

Meeting Summary December 6, 2021

Council Members Present (via Zoom):

Carlo Colella Vice President & Chief Administrative Officer (Chair) Scott Lupin Assoc. Director, Environmental Safety, Sustainability & Risk; Director, Office of Sustainability Mary Hummel Assistant Vice President, Division of Student Affairs Maureen Kotlas Executive Director, Environmental Safety, Sustainability & Risk Susan Corry David Cooper Assistant Director of Operations, Division of IT Bryan Quinn Director of Technical Operation, Department of Electrical & Computer Engineering Eric Wachsman Director, MD Energy Innovation Institute; Professor, Materials Science & Engineering Stephanie Lansing Professor, Environmental Science & Technology Giovanni Baiocchi Associate Professor, Geographical Sciences Jennifer Hadden Associate Professor, Government & Politics Laura McBride **Graduate Student Representative** Nina Jeffries **Undergraduate Student Representative**

Guest Attendees:

Laura Duncanson — Assistant Professor, Geographical Sciences

Leon Clarke — Acting Director, Center for Global Sustainability; Research Professor, School of Public Policy Shannon Kennedy — Senior Manager for Strategic Engagement, Center for Global Sustainability

Meeting start time: 11:00am

Meeting Highlights

Welcome

Carlo Colella welcomes all Council members and guest speakers to the meeting.

COP26 Climate Conference Highlights – S. DeLeon; L. Duncanson; L. Clarke; S. Kennedy

Sally DeLeon began the conversation on the COP26 United Nations Climate Conference by highlighting relevant presentations from the Spring 2021 Council meetings and introducing three guest speakers: Dr. Laura Duncanson, Dr. Leon Clarke, and Shannon Kennedy (introductory slides: Appendix A).

<u>UMD Forest Biomass Research at COP26: Next Steps for "Nature Based Solutions" — L. Duncanson</u>

- Dr. Laura Duncanson presented on the status of global carbon monitoring and an international global carbon stocktake (Appendix B). Key aspects of this presentation include data updates to airborne and terrestrial lidar data, Dr. Duncanson's work with researchers from around the world to establish a harmonized global biomass protocol, and efforts to establish high-quality reference measurements for validation of biomass products.
- The work in biomass harmonization and global carbon stocktake aims to help countries better understand existing biomass assets, monitor biomass loss, and understand associated carbon emissions of deforestation.

<u>COP26: The Glasgow Climate Pact — L. Clarke; S. Kennedy</u>

- Dr. Leon Clarke and Shannon Kennedy presented on major outcomes from the COP26 Climate Conference and UMD's significant contributions to this progress (Appendix C).
- UMD faculty supported negotiating teams for various agreements, co-hosted events with partnering faculty from around the world, and provided essential research that drove the US-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s, the Long-Term Strategy of the United States, the Global Methane Pledge, and the Net-Zero World Initiative among other commitments.

Sustainability Fund Proposals – N. Jeffries

Nina Jeffries presented to the Council on the Sustainability Fund budget and proposals (Appendix D). In addition to the proposals discussed in the November meeting, the Sustainability Fund Review Committee is moving forward four additional proposals:

- Repurpose Farm Plastic:
 - This project requests funding to prototype, design, and implement a machine to clean drip tape, a currently non-recyclable black tubing material frequently used on UMD's farms. If successful, the project could significantly reduce waste at UMD's farms and could save the University money. The project funding is matched.
 - Conditional on meeting the University's research safety requirements, the Council **approved** this project proposal.
- Cool Green Shelters for Campus Bus Stops:
 - This project requests funding to build two green shelters, replacing existing bus stops on campus with living canopies fitted with rainwater capture and pollinator gardens.
 - The Council expressed concerns about maintenance, added benefits for costs, aesthetics of year-round plantings, public health issues relating to allergies, and public safety concerns around the infrastructural design.
 - The Council **provided further questions** for this project proposal.
- Building Hope, a Podcast about Projects of Possibility:
 - This proposal requested funding to create a podcast focusing on School of Architecture, Planning, and Preservation projects while fostering student conversations and leadership.
 - The Council expressed concerns over the cost of the project, as the proposal almost exclusively requested funding for labor and included faculty labor costs.
 - The Council **provided further questions** for this project proposal.
- Passive Solar Heating and Grape Waste:
 - This proposal aims to generate student involvement in a research project on solar heating to eliminate toxins naturally, eliminating the need for pesticides and other chemicals. The research project is supported by the USDA, and the Fund proposal focuses on student involvement via research and information dissemination.
 - The Council **approved** this project proposal.

