



ENVIRONMENTAL SERVICES, INC.

American Carbon Registry

Blandin Native American Hardwoods Conservation & Carbon Sequestration Project (ACR212) Validation and Verification Report

1 December 2015

Project Proponent/Landowner:

Blandin Paper Company
115 SW 1st Street
Grand Rapids, MN 55744

Validation and Verification Conducted by:

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Project No. VO15017.00



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1 Executive Summary

Environmental Services, Inc., (ESI) was contracted by Blandin Paper Company on 16 March 2015 to conduct the validation and first verification of the *Blandin Native American Hardwoods Conservation & Carbon Sequestration Project*. ESI prepared this Validation/Verification Report in accordance with the outlined requirements of the American Carbon Registry's (ACR) Forest Carbon Project Standard, Version 2.1 (November 2010). ESI presents validation and first verification findings for the *Blandin Native American Hardwoods Conservation & Carbon Sequestration Project* (herein referred to as the "Blandin project"). The project validation and first verification was conducted as part of ACR's program requirements for offset projects.

The Blandin project follows ACR framework to achieve Greenhouse Gas (GHG) emissions reductions through Improved Forest Management project (IFM). The project uses Improved Forest Management to lengthen rotation ages and cutting cycles and increase stocking levels, while promoting species diversity. Project lands are located within the counties of Itasca, St. Louis, Koochiching, Aitkin, Clearwater, Beltrami, and Cass in Minnesota.

The GHG Project Plan validation and first verification included carbon sequestered through IFM on 173,385.5 acres. The project asserts emissions reductions (sequestration) of 178,907 MtCO₂e for the first verification/monitoring period 28 July 2010 – 27 July 2014.

The validation/verification objective included an assessment of the likelihood that implementation of the planned GHG project would result in the GHG emission removal/enhancements as stated by the project developer (ISO 14064-3:2006). The objective was to ensure that the Blandin project was in compliance with the ACR Standard, Version 4, January 2015, v3 February 2014, version 2.1 (October 2010), the ACR Verification Guideline for GHG Projects, Version 1.0 (July 2010), the ACR Forest Carbon Project Standard, Version 2.1 (November 2010), and the Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands, August 2014, version 1.1 criteria.

ESI confirms all validation activities, including objectives, scope and criteria, level of assurance, and the GHG Project Plan's adherence to the ACR Forest Carbon Project Standard (Version 2.1) as documented in this report are complete. ESI concludes without any qualifications or limiting conditions that *Blandin Native American Hardwoods Conservation & Carbon Sequestration Project* GHG Project Plan meets the requirements of ACR's Standard and the Forest Carbon Project Standard Version 2.1 (November 2010).

ESI confirms all verification activities, including objectives, scope and criteria, level of assurance, and the project's adherence to the ACR Forest Carbon Project Standard (Version 2.1) and the validated GHG Project Plan as documented in this report are complete. ESI concludes without any qualifications or limiting conditions that the *Blandin Native American Hardwoods*

Conservation & Carbon Sequestration Project Monitoring Report (28 July 2010 – 27 July 2014) meets the requirements of ACR’s Standard and the Forest Carbon Project Standard Version 2.1 (November 2010).

The GHG assertion provided by the Blandin Paper Company and verified by ESI has resulted in the GHG emission removal of 178,907 MtCO₂e equivalents (Total Tradable Balance) by the project during the first verification period/reporting period (28 July 2010 – 27 July 2014).

2 Introduction

This Validation/Verification Report is prepared in accordance with the outlined requirements of the American Carbon Registry’s (ACR), Forest Carbon Project Standard, Version 2.1 (November 2010). ESI presents validation and first verification findings of the Blandin project – prepared by the Offset Project Technical Consultant (Section 2.1) on behalf of the Blandin Paper Company. The project validation and first verification was conducted as part of ACR’s program requirements for GHG offset projects (Improved Forest Management). ESI is accredited by the American National Standards Institute (ANSI) under ISO14065:2013 for greenhouse gas validation and verification bodies including ISO 14064-3:2006, ISO 14065:2013, and validation/verification of assertions at the project level for Land Use and Forestry (Group 3) and is an approved ACR Validation/Verification Body (VVB).

The GHG Project Plan validation and verification included carbon sequestered through IFM on 173,385.5 acres. The project asserts emissions removals (sequestration) of 178,907 MtCO₂e for 2010-2014.

2.1 Contact Information – Roles and Responsibilities

Project Landowner / Project Proponent: Blandin Paper Company	Joe Maher, Mill General Manager +1-218-327-6398 Joe.maher@upm.com +1-218-327-6482 115 SW First St. Grand Rapids, MN 55744 Cheryl Adams, Forest Resources Manager +1-218-327-6482 Cheryl.adams@upm.com 115 SW First St. Grand Rapids, MN 55744
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Offset Project Technical Consultant: TerraCarbon LLC	David Shoch, Director Forest & Technical Services +1-434-326-1144 David.shoch@terracarbon.com 700 Harris Street #201B Charlottesville, VA 22903
Accredited V/V Body: Environmental Services, Inc.	<ul style="list-style-type: none"> • Shawn McMahon – Lead Validator/Verifier (smcmahon@esinc.cc / 330-833-9941) • Richard Scharf – Validation/Verification Team Member (rscharf@esinc.cc / 252-402-7354) • Jonathon Pomp – Validation/Verification Team Member (jpomp@esinc.cc / 304-642-1277) • Guy Pinjuv – Validation/Verification Team Member (gpinjuv@esinc.cc / 503-459-1318) • Matthew Perkowski – Validation/Verification Team Member (mperkowski@esinc.cc / 301-332-0771) • Eric Jaeschke – Validation/Verification Team Member (ejaeschke@esinc.ccc / 703-314-9064) • Aaron Holley – Validation/Verification Trainee (aholley@esinc.cc / 681-285-5371) • Caitlin Sellers – Senior Internal Reviewer (csellers@esinc.cc / 772-834-8571) • Janice McMahon – QA/QC (jmcmahon@esinc.cc / 330-833-9941)

