

Date: December 15, 2018

To: Massachusetts Department of Conservation and Recreation Forest Management

Re: Myles Standish Complex Ten Year Pine Barrens Restoration Project

To Whom It May Concern:

We wish to thank the DCR for developing this exciting long-range plan to restore our coastal pine barrens as outlined in the Myles Standish Complex Ten Year Pine Barrens Restoration Project. The Southeastern Massachusetts Pine Barrens Alliance (SEMPBA) whole heartedly supports this project and would like to offer our assistance in strengthening the public education and outreach capacity of this undertaking.

SEMPBA exists for one purpose only: to save our globally rare coastal pine barrens. We are well aware that Massachusetts' coastal pine barrens are at risk due to continued fragmentation and the lack of wildfire on the landscape and today occupies only 10% of its original area. Yet what remains is still a viable ecosystem harboring 48 unique globally rare natural communities as defined by Mass Fish and Wildlife and is home to over 180 state and federally listed species.

We understand that Pine Barrens contain the globally rare pitch pine -scrub oak natural community and that this type of forest requires disturbance for its continuation. We are also concerned with the natural fuel load that has accumulated over several decades and is a real danger to the community and to the forest itself if wildfire were to erupt and spread catastrophically as we've seen happen recently in other fire prone areas where management has been largely absent. We are also aware that a Southern pine beetle outbreak is imminent and acting now to manage the forest in a healthy state rather than waiting for an infestation will help mitigate against this severe threat. This plan addresses all of those concerns.

Building partnerships to increase the pace and reach of conservation has been SEMPBA's major focus. We are pleased to see that DCR is partnering with Mass Wildlife to extend treatment into the Pine Barrens WMA, the Maple Springs WMA, and the Camp Cachalot Wildlife Conservation Easement. We are also very pleased to see the DCR continuing to implement the Natural Heritage and Endangered Species Program 2007 Biodiversity of Myles Standish State Forest report's recommendation to improve and maintain habitat for pine barrens species.

We find only one weakness in the project. DCR has neglected to include a broad public outreach and education component for this project. SEMPBA and the Massachusetts Coastal Pine Barrens Partnership would like to offer our services at no cost to DCR. We can help publicize the ongoing restoration work, elicit active participation and engage the public in innovative outreach, educational programs, and pay

for interpretive signs and exhibits. Funding for our involvement in this project is possible through the US Forest Service Landscape Scale Restoration grant that SEMPBA has received along with our partners including Manomet (Center of Conservation Science), the Town of Plymouth, Mass Audubon, Tim Simmons Conservation Ecologist and Cape Cod Commission.

SEMPBA is offering to help DCR Forestry monitor the 13 units by capturing images using picture posts stationed in each unit and by periodic drone fly overs. Not only are these techniques known for being great tools for raising public awareness and engaging the community in restoration projects but allowing volunteer involvement helps build goodwill resulting in support for future management projects. Drone images and picture post photographs systematically collected by volunteers generate important scientific data for evaluating management techniques and tracking landscape changes over time.

We urge you to consider broadening this partnership to include SEMPBA and volunteers. We hope to gather images of the project areas and place picture posts in designated sites before the project begins, continue to capture images throughout the course of the project and a few years post treatment. We welcome the opportunity to plan our involvement and cooperate on the design of interpretive signs and programs that DCR staff determines to be most useful to the project.

Thank you for a great project. We look forward to supporting the restoration of the Myles Standish Complex in whatever way we can.

Sincerely,

Sharl Heller

Sharl Heller
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December 15, 2018

Submitted via email to: Jessica Rowcroft jessica.rowcroft@state.ma.us and paul.gregory@mass.gov and karen.nober@state.ma.us and env.internet@mass.gov and tori.kim@state.ma.us

Jessica Rowcroft, Project Manager

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1. Comments on Miles Standish Complex Ten Year Pine Barrens Restoration

2. Formal Notice of Deficiency of MEPA Process and Improper Application of Thresholds or Categorical Exclusion as it Relates to this Project

3. Formal Request for Agency Review under 301 CMR 11.12(1)

4. Formal Request for an Advisory Opinion under 301 CMR 11.01(6)(a)

5. Request for Public Records Concerning MA Administrative Procedures Act and Clear Identification of Process Available to the Public Under 801 CMR 1: Standard Adjudicatory Rules

Dear Ms. Rowcroft,

I am writing to comment on the proposed deforestation of the publicly-owned lands known as the Miles Standish State Forest located in Plymouth, Carver, and Wareham, MA.