Sustainable Water Use and Watershed Report (2021) Follow-Up Discussion – S. Lupin

Scott Lupin shared the Sustainable Water Use and Watershed Report for final consideration (Appendix E). The Council agreed to approve or reject the report by the Spring 2022 semester.

Open Forum –

The Sustainability Council and Office of Sustainability sincerely thank Mary Hummel for her participation, time, and support of campus sustainability efforts. She has participated in Council meetings since joining the UMD community. The Council appreciates her commitment, thoughtfulness, and thoroughness and congratulates her on her retirement.

Adjourn 1:00 pm

Appendices:

Appendix A: COP26 Climate Conference Highlights Presentation

Appendix B: UMD Forest Biomass Research at COP26: Next Steps for "Nature Based Solutions" Presentation

Appendix C: COP26: The Glasgow Climate Pact Presentation

Appendix D: Sustainability Fund Proposals Presentation

Appendix E: Sustainable Water Use and Watershed Report (2021) Follow-Up Discussion Presentation

UN Climate Conference Highlights

New Guest Speakers

Recall relevant Council presentations from last Spring:

- 1) <u>US Role in Raising Global Climate Ambitions</u> Dr. Nathan Hultman, Center for Global Sustainability
- 2) <u>Methane Leakage outside of GHG Reporting</u> Dr. Giovanni Baiocchi, Geographical Sciences; IPCC Author
- 3) <u>Maryland Innovation</u> (ties into Net Zero World Initiative) Dr. Eric Wachsman, Materials Science & Engineering; Director of Maryland Energy Innovation Institute

Department of Geographical Sciences, BSOS

Dr. Laura Duncanson

Assistant Professor

- Presented on a multi-national science panel in the Green Zone at COP26
- Collaborating with international network of scientists on forest measurement and monitoring using remote sensing science to support policy-making

Center for Global Sustainability, School of Public Policy

Dr. Leon Clarke, Acting Director

Shannon Kennedy, Senior Manager of Strategic Engagement

- Provided broad participation and support for COP26
- Some Key Outcomes:
 - US-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s
 - The Long-Term Strategy of the United States
 - Global Methane Pledge
 - Net Zero World Initiative
 - Glasgow Leaders Declaration on Forests and Land Use (covered by Laura's presentation)

UMD Forest Biomass Research at COP26: Next Steps for 'Nature Based Solutions'

Laura Duncanson, University of Maryland

With contributions from: The GEDI & ICESat-2 Science Teams The NASA-ESA Multi-Mission Algorithm and Analysis Platform (MAAP) NASA's ABoVE Program The CEOS Biomass Harmonization Activity



ECOSYSTEM LIDAR









The Global Carbon Budget Update for 2021

The level of CO₂ continues to increase in the atmosphere, causing climate change. Emissions from deforestation and other land-use change remain high, partly offset by removals from regrowth of forest and soil recovery.





previous version by Nigel Hawtin. Poster created by Natalie Porter (ClimateUEA).





The World Has Committed to Ending Deforestation by 2030



GLASGOW LEADERS' DECLARATION ON FORESTS AND LAND USE

- Endorsed by 141 countries
- Covers 90% of global forests
- \$1.7 billion to support indigenous peoples
- \$1.5 billion to conserve the Congo Basin

BUT this isn't the first pledge -EO of forests is required to monitor carbon emissions from deforestation and degradation, and sinks related to regrowth



We still do not know how much carbon is stored in Earth's forests.

