Minutes
Baltimore County Advisory Commission on Environmental Quality (CEQ)
December 7, 2022 7 PM Online Meeting on Webex

CEQ meeting dates, membership information, and reports are available at www.baltimorecountymd.gov/Agencies/ceq/index.html

Our thanks to Brian Lindley of EPS for coordinating Webex meetings during the pandemic.

Attendance: Carol Newill, Brian Lindley, David Ruppert, Eric Duce, Joan Plisko, Justin Gallardo, Lois Jacobs, Glenn Elseroad, Steve Malan, Valerie Androutospoulos, Andy Miller, Avery Harden, Henry Ayakwah, Radu Zamfirache, Karen Wynn, Mahnaz Mazaheri Assadi, Nancy Horst

I. Welcome. Everyone mute please.

   This evening we will have part 2 of our new series on the expected increases in extreme weather and water-related challenges in Baltimore County, their projected impacts, and the development of plans for resiliency to protect essential infrastructure and public health. Our focus will be on the water-related challenges in our county, both coastal and non-coastal, that are expected due to global warming and that will be exacerbated or reduced by local decisions and interventions. Goals are to present information and stimulate discussion in support of increasing resiliency through climate change adaptation.

   We have invited County leaders who are currently involved in making those decisions, and we hope to facilitate communication among people in government, academia, private industry, and the public.

II. Today's Presentation: "What Agriculture Resilience looks like in the face of extreme weather." Dr. David Ruppert, University of Maryland College of Agriculture & Natural Resources, Assistant Clinical Professor of Environmental Science and Technology, and Program Coordinator of the Agricultural Nutrient Management Program. Thank you, Steve, for inviting Dr. Ruppert.

Dr. Ruppert: So much of what we say about agriculture can be applied to other suburban or urban landscapes. Tonight will talk about extreme events on the landscape, heat and drought, but not climate change itself or global biodiversity loss.

Extreme events: occurrences of unusually severe weather or climate conditions that can cause devastating impacts on communities and agricultural and natural ecosystems.

Weather-related: heat waves, heavy downpours and freshwater flooding, saltwater flooding (this won't be discussed in detail)

Climate-related: drought

Landscape-level causes and effects

Mortality; erosion/sedimentation/inundation, loss of property value; loss of agricultural land, transition to saltwater marsh; overall loss of land. Loss of property value and downward

spiral with loss of agriculture.

Landscape-level causes: these are actually quite simple. A necessary but not sufficient condition for a heat wave is low soil moisture. Low rainfall infiltration → heavy downpours and flooding.

With saltwater flooding the landscape cause is sea-level rise. With climate-related drought again the cause is low soil moisture.

Much of this comes down to moisture: inability to store it or inability for it to get into the soil in the first place.

To maximize landscape soil moisture storage, **maximize infiltration** and trap the moisture as high up in the landscape as possible where we can do more with it because it's in place in the landscape for plants to use.

If soil moisture is minimal you get drought heat waves; if maximized, you avoid drought, heat waves, runoff, erosion, down-landscape flooding, stream degradation; and you promote agricultural productivity and ecosystem functioning.

Showed a picture of a double-ring infiltrometer.

This device measures how fast water percolates downward.
Demonstration by NRCS: different soils and treatments in boxes with jars in rear measuring infiltration rate and jars in front measuring runoff rate. We want to maximize infiltration rate and minimize runoff rate.

Runoff and erosion minimize soil water storage. A soil crust on an eroded surface minimizes storage of water. Soil shown in the figure is made of aggregates that create porosity between them, when soil biology is allowed to work and to incorporate plant residues and root materials. These aggregates will maximize infiltration; if disturbed they form a surface crust and slow down infiltration.

Rate of water delivery to streams affects:

- Height of water table between rain events (higher when landscape stores more water)
- Height of the water table during rain events (higher when the landscape stores less water)
- Amount of water available to crops and the ecosystem
- Risk of flooding
- Risk of erosion

Comparison of pre- and post-development hydrographs: change in lag time, time base, peak of hydrograph. In between rain events the water table is lower because water is not being stored in the landscape. So we can evaluate overall health of watersheds in Baltimore County by measuring the hydrographs of Baltimore County streams.

Maximize infiltration by maximizing the aggregation of soil. Nice picture of a well-aggregated soil that serves as a goal for managing soil.
Cornell Soil Health Assessment:

- Infiltration rate
- Aggregate stability
- Organic carbon
- Active carbon
- Soil protein
- Respiration by soil biota
- Soil root penetrability – how easily roots penetrate in soil which in turn controls ability of water to penetrate the soil.