1. Comments on Miles Standish Complex Ten Year Pine Barrens Restoration

The items listed below are specifically being provided so that they will be considered as part of the scope of the environmental analysis conducted for the proposed project. It is particularly important that a full and honest analysis of the project be conducted and that such analysis be disclosed to the Pubic, and that all analyses be well documented so that DCR can show that it has fully considered the potential impacts of this project on climate change, greenhouse gas emissions, compliance with section 3-D of the Global Warming Solutions Act. DCR must also be able to show the specific fiscal impact on the Commonwealth of Massachusetts budget from the actions proposed in the Forest Management Proposal dated November 1, 2018. All records related to the analysis for this project should be retained

as public records and made readily available for public review in accordance with the MA Public Records Law.

Climate Change and Forest Carbon Sequestration

Halting and reversing the increase of atmospheric carbon dioxide (CO2) and other greenhouse gases (GHG) to address climate change is an unprecedented challenge. The Paris Agreement on climate change,1 endorsed by the U.S. and almost 200 other countries, affirmed that it is critical to limit global temperature rise to well below a rise of 2 degrees Celsius beyond preindustrial levels. Article 5 of the Agreement declares that to achieve this goal, "Parties should

1 United Nations Framework Convention on Climate Change (UNFCCC). 2015. "Adoption of the Paris

Agreement" http://unfccc.int/resource/docs/2015/cop21/eng/l09.pdf

take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gasses…including forests." The Baker Administration has gone on record in support of the Paris Accords, including the pledge to protect forests from degradation.

The importance of forest protection in mitigating climate disruption is increasingly recognized by the scientific community. For example, Woods Hole Research Center has noted that "even complete cessation of fossil fuel use by 2100 might not be enough to limit global warming to 2 degrees Celsius," but that the proper management of tropical and temperate forests could "accumulate additional carbon, bringing the total accumulation to as much as 5 billion tons of carbon per year.2

2 Richard A. Houghton and Alessandro Baccini. 2015. Forest Restoration: The Bridge to a Fossil- Fuel-

Free Future. Woods Hole Research Center Policy Brief. May 2015
http://whrc.org/wpcontent/uploads/2015/06/PB_Restoration.pdf

3 J. Hansen, M. Sato, P. Hearty, R. Ruedy, M. Kelley, V. Masson-Delmotte, G. Russell, G. Tselioudis, J.

Cao, E. Rignot, I. Velicogna, B. Tormey, B. Donovan, E. Kandiano, K. von Schuckmann, P. Kharecha, A. N. Legrande, M. Bauer, and K-W Lo. 2016. Ice Melt, Sea Level Rise and Superstorms: Evidence from Paleoclimate Data, Climate Modeling, and Modern Observations that 2 °C Global Warming Could Be Dangerous, Atmos. Chem. Phys., 16, 3761-3812, doi:10.5194/acp-16-3761-2016
http://www.atmoschem-phys.net/16/3761/2016/acp-16-3761-2016.html

4 Daolan Zheng, Linda S. Heath, Mark J. Ducey, and Brett Butler. 2009. Relationships Between Major

Ownerships, Forest Aboveground Biomass Distributions, and Landscape Dynamics in the New England

Region of USA. Environmental Management Volume 45, Issue 2 , pp 377-386
http://link.springer.com/article/10.1007%2Fs00267-009-9408-3

Recent research provides scientific evidence that the impacts of continued global warming may well be even worse and occur even sooner than previously thought. For example, a paper published by 19 leading climate experts concludes that, "we have a global emergency" because human-caused increases in atmospheric concentrations of carbon dioxide likely will melt ice sheets far more rapidly than previously anticipated. The melting would, within the near future, raise sea levels by several meters,

arrest the North Atlantic Ocean circulation, and stimulate super storms.3 This research demonstrates the need to take immediate action to reduce atmospheric CO2 and other greenhouse gasses (GHG).