"You can't manage what you don't measure"

To estimate carbon emissions from forests:

- 1) 'Activity Data' Deforestation
- 2) 'Emissions Factors' How much biomass/carbon was there?





NASA's GEDI Biomass Products are Coming Online Soon...



Coming Soon to https://earthdata.nasa.gov/maap-biomass



GEDI collects data over the tropics and temperate forests... what about northern forests?



Credit: NASA's Scientific Visualization Studio



NASA's ICESat-2 data fill GEDI's northern data gap for global lidar mapping



Open science product created on the NASA-ESA MAAP (scimaap.net). Explore this map here: https://earthdata.nasa.gov/maap-biomass





New dashboard for COP26 - Explore 2020 Biomass Products!



EARTHDATA

Biomass Earthdata Dashboard **BETA**

eesa

Welcome Products ∨



https://earthdata.nasa.gov/maap-biomass

Country Pilots ∨ About <







https://earthdata.nasa.gov/maap-biomass



Biomass Harmonization: Current Status

- Products are being assessed following the WGCV biomass protocol using available reference data in ۲ pilot USGS Silvacarbon & SERVIR countries – expanding to >30 countries
- 2020 biomass maps in final development; provisional products available on platform •
- Harmonization framework still in discussion; harmonized product expected 2022 •
- Country-level summaries Created with user-friendly notebooks •
- Presented activity and dashboard at COP26 •

ESA (+EU/UK Researchers):

- Clement Albinet
- Martin Herold ٠
- Heather Kay ٠
- Richard Lucas •
- Joana Melo ٠
- Erik Næsset ٠
- Kostas Papathanassiou
- Klaus Scipal ٠
- Frank-Martin Seifert ٠
- Pedro Rodriguez • Veiga

NASA (+US Researchers):

- John Armston
- Ralph Dubayah •
- Laura Duncanson
- David Minor
- Vero Leitold
- Neha Joshi •
- Sean Healey •
- Ron McRoberts
- Sassan Saatchi •
 - Sylvia Wilson
- JAXA:
 - Osamu Ochiai
 - Ake Rosenqvist
 - Takeo Tadono
 - Masato Hayashi





New dashboard for COP26 - Explore 2020 Biomass Products!



EARTHDATA

Biomass Earthdata Dashboard **BETA**

eesa

Welcome Products ∨



https://earthdata.nasa.gov/maap-biomass

Country Pilots ∨ About <







Maps are only as good as the data used to train them!



New GEO Activity: GEO-TREES! A Forest Biomass Reference System from Tree-by-Tree Inventory Data

Updated Reference Data Are Critically Important for Improved Biomass Mapping. GEO-TREES supports collection of new high-quality reference measurements for validation of biomass products.

We encourage CEOS agency cooperation and funding support of data collection for biomass validation following recommendations from the biomass protocol (open field and airborne data). There is an opportunity for lasting contributions to forest carbon monitoring.







Animation by Atticus Stovall

BY MA

ALL DO





COP26 was just the first milestone for Biomass Harmonization

Work continues to support the 2023 Global Stocktake and beyond (2028, 2033...)

- **Update dashboard with New and Improved Products**
 - Add UMD GEDI L4B
 - Add GEO-TREES page
 - + Mangroves?
- **Expand Country Partnerships**
 - Current 5 planned >30 through USGW SilvaCarbon & SERVIR
- Link to Land Use Change / Forest Loss
 - Help countries report on deforestation rates AND associated carbon emissions







What more can we do at UMD to support these global efforts?