Infiltration rate and aggregate stability are key metrics.

Soil aggregation is encouraged by
- Minimizing disturbance
- Year-round input of organic matter
- Encouraging soil as a habitat
- No-tillage
- Cover cropping

Minimizing tillage minimizes disturbance of soil aggregates

Cover crops help to maximize year-round input of organic matter. We want living roots in the soil as much as possible.

Photo of tillage as a form of extreme soil disturbance, compared with no-till planting - planting into ground that still has a living crop.

YouTube video of soil aggregation and water infiltration from a no-till, moderate tillage and intensively tilled soil. Tillage has a huge impact on aggregates. No-till maximizes infiltration.

Winter fallow vs cover cropping: winter wheat and winter rye → multiple environmental benefits. For maximum services of a cover crop, plant by Labor Day.

Forage radish crop (killed by freezing weather) – provides huge soil coverage and a lot of organic matter, compared to soils with no cover crop. High infiltration on the first, low infiltration on the second.

Maryland is a leader in the country in adoption of cover cropping and no-tillage. Adoption in Baltimore County among grain producers is high; 75-80% adoption of cover crops; 90% adoption of conservation tillage.

Other BMPs known to be effective and increasingly important as slopes get steeper:
- Farming on the contour
- Perennial agriculture (orchards, vineyards, brambles

Research frontiers

Cover crop mixtures – more effective?
Relay cropping – planting one while the other is still alive, always have a living root present
Maximize the input of organic carbon into the soil; promoting soil biology, aggregation and stability

Intensive grazing – high animal density, short duration, long recovery, grazing regimes
Increased complexity of rotations including animal integrations and CRP

Baltimore County has two regions: sandy coastal plain, “silty” Piedmont (i.e. silty textures in soil) which maximizes water-holding capacity. What is challenging is that silt is highly erodible and susceptible to compaction.

Helpful: high inherent water-holding capacity
Challenging: highly erodible; susceptible to compaction

Conclusions:
Agricultural resilience in the face of extreme weather means maximizing agricultural soil water infiltration, thereby

- Storing the maximum amount of water at higher elevations where possible
- Maximizing agricultural production – despite drought
- Mitigating temperatrues

What can CEQ do?

- Get to know health of watersheds by measuring stream hydrographs. Ask what we can do to flatten the curve of our hydrographs
- Encourage perennial agricltural as slopes steepen
- Encourage creativity and results with agricultural soil mgmt.
    - e.g. create a contest as part of county fair
        - highest measured soil quality
        - greatest improvement in soil quality
        - encourage research with local universities
        - identify innovative farmers
- identify locations where erosion remediation/prevention is needed and work with NRCS and land managers to provide cost share
- suburban locations

Appendix identifies UMD extension agricultural educator in Baltimore County – Erika Crowl

Dr. Kate Tully – saltwater intrusion into agricultural landscapes; conversion of agricultural land to marsh

Question from Joan Plisko: With no tillage and cover cropping and other intervention, are you looking at and measuring carbon sequestration by comparison with conventional agricultural methods?

Answer: Sequestration of carbon is of huge interest worldwide and there are many studies. Not familiar with all the subtleties of the research results. No-tillage maximizes organic-matter storage in the soil. There is some research indicating that extreme tillage introduces carbon deeper down that can persist for a long time with similar amount of carbon stored compared to no-till; other studies disagree a bit

Q: There are some innovative farmers in various places. Do you know who they would be in Baltimore County?

A: Erika Crowl would be able to help with that.

Glenn Elseroad: I just became president of the Baltimore County Farm Bureau and most of the practices you talked about are very important to farmers. I think we are moving in a great direction – there are hardly any farms left that don't use cover crops. We are also changing the farm equipment to reduce soil compaction, interested in capturing carbon and putting a valuation on it sometime in the future. Soils in Baltimore County have yields per acre that exceed some of the best agricultural land in the world because of practices being used.

What about use of chemicals if you are no longer removing weeds mechanically? Use of herbicides is often done. There are organic farmers trying to create real no-till systems even without herbicides and there are some fascinating efforts out there. Example: roller-crimper. Create such a huge biomass cover crop that you can roll it down and suppress weed growth and plant in a dense vegetative mat. There are ways to do it without herbicides but much of what is done is with herbicides. We need to encourage those creative farmers who are trying to do what seems impossible.

Glenn: When you use cover crops and you create a residue, you often eliminate a lot of the weeds that create competition with the crops.