Massachusetts Public Lands have the potential to play a key role in efforts to address the climate crisis. Our state's forests are high in biomass density and carbon storage capacity.4 About 13 percent of the land base is in state ownership. This offers our Commonwealth an outstanding opportunity to provide leadership in the protection and restoration of forests to help mitigate climate change.

The DCR took a positive step several years ago with the Forest Futures Visioning Process (FFVP). The FFVP was meant to take a fresh look at the agency's forestry program and to help chart a new course for the management of state-owned forest lands.

DCR, with facilitation by the Massachusetts Office of Public Collaboration (MOPC), launched the FFVP in April 2009. The agency undertook this process at the suggestion of the DCR Stewardship Council, in response to public criticisms of some of DCR's forestry practices and in recognition of the need to engage the public in an active dialogue about land management within the DCR State and Urban Parks system. Led by a Technical Steering Committee (TSC) composed of individuals with a high level of expertise on issues, trends, and best practices in climate change, forest conservation and ecology, invasive species, landscape ecology, natural resource economics and law, recreation, silviculture, social policy, visual/aesthetics, watersheds, and wildlife habitat, and guided by an Advisory Group of

Stakeholders, the FFVP involved five public forums that were attended by over 500 individuals and received over 1,000 comments during the course of the process.

In its final recommendations report, the TSC encouraged DCR to embrace a "land management paradigm shift ... moving the Department's forest management towards a vision based on a more comprehensive suite of ecosystem services."...The TSC focused on the premise that DCR lands should be managed for the provision of ecosystem services to the public that are not consistently delivered by private lands. These services include: carbon sequestration….5

5 Massachusetts Department of Conservation and Recreation. 2012. Landscape Designations for DCR

Parks & Forests: Selection Criteria and Management Guidelines (p. 1-2)
http://www.mass.gov/eea/docs/dcr/ld/management-guidelines.pdf

6 Commonwealth of Massachusetts. Acts of 2008 Chapter 298. An Act Establishing the Global Warming

Solutions Act. https://malegislature.gov/Laws/SessionLaws/Acts/2008/Chapter298

7 Regional Greenhouse Gas Initiative. 2013. Offset Protocol U.S. Forest Projects

http://www.rggi.org/docs/ProgramReview/_FinalProgramReviewMaterials/Forest_Protocol_FINAL.pdf

The 2008 Massachusetts Global Warming Solutions Act (GWSA) includes specific targets for reducing emissions of carbon dioxide and other greenhouse gases (GHG).6 The GWSA calls for the Massachusetts Department of Environmental Protection (DEP) to publish a state GHG emissions inventory, including both emission sources and carbon sinks. Moreover, the GWSA establishes statewide goals that will achieve a reduction of between 10% and 25% below statewide 1990 GHG emissions by 2020 and 80% below 1990 GHG emissions by 2050.

To date, Massachusetts policy makers and agency officials have not risen to these challenges.

Although there is a broad global consensus that managing forests to maximize carbon sequestration is vital to mitigating disastrous climate disruption, state agencies have failed to take decisive action to address this issue. Instead of providing strong regulation of GHG emissions from forests, DEP has allowed DCR to continue a forest management program with no apparent requirement that it conduct an on-the-ground baseline carbon inventory, or that it ensures that its programs are helping to achieve GWSA GHG reduction goals. Despite the recommendations of the FFVP Technical Steering Committee and Advisory Group of Stakeholders, DCR has not made a "land paradigm shift."

Instead, as indicated by the forest management projects currently proposed by DCR, the agency has fallen back into business as usual, cutting our state forests with no apparent regard or accountability for carbon sequestration or climate impacts. This project, where 80-90% of the existing forest is proposed to be removed, will have an obvious and severe impact on the level of on-site carbon storage and the ability of the forest ecosystem to continue to sequester CO2 in increasing quantities. Such obvious impacts must be clearly considered, analyzed, and fully disclosed, in accordance with the law.