Campus Forest Carbon Project







Project Sponsor UMD Sustainability Fund

This project seeks to advance the University of Maryland's goal to become climate neutral by accurately adding land-based carbon into its annual carbon footprint. While much progress has been made to lower University emissions across multiple energy sectors, tree conservation or restoration could further enhance these goals with high-resolution measurements of forest carbon gains (or losses) at 90 square meter resolution. As a living document, the <u>University's Climate Action Plan</u> can also be further developed to reflect our commitment to maintaining or increasing our natural carbon storage capacities via informed land-use decisions. Additionally, this work builds UMD's capacity to purchase forest-based carbon credits from reliable projects located in Maryland using a consistent scientific approach.

Faculty and students in the Department of Geographical Sciences (GEOG) have been working with the Maryland Department of Natural Resources (MDNR) for nearly eight years, under the auspices of <u>NASA's Carbon Monitoring System</u>, to implement this carbon monitoring science at the state level and advance the goals of the Greenhouse Gas Reduction Act

Iduncans@umd.edu





COP26: The Glasgow Climate Pact

Leon Clarke Acting Director, Center for Global Sustainability Shannon Kennedy Senior Manager of Strategic Engagement, Center for Global Sustainability





COP26: Major Outcomes & Agreements

- US-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s
- The Long-Term Strategy of the United States
- Global Methane Pledge
- Net-Zero World Initiative
- Financial commitments
- Glasgow Leaders Declaration on Forests and Land Use
- Global coal phase-out
- And more!



US-China Joint Glasgow Declaration on Enhancing Climate Action in the 2020s

The declaration advanced new agreement by both countries on overall ambition toward 1.5C, as well as sectoral work on methane and power sector.

UMD Contributions:

- CGS research on coal phase down and overall China decarbonization strategies was used to support U.S. State Department
- CGS China Program Leads are Professor Ryna Cui and PNNL joint appointee Dr. Sha Yu
- Nate Hultman, Director/Founder of CGS & Professor at SPP was serving on Kerry's core negotiating team at COP26 for this agreement





The Long-Term Strategy of the United States

The U.S. LTS presents pathways by which the U.S. can reach its 2050 net zero GHG goal, and was a core U.S. deliverable for the COP under Paris Agreement article 4.19. It was released on Nov 1 and announced by Pres. Biden as well as Secretary Blinken, Sec Kerry, and National Climate Advisor McCarthy.

UMD Contributions:

- The CGS and JGCRI team developed capacity and expertise to support US national climate strategies
- CGS co-organized a large workshop mid-year of experts to help identify priorities and strategies for the next U.S. LTS
- JGCRI team, notably led by PNNL joint appointee Haewon McJeon, conducted much of the modeling analysis for the 2021 U.S. LTS
- Nate Hultman was lead author for the U.S. Long-Term Strategy in his current role at State Department



THE LONG-TERM STRATEGY OF THE UNITED STATES

Pathways to Net-Zero Greenhouse Gas Emissions by 2050



Global Methane Pledge

The GMP was launched on Nov 2 with more than 100 countries, with a commitment to reduce emissions 30% by 2030.

UMD Contributions:

- CGS team includes non-CO2 gases as part of national ambition assessments
- JGCRI team, including PNNL joint appointees Meredydd Evans and Sha Yu has specific programs on methane that were used to inform understanding of opportunities for major economies, including China
- Nate Hultman is on the methane team at State Department that helped develop and launch the GMP at COP26





Net-Zero World Initiative

The Net Zero World Initiative is an effort to bring bilateral assistance to a set of key countries around the world. It is particularly focused on bringing assets of the U.S. national laboratories. The organizers hope to raise \$100 million to support this effort, much of it from philanthropy. NZW was launched at COP by Jennifer Granholm and John Kerry.