Look up University of MD research on the forage radish; often those plots are virtually weed free even months later.

Carol mentioned advice given to keep from mowing lawn grass too low where it might encourage weeds to germinate because they then get more sun.

We want sun to hit the vegetation rather than helping weed seeds germinate.

End of presentation. Thank you, Dr. Ruppert.

III. Minutes of 10/26/2022 meeting. Approved with the caveat that Andy might still need to amend the portion describing his talk. Approved without opposition. Thank you, Valerie.

IV. Aspects of current efforts to ban plastic bags at grocery stores. Karen Wynn. Councilmember David Marks will introduce legislation in a month or two; sticking point is whether to charge for paper bags. Karen is meeting with him on Sunday and with Councilman Crandall. Trying to work out the issue of fees.

V. DEPS has posted on the CEQ webpage one of the two May 2022 CEQ reports, specifically Forest Conservation in Baltimore County: Challenges and Opportunities, May 1, 2022.

The Second report is not posted separately on the CEQ webpage but is available to the public through the CEQ agenda for September, i.e. Chat Questions organized by topic area, asked by the public following a presentation on 5/12/22 by Go Ape at a virtual meeting hosted by the Department of Recreation and Parks, especially addressing Oregon Ridge Park, A Report from the Baltimore County Commission on Environmental Quality 5/18/22.

Carol: Baltimore County Green Alliance is working on making specific recommendations to the County Council for strengthening the Forest Conservation code, based on our report.

Third report – Carol noticed the Solar report had not been posted; Lois sent it to Carol who sent it on to Brian Lindley and he had it posted.

VI.Oregon Ridge Master Plan process update:
November 12 and November 16: In-person and virtual public meetings presented elements of the upcoming master plan, including separating the park into 3 "core" sections, and a plan for new roads, building locations, parking lots, and septic. "Alternatives" of photos of facades of a new Lodge building, band shell, and Nature Center were provided. Participants at the in-person meeting 11/12 were happy to hear the Director of Recreation & Parks announce that mountain biking and horses will continue to not be allowed in Oregon Ridge Park; at the virtual meeting 11/16, horses were not mentioned in the Director's announcement re mountain biking, but during the presentation the contractor said that horses will not be allowed in the "Conservation Core" from the ridge line south, i.e. in the Baisman Run watershed, or in the "Between Cores" section from the ridge line north to the more built core section in the north of the park closer to Shawan Rd (Oregon Run watershed). Stream buffers of 100 ft on each side were recommended, as were impervious surfaces of the new parking areas.

- **Video of 11/16 meeting** is on the Master Plan web page; unclear how to see the Chat.
- **January 2023**: Draft Master Plan will be released and open for public comment. Web page says "Public meeting on final plan to be scheduled."
- https://www.baltimorecountymd.gov/departments/recreation/programs/oregon-ridge- lodge/master-plan

These November meetings were well attended by the public. Mountain bikes will not be allowed at the park and it was mentioned at one of the meetings that horses are recommended not to be allowed in two of the three sections of the park – there is concern about potential effect of horses on increasing erosion and habitat problems. Lois: is there any discussion of whether there might be places where horses could be brought in in an appropriate manner?

Carol mentioned 100-ft buffers on either side of stream.
Horses are allowed at the Ag center which has 3 miles of horse trails on county land there.

The landscape architect also recommended management of parking. There is a desire to maintain infiltration of rainfall so as not to impact water tables and well water.

The next time people will provide input to the Master Plan will be in January when a draft Master Plan will be released for public comment.

VII.CEQ Meeting dates: 1/25, 2/22, 3/22, 4/26, 5/24

Please let Carol know if you cannot attend – we do need to keep track to make sure people are attending to the extent possible.

VIII. Closing Comments: Carol Newill

Welcome to Mahnaz who is back from Iran after 3 months.
Joan Plisko will withdraw from CEQ as of end of December; we really appreciate everything she has done with and for CEQ, her report on food waste, and her excellent questions and participation.

Joan wanted to promote the Climate Justice forum at Chizuk Amuno and will talk about four state bills. The event will be catered by Pearlstone and sponsored by Pearlstone and Baltimore Jewish Council.

The 2021 annual report prepared by Lois is now posted, so thanks to Lois for that.

Last note about our current presentation series: Chris Overcash will present on coastal flooding in January.

Happy holidays to everyone. We will see each other again at our regular online meeting on January 25.

Vote to adjourn at 8:09 p.m.