The Regional Greenhouse Gas Initiative (RGGI), established by the Commonwealth of Massachusetts and eight other states, offers guidance that could be followed by DCR to assess how its forest management projects affect forest carbon. RGGI includes a number of requirements and methods for quantifying the net climate benefits of such projects.7

- Standing live carbon (carbon in all portions of living trees)
- Shrubs and herbaceous understory carbon
- Standing dead carbon (carbon in all portions of dead, standing trees)
- Lying dead wood carbon
- Litter and duff carbon (carbon in dead plant material)
- Soil carbon
- Carbon in in-use forest products
- Forest product carbon in landfills
- Biological emissions from site preparation activities
- Mobile combustion emissions from site preparation activities
- Stationary combustion emissions from ongoing project operation and maintenance
- Biological emissions from clearing of forestland outside the project area
- Biological emissions/removals from changes in harvesting on forestland outside the project area
- Combustion emissions from production, transportation, and disposal of forest products

• Biological emissions from decomposition of forest products

To date, RGGI guidelines have assumed that burning forest biomass for energy is “carbon neutral.” Recent science, such as the 2010 Manomet study, commissioned by the

Commonwealth of Massachusetts8, has found that this is not the case. In fact, the Manomet study concluded that whole tree biomass burned as fuel results in greater net emissions of carbon dioxide than from fossil fuels. Consequently, prudent measurement of the carbon impacts of forest management activities should also include:

8 Manomet Center for Conservation Sciences. 2010. Massachusetts Biomass Sustainability and Carbon Policy Study: Report to the Commonwealth of Massachusetts Department of Energy Resources.

Thomas Walker (Ed.). Contributors: Peter Cardellichio, Andrea Colnes, John Gunn, Brian Kittler, Robert

Perschel, Christopher Recchia, C., David Saah, and Thomas Walker. Natural Capital Initiative Report NCI-2010- 03. Brunswick, Maine
http://www.mass.gov/eea/docs/doer/renewables/biomass/manometbiomass-report-full-lorez.pdf

• Biological emissions from burning of forest biomass as waste or for energy

DCR has a duty, consistent with the Paris Agreement, the GWSA, and the recommendations of the FFVP, to fully and seriously address the carbon and climate impacts of forest management and forest degradation. Before DCR starts any on-the-ground activities related to the proposed forest management project being considered, the agency must:

• describe how DCR plans to measure each of the RGGI factors listed above — as well as emissions from burning of forest biomass — before the project is begun, and how it will provide follow-up measurements after the project is completed;

• supply numerical data for each of these factors;

• explain how this project conforms with the mandate of the GWSA to collaborate with the DEP to monitor and regulate emissions of GHGs with the goal of reducing those emissions;

• provide estimates of the expected net carbon emission and sequestration impacts of this project by 2020 and 2050;

• if the proposed project does not maximize the amount of stored forest carbon, fully and transparently explain why DCR has concluded that the benefits from not doing so outweigh the costs; and

• offer an opportunity for public review and comment on these findings.

The days are past when forest management projects could be planned and executed by DCR with no regard for the global climate. While DCR refers to such projects as “management”, these activities can

also be categorized as forest degradation. In this specific case, the proposed “management” entails a type-conversion of the ecosystem on a landscape scale and

a level intensity that exceeds the commonly accepted threshold referred to as “deforestation”. Such forest management decisions made today will have climate implications for many decades to come. DCR is violating the Public Trust Doctrine and leaving a legacy to future generations by failing to protect our precious state forests and their vital capability to mitigate climate disruption.

Costs versus Benefits of Proposed Projects

DCR must provide dollar figures for each of the line items listed below.

Projected costs:

• Forester salaries and benefits

• Contract and/or seasonal forester salaries

• Vehicle operation and maintenance

• Supplies and equipment

• Related Bureau of Forestry office operating costs

• Boundary surveying

• Road building and maintenance

• Mitigation of invasive species, water quality degradation, soil erosion, etc. Projected revenue:

• Revenue from sale of trees cut

• Other sources of revenue

• Projected net costs versus revenue over life of project

If the costs of an individual project are projected to exceed revenues for the sale of trees cut, DCR needs to explain how the net benefits to the public justify such a loss to taxpayers. Such an analysis must include other public programs and services forgone in order to implement the forest management project. If it is claimed that there are broader economic benefits to society, such as increased carbon storage to mitigate climate change, then these benefits need to be specifically documented.