UMD Contributions:

- The JGCRI team, including CGS joint appointees, has been intimately involved in the development of the plan and the cross-laboratory coordination.
- PNNL joint appointees, Meredydd Evans and Dr. Sha Yu, have been key participants from PNNL in NZW.
- Leon Clarke, Acting Director at CGS and formerly lead for integrated modeling at JGCRI, was present at the launch and participated in the follow-up stakeholder meeting, as a representative of PNNL





U.S. Climate Action Center

A Conversation with U.S. Senator Cardin on Coastal Climate Resilience

- Leon Clarke, CGS
- Marcene Mitchell, WWF
- Senator Cardin (D-MD)
- Mayor Constant, Gretna, LA
- Councilmember King, Maui County, HI

Release of *Blueprint 2030: A Policy Platform for an All-In Climate Strategy*



The Power Sector with an All-In Strategy

Priority high ambition policies that can lead to **50–52%** emissions reductions by 2030



"ALL IN" BREAKTHROUGH ACTIONS:

- •Mandate/incentivize 100% clean electricity by 2035 and 80% or more by 2030 (federal and state)
- •Procure 100% clean electricity on a 24/7/365 basis as soon as possible (all)
- Invest in RD&D to ensure a reliable, resilient energy supply that is largely renewable (federal, business)
- •Train and inspire the clean-energy workforce while supporting community transition (all, especially civil society)





UMD's Official Side Event w/ ClimateWorks Foundation & U.S. Climate Action Network France

Key

Building an Inclusive Global Stocktake: How Civil Society Can Help Assess Climate Progress

- Leon Clarke, CGS
- Cecilia Kinuthia-Njenga, UNFCCC
- Marine Pouget, CAN France
- Vaibhav Chaturvedi, Council on Energy, Environment and Water
- Tambe Honourine Enow, Africa Climate and Environment Foundation
- Mariana Panuncio-Feldmen, WWF
- Jorge Villareal, Iniciativa Climática de Mexico

Leon Clarke and Nate Hultman are co-leads for the Mitigation Working Group for the independent Global Stocktake (iGST)

SCHOOL OF PUBLIC POLICY FRVI NO SCHOOL OF PUBLIC POLICY CENTER FOR GLOBAL SUSTAINABILITY

Political economy dimensions of the global stocktake

	Dimension	Indicator	progress	clarity	availability	data availability
I/A Aedium .ow Ositive Jncertain	National	Existing climate pledges				
	ambition	National commitments by heads of state or government				
	Institutional arrangements	Scales & scope				
		Robustness				
		Prevalence of institutional veto points				
	Stakeholders & interests	Stakeholder inclusiveness				
		Support from political elites				
		Political influence of interested coalition				
		# of co-benefit partnerships				
	Policy effectiveness	Effectiveness of policy adoption				
		Effectiveness of policy implementation				
		Policy coherence				
		Track record on previous commitments				
	Public opinion	Climate awareness				
		Public support for climate action				• • • • • • • • • • • • • • • • • •
		Heterogeneity in perception & specific interests				



Developing country engagement on adaptation & finance

- SPP Professor Anand Patwardhan helped launch the new Adaptation Research Alliance (ARA)
- the Initiative on Closing the Investment Gap on Sustainability (CIG Initiative) held an event to launch a new solar panels for airports in small island developing states







Thank you!

Leon Clarke Acting Director, Center for Global Sustainability Shannon Kennedy Senior Manager of Strategic Engagement, Center for Global Sustainability

> More on CGS at COP26: Events & recordings Reflections from our experts





Grant Recommendations: Dec. 2021



Sustainability Fund Budget for FY22

Revenue

Expenses

FY21 Working Budget*	\$347,641	Balance if recommendations are approved*	\$153,858.34
Fall Deadline Request Total	\$352,505	Today's Grant Recommendations	\$79,986
FY21 Carry-Forward*	\$17,641	Carbon Offsets for Undergraduate Commuting*	\$55,000
FY21 Revenue*	\$330,000	Sustainability Mini-Grants	\$2,385



Projects Recommended for Funding

- 1. Repurpose Farm Plastic approved
- 2. Cool Green Shelters for Campus Bus Stops tabled
- 3. Building Hope: A Podcast about Projects of Possibility tabled
- 4. Using Passive Solar Heating and Leftover Grape Waste as an Alternative to

Chemical Pesticides - approved

*Reviewed all 10 proposals. Holding one.



