School of Environmental and Forest Sciences

UNIVERSITY *of* WASHINGTON

College of the Environment

Carbon Accounting and the Goodman Creek Unit

Throughout the quarter we have consulted with carbon-accountants, foresters, wood product specialists and forest simulator specialists to answer your questions of how much carbon is standing in the University of Washington's holding on the Olympic Peninsula- the Goodman Creek Unit, and, just as importantly, how this sequestered carbon can be accounted for in the University's books.

Alternatives of Goodman Unit Management

1. Baseline: Currently applied at the Goodman Creek Unit

Harvest Treatment: Every 5 years, 1.5%of the total area is clear-cut, leaving eight of the largest trees per acre. The total rotation time is 375 years.

2. No Management: To have an impression of carbon if no treatments were applied

Advantages: Maximize carbon & no investment is needed into forest treatments

Disadvantages: No income from timber harvest and increased risks of wind damage

3. Sustainable Forest Management: A moderate harvest prescription to offer an example of managing for some timber income, but also forest "health" and big trees.

Harvest Treatment: 16-17% of Goodman Unit stands (which would be about 65-70 stands) would be cut every 5 years; specifically, 70% of trees would be cut while 30% of the largest trees would be retained and 300 Douglas-fir seedlings/ acre would be planted.

Pre-commercial Thinning Treatment (PCT): PCT will be applied 10 years following harvest to remove small trees and promote larger tree growth.

- Remove trees between 0" – 8" diameter at breast height (DBH)
- Leave 150 tree per acre onsite

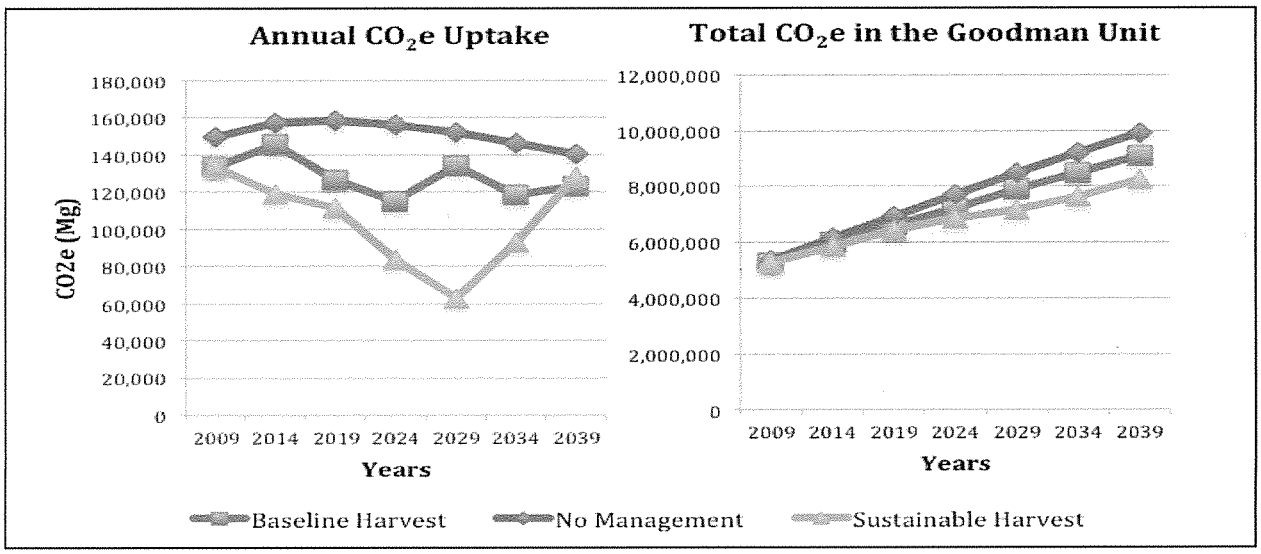
Carbon Calculations

The Landscape Management System (LMS) was used to simulate our three forest management scenarios for 30 years (2009 – 2039).

An Excel-based carbon calculator was then used to compute the total carbon and carbon uptake rates at five-year increments for each scenario.

- Total tree carbon was computed (stems, branches, roots and foliage)
- A homogeneous landscape was assumed in the model
- A 10% random sample was modeled, then results were multiplied by 10

Management Scenario	Average Annual Carbon Uptake (Mg CO2e)	Average Annual Timber Revenue	Range of Annual Timber Revenue
1. Baseline	127,157	$35,343	$10,500 - $58,000
2. No Management	151,659	$0	$0
3. Sustainable Forest Management	99,646	$28,749	$16,000 – $57,000



Certification

- Officially claiming offsets could make the University of Washington's carbon offset claims more credible.
- "Carbon offsets" are projects that mitigate or sequester carbon over long periods of time. Once carbon offsets are certified, a second certification must be obtained in order to sell or trade these offsets.
- A "carbon credit" is the purchase, sale, or trade of carbon offsets. Because the University of Washington is interested in claiming offsets and less interested in selling these offsets at this time, we will further examine carbon offsets.
- The certification process is done through a third party company that is approved to certify a carbon Certification Standard. When certifying carbon offsets, a "project" must be established, e.g. The Goodman Creek Unit.
- There are several certification standards for certifying carbon offsets. Some of these standards focus more on building construction and use (The Gold Standard), industrial plantations, community and biodiversity (Climate, Community and Biodiversity Standards) and other carbon offset projects that are not directly related to the Goodman Unit.
- The Climate Action Reserve includes protocol for improving forest lands, and therefore applies best to this project.
- There are three certification project types that Climate Action Reserve certify
    - Afforestation/Reforestation
    - Avoided Conversion

    - Improved Forest Management (The only valid project type since the Goodman unit already has trees on site and the unit is not going to be converted to something other than a forest.)
- The requirements for certification, however, do pose several challenges since the University of Washington does not directly own the land. Constant monitoring, clear timber/land rights, DNR cooperation, and sound management plans are some of the biggest concerns that need to addressed in order to achieve certification.

Wood Construction

- Wood is a carbon sink: it stores more carbon per volume than it releases during harvest, processing and transportation. Buildings with longer lifetimes and that are constructed with a high proportion of wood can achieve net zero carbon emissions.
- Wood buildings are energy efficient. This is significant considering most carbon emissions from buildings are a result of its energy use.
- Building with wood fulfills LEED standards and contributes to higher LEED ratings.
- Wood reduces cost of building because fewer materials are required and a shorter construction time is needed.
- Building with wood reduces emissions associated with landfill waste and demolition since it is more efficiently reused and recycled.
- We recommend that a wood-priority policy be implemented as an alternative to concrete and steel for new construction as a way to substantially reduce carbon emissions.

Thank you

Shannon Armitage
Brooke Cassell
Mathew Grund
Mikhael Kazzi
Hyunju Lee
Luyi Li
Josefina Narvaja
Eric Snoozy
Gregg Zimmerman

Advised by:
Dr. Gregory Ettl
Dr. David Ford