2. Formal Notice of Deficiency of MEPA Process and Improper Application of Thresholds or Categorical Exclusion as it Relates to this Project

This communication serves as a formal notice that the process DCR is using to comply with MEPA is flawed and will be subject to challenge, should the process not be corrected. DCR is failing to conduct an honest analysis of obvious and easily anticipated environmental impacts, as outlined in the above section, by relying on an obsolete loophole in MEPA regulations found at 301 CMR 11.03(1)(a)(1) –

“Direct alteration of 50 or more acres of land, unless the Project is consistent with an approved conservation farm plan or forest cutting plan or other similar generally accepted agricultural or forestry practices.” This loophole allows for projects which are conducted in accordance with an approved forest cutting plan and which follow Best Management Practices are considered exempt from environmental analysis and MEPA review. The use of this threshold or loophole is invalid because MEPA was revised in 2013 and includes specific language that requires consideration of climate change impacts - “the reasonably foreseeable climate change impacts of a project, including its additional GHG emissions".

However, while the MEPA regulations do mention GHG accounting, the regulations are not specific and rely on associated administrative actions to ensure proper accounting. This reliance on external programs fails to address the well-known impact that forest degradation and deforestation has on carbon emissions and ability of forests to sequester CO2. In addition, the

forest management BMPs have not been updated since MEPA was changed to require that impacts to climate change be considered and disclosed. The current BMPs were last revised in 2013 and do not address global warming, climate change or GHG emissions. There are no BMPs that specifically address forestry practices that ensure an annual aggregate reduction in GHG emissions. Even though the Global Warming Solutions Act (GWSA) was passed in 2008, and MEPA was revised in 2013, no attempt has been made by DCR to analyze and disclose such reasonably foreseeable impacts that forest degradation projects conducted on our publicly owned lands will have on climate change, global warming, and CO2 emissions. As recently as 2016, the Baker Administration issued Executive Order (#569) requiring revision of all regs and guidelines, but since then the DCR has not complied with this directive as it relates to consideration and disclosure of impacts related to climate change, global warming, and CO2 emissions. As such, the proposed “Business as Usual” mode of operation by DCR is in violation of law, regulation, policy, and Executive Order, and as such may not proceed until DCR conducts a full accounting of its activities in accordance with the GWSA prior to any irretrievable commitment of resources.

3. Formal Request for Agency Review under 301 CMR 11.12(1)

Pursuant to MEPA at 301 CMR 11.12(1), this is a formal request that DCR undertake a review and evaluation of its forest degradation and deforestation (so-called “forest management”) activities in light of the above comments and concerns raised by over 2000 members of the public in petitions to the Secretary, as it relates to this proposed project and also to the larger improperly segmented but highly related activities conducted under the timber program on publicly-owned lands.

4. Formal Request for an Advisory Opinion under 301 CMR 11.01(6)(a)

Pursuant to MEPA at 301 CMR 11.01(a), this is a formal request that the Secretary provide a section 11.01(6)(a) Advisory Opinion concerning the applicability of MEPA to this specific proposed 10-year project as well as the DCR forest degradation and deforestation (so-called “forest management”) program in its entirety, as outlined in this comment letter above, as well as the applicability of the anti-segmentation provision of MEPA as it relates to the common use and abuse of publicly owned lands being undertaken across the Commonwealth by DCR as part of a coordinated program to supply forest

products to private individuals or a class of men without conducting a meaningful analysis of the probably and likely cumulative impacts, as outlined in this letter.

5. Request for Public Records Concerning MA Administrative Procedures Act and Clear Identification of Process Available to the Public Under 801 CMR 1: Standard Adjudicatory Rules

Please provide all records that address the following areas:

A. -any determination or decision document, legal opinion, analysis, or other records that relate to the DCR's requirement to comply with the Global Warming Solutions Act, as it relates to this project or the overall forest degradation and deforestation (so-called "forest management") program being orchestrated by the DCR on publicly-owned lands.