Repurpose Farm Plastic

Requested: \$20,500

SFRC recommendation: \$18,800

Summary: Funding for a prototype machine to help clean drip tape from UMD farms. Opportunity if machine works it could be scaled up and applied to other farms in the state.

Submitted by: Krisztina Christmon, PhD student Department of Entomology; Dr. Kathryne L Everts, advisor



Wye Mulch Film and Drip Waste





Recommended Grant: \$18,800

Item	Cost
Design/Prototyping stage	\$9,500
Integration/testing stage	\$2,000
Production/Collection of plastic	\$2,300
Competition prize	\$5,000
Cut \$1,700 for advertising	
Matched funds by Repurpose Farm Plastic LLC	
Decrease university's plastic waste by 1 ton	
Collect plastic, clean, granulate, and sell or produce new product	

Payback: profits of useful machine, profits of granulated plastic, patented tech



Cool Green Shelters for Campus Bus Stops Requested: \$20,000

SFRC recommendation: \$20,000

Summary: Green shelters on two existing bus stops on campus purchased from Living Canopies Ltd (UMD eco-tech start up company). Environmental benefits (reduction of UHI effect, stormwater management, pollinator habitat) and provide research opportunities. Other components include a phone charging station powered by a solar panel on the shelter

Submitted by: Dave Tilley, ENST professor



Cool Green Bus Shelters

- Planned completion is Fall 2022 and maintenance will be performed by the same start-up company.
- Each unit capture as much as 500+ gallons/year and use to water plants, sequester 7kg of CO2/year
- Contingent on Architectural and Landscape Review Board approval and input/formal approval from DOTS and Building and Landscape Maintenance



Recommended Grant: \$20,000

Item

2 Green Shelters

\$20,000

Cost

- \$4,500 discount
- Identical proposal submitted to facilities
- Support from the AEES and SASLA student groups on
- Three options for long term maintenance: (1) students of AEES and SASLA (2) UMD-FM Landscape Services and (3) a continual contract with Living Canopies
- \$ dependant on ALRB approval and DOTS and any other required approval



Building Hope: A Podcast about Projects of Possibility

- **Requested:** \$36,571
- **SFRC recommendation:** \$31,186
- **Summary:** Pilot a season of six (6) 45-minute podcast episodes with an accompanying interactive website. Episodes on sustainable, student designed case studies. Available to all.

Submitted by: Julie E. Gabrielli, ARCH

Building Hope: A Podcast about Projects of Possibility

- Two primary questions:
 - (1) Can built environment designs that prioritize sustainability features and seek to repair environmental degradation be made more accessible through a storytelling medium?
 - (2) How does the medium of the podcast accelerate student conversation and leadership around sustainable design and activate the role of hope?
- Released Jan 23'. Distributed through classes, journalism/architecture newsletter, and industry contacts like NPR
- Submitted two other grant proposals, would return Sustainability Fund money
- Support from NOMAS, AIAS, WIA, Juan Luis Burke, Ph.D. (ARCH prof), Rafael Lorente (ARCH Academic Associate Dean), Patricia Cossard (reACT)

Recommended Grant: \$31,186

Item	Cost
PI and Co-PI	\$13,800
Fringe Benefits	\$2,326
Publication Costs	\$1,020
Undergrad students	\$14,040

- Made grad positions undergrad (\$22.50/hr to \$18/hr)
- Cut travel \$ request
- Replaced consultant services with an undergrad student
- A lot of student involvement and aimed at telling student stories



Passive Solar Heating and Grape Waste

Requested: \$10,000

SFRC recommendation: \$10,000

Summary: 3-year research project to demonstrate the synergistic benefits of using passive solar heating, cover crops and grape pomace to: (1) reduce crop pests, (2) enhance crop yields, beneficial organisms and biodiversity and (3) improve soil health.

