know if Peter can do the change and have that discussion available for May?

Peter Claggett: I'll keep you posted and we can decide how to keep the membership aware. Possibly in about 2 weeks we can provide an update and preliminary data for the change in the 14 counties. As soon as we have something to show for one county, we can try to schedule a short one hour meeting or something to go over it with you all.

Karl Berger: I would prefer to wait until we have all 14 counties to review at the May meeting, and then if we miss on the change product, we could schedule another LUWG meeting to go over that with all 14 instead of just looking at one in the meantime.


**ACTION:** Peter Claggett will provide an update on the characterization of Land Use change for the 14 counties as soon as the analysis is acquired. Jackie Pickford will then send out a doodle poll to schedule a short interim meeting for updates, questions, and concerns.


Cassie Davis: I have a quick general question about the change in Land Use--If there's an error in NY where there was more pasture than turf grass, will that be reflected in this land use change? I guess I'm just confused if this 2017 land use is more accurate, what does it have to do with the 2013 change?

Peter Claggett: If you find errors with the 2017 LU, that's different from the change. Hypothetically there could be errors within the land use data in one part of your county, but if it's not showing any land cover change there then it won't show up in the change product. I'll work with Rachel to try and get the land cover change product up on the viewer so you guys can start looking at that.

Rachel Soobitsky: Yeah I can publish that.

**ACTION:** Rachel Soobitsky and Peter Claggett will work together to publish the land cover change product on the Web Viewer.

Lisa Beatty: From a PA perspective, the integration into CAST is a priority. I think we need to weigh the implications of this not getting into CAST21. It's important that this base condition be

as good as it can be at this point, instead of not being at all. From what I've heard, this 2017 Land Cover is very accurate.

Karl Berger: We created a dilemma, which is that we probably have a land cover to land use that is much more accurate and yet, because of the delta change and the reasons we talked about, we won't be able to realize the full benefits of all that accuracy in the loading sense now, only when maybe it gets put into an updated version 7 of the model at some point in the future. But at least we'll be moving in the direction of more accuracy, so we should keep that in mind. The delta change won't get you all the accuracy that's in the new LU but it will get you closer to the accuracy then if we didn't do this at all.

James Martin: Peter can you help me connect the dots then if what is going into CAST is a change product, what's going to be used in the land use change model that predicts future years in CAST--the change product? Or the change as implemented in CAST or the actual data from the revised 2013 and revised 2017?

Peter Claggett: The land change model is calibrated over a longer period, but it starts with the base of whatever the most recent high resolution data is, so we're not going to forecast anymore from 2013, instead we will be forecasting from 2017.

James Martin: Right, but it's the 2017 actual that you're creating now that'll be the baseline for the land change and the 2017 that's in CAST will be different.

Peter Claggett: But it's also the deltas. We'll be doing the same process that we're doing now with the 2013 to 2017 change, but with 2025 and 2017.

James Martin: Gotcha okay.

KC Filippino: So our plan moving forward is dependent upon when the change analysis is complete and hopefully we will have time to review that. If we don't have enough time we will have to truncate that review period.

Peter Claggett: The change review period should be very very simple.