B. -any records or documentation that pertains to the administrative procedure(s) available to the public concerning commenting on, being involved in, or participating in the planning process for the management of forest lands under the jurisdiction of DCR, including but not limited to the administrative appeal process or other options available pursuant to 801 CMR 1.

C. -any documents that pertain to the requirements of DCR to accept public comments and public input into the forest management process, and any records which explain how public comments are reviewed, considered, treated, dismissed, ignored, belittled, or rejected during the agency's internal review process.

D. -any documents or records that provide a legal opinion of the planning process that DCR follows during the initiation through implementation of the forest management activities conducted on publicly-owned lands.

E. -any documents or records that pertain to the application of MEPA thresholds or categorical exclusions relating to the analysis of environmental impacts of forest degradation or deforestation (so-called "forest management") activities conducted by DCR on publicly-owned lands, including compliance with analysis and disclosure of climate change, global warming, or GHG emissions.

F. -any records or documents that disclose the result of a GHG accounting or climate change analysis for the proposed project or for DCR as an agency, as it relates to forest degradation or deforestation (so-called "forest management") activities conducted by DCR on publicly-owned lands.

G. -any records or documents that pertain to the MEPA defined concept of segmentation of related projects or activities associated with the DCR forest degradation or deforestation (so-called "forest management") activities being planned and implemented by DCR on publicly-owned lands.

Thank you for the limited opportunity to provide comments on this proposed management project. Attached is a recent statement signed by 40 prominent scientists that directly relates to the question of forests in this age of climate chaos. Please incorporate it into your analysis process and when addressing the comments contained in this letter. It must be stressed that it is critical that the during the planning process all analysis be fully documented and then made publicly available for review before any decisions are made regarding the implementation of this project. The public must be fully involved in

the management of Our Public Lands. To do otherwise will result in the initiation of Administrative and Legal actions as required to bring DCR into compliance with applicable laws, regulations, and policies.

Sincerely,

Glen Ayers

Appendix:

Five Reasons the Earth's Climate Depends on Forests

Statement from Scientist Signatories

"The Intergovernmental Panel on Climate Change (IPCC) will issue a new report soon on the impacts of 1.5°C of global warming. Limiting average temperature rise to 1.5°C requires both drastic reduction of carbon dioxide (CO2) emissions and removing excess carbon dioxide from the atmosphere. While high-tech carbon dioxide removal solutions are under development, the "natural technology" of forests is currently the only proven means of removing and storing atmospheric CO2 at a scale that can meaningfully contribute to achieving carbon balance.

In advance of the IPCC report, we highlight five often overlooked reasons why limiting global warming requires protecting and sustainably managing the forests we have, and restoring the forests we've lost.

1. The world's forests contain more carbon than exploitable oil, gas, and coal deposits, hence avoiding forest carbon emissions is just as urgent as halting fossil fuel use. Recent research suggests that, in order to have a chance of limiting warming to 1.5°C, we cannot emit more than about 750 billion tons of CO2 in the coming century[i]. The carbon in readily exploitable fossil reserves could release 2.7 trillion tons[ii] of CO2 up to 2100. By comparison, forests store enough carbon to release over 3 trillion tons[iii] of CO2 if destroyed. And climate change itself makes forests more vulnerable, including to uncontrollable wildfires.

2. Forests currently remove around a quarter of the CO2 humans add to the atmosphere, keeping climate change from getting even worse. By destroying forests, we not only emit carbon dioxide but also lose the role forests play, through photosynthesis, in taking carbon dioxide out of the atmosphere. Of the 39 billion tons of CO2 that we emit into the atmosphere each year, 28%[iv] is removed on land (mostly by forests), and around a quarter by oceans. The remainder stays in the atmosphere. Maintaining and improving the management of existing forests is a critical part of climate change mitigation, with substantial additional benefits, including reducing air pollution, buffering against flooding, and conserving biodiversity.