Submitted by: Cerruti Hooks, Extension Specialist and Professor, Dwayne Joseph, PhD Student, ENTM and CMNS



Solar Heating and Grape Waste

- Biosolarization: incorporating organic amendments (cover crops and/or crop waste such as tomato/grape pomace) into the soil. The soil is covered with a plastic tarp and kept wet, creating a temporary anaerobic condition thereby initiating the breakdown of the organic matter by microorganisms
- Solar heating and natural toxins produced from crop waste combine to kill soil pests
- Biosolarization improves soil quality by adding organic matter to the topsoil,
- Biosolarization use is limited partially due to insufficient research and information dissemination
- Research conducted at UMD Central Maryland Research and Education Center
- \$92,112 from USDA, \$10,000 from SF to increase paid student involvement



Recommended Grant: \$10,000

Item	Cost	
Student Interns	\$9,695	
Plot Allocation Fee	\$305	

- Supports OS objective to facilitate the implementation of sustainable practices for university operated centers
- College Park Scholars, "Twilight Tours", Clarksburg open houses, MD Organic Food and Farming Association, volunteer opportunities - 210+ students involved
- Students to research and information dissemination (education, training) to facility managers, scientists, UMD ag-educators, farmers, community members and other students



2021 Sustainable Water Use & Watershed Report

Presentation to the University Sustainability Council Scott Lupin - Associate Director, Dept. of ESSR & Director, Office of Sustainability



Accomplishments



- 1. Organization of Roles, Responsibilities, & Authorities
- 2. Stormwater Banking
- 3. Campus Creek Restoration
- 4. Expand Inspection and Maintenance of Stormwater Facilities
- 5. Water Harvesting Assessment
- 6. Vehicle Wash Facilities
- 7. Annual Reporting



2021 Report Major Findings





UNIVERSITY SUSTAINABILITY COUNCIL SUSTAINABLE WATER USE AND WATERSHED REPORT 2021



- Senior management regularly informed and engaged on stormwater topics
- Key staff communicate and coordinate effectively to share information and identify stormwater priorities
- Sound management of MS4 permit routinely allows UMD to stay ahead of requirements
- First phase of the Campus Creek restoration successfully completed; second phase in design
- Expanded campus-wide inspection program established to prevent stormwater pollution and illicit discharges



2021 Report Priority Challenges

- Cost of water services continues to increase year over year
- Stormwater regulation and administrative burden significantly increasing
- Growing long-term risk to water supply due to:
 - Regional population growth
 - Climate change
 - Aging infrastructure
 - Single source/provider
- Construction continues to pose a threat to MS4 stormwater permit compliance
- University is experiencing a higher frequency of localized flooding events



Conclusions from 2014 - 2020

- Trends predict increases in regional pressure to **respond to climate change** and more stringent **water pollution regulation**
- Increasing **administrative** and **financial obligations** due to changes in stormwater permit requirements and water/sewer costs
- Maintaining **governance structures** for water use and stormwater management will allow continuous improvement and reduced risks **across university departments**
- Report offers **eight recommendations** to put UMD on a path to better **financial**, **social**, and **environmental outcomes**



Recommendations for the Future

Recommendation 1:	Maintain senior management engagement in water and stormwater issues
Recommendation 2:	Expand in-house training and reporting by UMD construction site inspector
Recommendation 3:	Design, fund & construct the Severn and Wye Oak vehicle and equipment wash facilities



Recommendations for the Future

Recommendation 4:	Stay ahead of stormwater permit requirements
Recommendation 5:	Convert campus irrigation systems to groundwater sources where cost-effective; seek reductions in potable water use
Recommendation 6:	Complete Phase 2 of Campus Creek restoration



Recommendations for the Future

Recommendation 7:

Expand inspection and repair of stormwater facilities and maintain a computerized inspection tracking system

Recommendation 8:

Evaluate recurring campus flooding locations — design and install mitigation measures