3. Achieving the 1.5°C goal also requires massive forest restoration to remove excess carbon dioxide from the atmosphere. Reforestation and improving forest management together have large potential to remove CO2 from the atmosphere. These "natural climate solutions" could provide 18%[v] of cost-effective mitigation through 2030.

4. Bioenergy is not the primary solution[vi]. Achieving significant amounts of carbon dioxide removal through use of wood for energy and capturing the resulting carbon in geological reservoirs requires technology that is untested at large scale. In some areas, such as high carbon tropical forests and peatlands—both of which continuously remove carbon from the atmosphere—conservation is the best

option. Climate benefits could also come from increased use of sustainably produced wood in longer-lived products, such as buildings, where timber can store carbon and substitute energy-intensive materials like concrete and steel.

5. Tropical forests cool the air around them and the entire planet, as well as creating the rainfall essential for growing food in their regions and beyond[vii]. Standing forests pull moisture out of the ground and release water vapor to the atmosphere, regulating local, regional and global precipitation patterns and acting as a natural air conditioner[viii]. In contrast, cutting down tropical forests increases local surface temperatures by up to 3°C[ix]. These "climate regulation" effects of tropical forests make their conservation essential to protect food and water security.

In sum, we must protect and maintain healthy forests to avoid dangerous climate change and to ensure the world's forests continue to provide services critical for the well-being of the planet and ourselves. The natural technology forests provide underpins economic growth but, like

crumbling infrastructure, we've allowed forests to be degraded, even as we know that deferring maintenance and repair only increases the costs and the risk of disaster. In responding to the IPCC report, our message as scientists is simple: Our planet's future climate is inextricably tied to the future of its forests."

Signatories:

1. Paulo Artaxo, Physics Department, University of São Paulo

2. Gregory Asner, Department of Global Ecology, Carnegie Institution for Science and US National Academy of Sciences

3. Mercedes Bustamante, Ecology Department, University of Brasilia and Brazilian Academy of Sciences

4. Stephen Carpenter, Center for Limnology, University of Wisconsin-Madison

5. Philippe Ciais, Laboratoire des Sciences du Climat et de l'Environnement, Centre d'Etudes Orme des Merisiers

6. James Clark, Nicholas School of the Environment, Duke University

7. Michael Coe, Woods Hole Research Center

8. Gretchen C. Daily, Department of Biology and Woods Institute, Stanford University and US National Academy of Sciences

9. Eric Davidson, University of Maryland Center for Environmental Science and President of the American Geophysical Union

10. Ruth S. DeFries, Department of Ecology, Evolution and Environmental Biology, Columbia University and US National Academy of Sciences

11. Karlheinz Erb, University of Natural Resources and Life Sciences, Vienna (BOKU)

12. Nina Fedoroff, Department of Biology, Penn State University

13. David R. Foster, Harvard University

14. James N. Galloway, Department of Environmental Sciences, University of Virginia

15. Holly Gibbs, Center for Sustainability and the Global Environment, University of Wisconsin-Madison

16. Giacomo Grassi

17. Matthew C. Hansen, Department of Geographical Sciences, University of Maryland

18. George Homberger, Vanderbilt Institute for Energy and Environment

19. Richard Houghton, Woods Hole Research Center

20. Jo House, Cabot Institute for the Environment and Department of Geographical Sciences, University of Bristol.

21. Robert Howarth, Department of Ecology and Evolutionary Biology, Cornell University

22. Daniel Janzen, Department of Biology, University of Pennsylvania and US National Academy of Sciences

23. Carlos Joly, Institute of Biology, University of Campinas

24. Werner Kurz, Canada

25. *William F. Laurance, College of Science and Engineering, James Cook University*

26. Deborah Lawrence, Department of Environmental Sciences, University of Virginia

27. Katharine Mach, Stanford University Earth System Science

28. Jose Marengo, National Centre for Monitoring and Early Warning and Natural Disasters (CEMADEN, Brazil)

29. William R. Moomaw, Global Development and Environment Institute, Tufts University and Board Chair, Woods Hole Research Center

30. Jerry Melillo, Marine Biological Laboratory, University of Chicago

31. Carlos Nobre, Institute of Advanced Studies, University of São Paulo and US Academy of Sciences

32. Fabio Scarano, Institute of Biology, Federal University of Rio de Janeiro, and Brazilian Foundation for Sustainable Development (FBDS)

33. Herman H. Shugart, Department of Environmental Sciences, University of Virginia

34. Pete Smith, FRS, FRSE, University of Aberdeen, United Kingdom

35. Britaldo Soares Filho, Institute of Geosciences, Federal University of Minas Gerais

36. John W. Terborgh, Nicholas School of the Environment, Duke University

37. G. David Tilman, College of Biological Sciences, University of Minnesota

38. Adalberto Luis Val, Brazilian National Institute for Research of the Amazon (INPA)

39. Louis Verchot, International Center for Tropical Agriculture (CIAT)

40. Richard Waring, Department of Forest Ecosystems and Society, Oregon State University

The views expressed are those of the signatories as individuals and may not be regarded as stating an official position of their respective institutions.

[i] Millar, R. J., Fuglestvedt, J. S., Friedlingstein, P., Rogelj, J., Grubb, M. J., Matthews, H. D., … & Allen, M. R. (2017). Emission budgets and pathways consistent with limiting warming to 1.5 C. Nature Geoscience, 10(10), 741. https://www.nature.com/articles/ngeo3031/. Goodwin, P., Katavouta, A., Roussenov, V. M., Foster, G. L., Rohling, E. J., & Williams, R. G. (2018). Pathways to 1.5 C and 2 C warming based on observational and geological constraints. Nature Geoscience, 11(2), 102. https://www.nature.com/articles/s41561-017-0054-8. Tokarska, K. B., & Gillett, N. P. (2018). Cumulative carbon emissions budgets consistent with 1.5° C global warming. Nature Climate Change, 8(4), 296. https://www.nature.com/articles/s41558-018-0118-9.pdf. These recent sources use different statistical methods and base years, all resulting in median estimates of 200-208 GtC remaining for a 50-66% probability of 1.5° C.

[ii] Heede, Richard and Naomi Oreskes (2016). Potential emissions of CO2 and methane from proved reserves of fossil fuels: An alternative analysis. Global Environmental Change 36 (2016) 12-20.

[iii] Pan, Y., Birdsey, R.A., Fang, J., Houghton, R., Kauppi, P.E., Kurz, W.A., Phillips, O.L., Shvidenko, A., et al. (2011). A large and persistent carbon sink in the world's forests. Science 333, 988–993; Pan, Y., Birdsey, R.A., Phillips, O.L., Jackson, R.B. (2013). The structure, distribution, and bio mass of the world's forests. Annu. Rev. Ecol. Evol. Syst. 44, 593–622.

[iv] Le Quéré, C. et al (2018). Global carbon budget 2017. Earth System Science Data, 10, 405-448. https://www.earth-syst-sci-data.net/10/405/2018/

[v] Calculated from Griscom et al (2017). Natural climate solutions (Supplementary Information). Proc. Natl. Acad. Sci. U. S. A., 114, 11645–11650, doi:10.1073/pnas.1710465114. http://www.ncbi.nlm.nih.gov/pubmed/29078344. Categories included in the 18% mitigation potential (from the cost-constrained 2°C scenario) include reforestation, natural forest management, improved plantations, mangrove restoration, peatland restoration (assuming much of this was or is forested), trees in cropland and biochar. All natural climate solutions are assumed to ramp up at the same rate.

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From: Meg Sheehan
Sent: Tuesday, December 4, 2018 9:49 AM
To: Rowcroft, Jessica (DCR) <jessica.rowcroft@mass.gov>
Subject: Myles Standish State Forest Public Meeting

Hello Jessica,

Is there a way to submit written comments if one is unable to attend the public meeting tomorrow?

In particular, I would like to know whether there has been an environmental impact assessment of the greenhouse gas and climate change impacts of the forestry project and any proposed fire management. This should be done under the Global Warming Solutions Act.

In addition, I would like to know how much wood is being removed, whether it is being sold and if so to whom for what price and purpose.

Thank you.

Margaret E. Sheehan, Esq.