2.2 Project Description

By ACR definition, the Blandin project is considered an Improved Forest Management project (IFM). Project lands, totaling 173,385.5 acres, are located within the counties of Itasca, St. Louis, Koochiching, Aitkin, Clearwater, Beltrami, and Cass in Minnesota. The project improves forest management via implementation of Blandin Paper Company’s “Smart Forestry” practices guided by establishment of a conservation easement over the entire project area. These practices involve implementing longer rotations and cutting cycles. Also, a transition from even-aged management to uneven-aged management is implemented to promote species diversity. Increased stocking relative to the baseline will result from project implementation of improved forest management practices.

2.3 Objective

The validation/verification objective included an assessment of the likelihood that implementation of the planned GHG project would result in the GHG emission removal/enhancements as stated by the project developer (ISO 14064-3:2006). The objective was to ensure that the project was in compliance with the ACR Standard, Version 2.1 (October 2010), the ACR Verification Guideline for GHG Projects, Version 1.0 (July 2010), and the ACR Forest

Carbon Project Standard, Version 2.1 (November 2010) criteria. ESI assessed the GHG emission reductions of the IFM project.

2.4 Criteria

The criteria followed by ESI included ISO 14064-3, ISO 14065, and the validation/verification guidance documents provided by ACR located at <http://www.americancarbonregistry.org/carbon-accounting/standards>. These documents included:

- ACR Standard, January 2015 – v4.0
- ACR Forest Carbon Project Standard, November 2010 – v2.1
- ACR Validation and Verification Guidelines for GHG Projects, June 2012 – v1.1
- Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands, August 2014 – v1.1

2.5 Scope

The scope of the validation/verification generally included the GHG Project Plan and eligibility requirements; GHG project and baseline scenarios; physical infrastructure, activities, technologies and processes of the GHG project; GHG sources, sinks and/or reservoirs; types of GHGs; and time periods covered. The geographic scope was defined by the project boundary, which included multiple discrete parcels, the carbon reservoir types, management activities, growth and yield models, inventory program, and contract periods. The scope of the Blandin project in Minnesota is defined below.

Baseline Scenario	Aggressive industrial harvest – NPV maximisation at 6% discount rate
Activities/Technologies/Processes	Improved Forest Management
Sources/Sinks/Reservoirs	Above-ground biomass, below-ground biomass, harvested wood products, emissions from biomass burning, market leakage.
GHG Type	Carbon-dioxide (CO ₂)
Project locations	Itasca, St. Louis, Koochiching, Aitkin, Clearwater, Beltrami, and Cass Counties, Minnesota
Time Period	First Project Crediting Period: 28 July 2010 – 27 July 2030 Project Term: 28 July 2010 - 27 July 2050 Monitoring Period: 28 July 2010 – 27 July 2014
Project Boundary	173,385.5 acres State of Minnesota - mainly located within a 70-mile radius of Grand Rapids, in 7 different counties: Itasca, St. Louis, Koochiching, Aitkin, Clearwater, Beltrami, and Cass.

2.6 Level of Assurance

The level of assurance was used to determine the depth of detail that the validator/verifier (ESI) placed in the validation and verification plan to determine if there are any errors, omissions, or misrepresentations (ISO 14064-3:2006). ESI selected samples of data and information to be verified to provide reasonable assurance and to meet the materiality requirements of the IFM project (ACR Verification Guidelines for GHG Projects v1.1, June 2012). ACR considers verification to be a risk-based process where the verifier examines a sufficient amount of data and uses the verifier's professional judgment to provide a reasonable assurance.

2.7 Materiality

Materiality is a concept that the individual or aggregation of errors, omissions, and misstatements could affect the GHG assertion and the decisions of the intended users. Materiality was also used as part of the verification sampling plan design, to determine the type of verification processes used by ESI to minimize the risk of not detecting a material misstatement. ACR's materiality threshold is +/-5% of the GHG project's emission reductions or removal enhancements. In other words, ACR requires that any differences between emission reductions/removals claimed by the project proponent and estimated by the verifier be immaterial (less than +/- 5%). Individual or aggregation of errors or omissions greater than the ACR materiality threshold of +/-5% require re-stating before verification statements can be accepted by ACR.

3 Validation Process and Findings

3.1 Validation Process

The validation process closely followed the guidance provided by The American Carbon Registry, Forest Carbon Project Standard (Version 2.1), the Verification Guideline for GHG Projects (Version 1.1), ISO14064-3, ISO 14065, and the ESI Management System and Management System Manual, Section V.15. A project specific Validation and Verification and Sampling Plan (note combined with first verification) was developed to guide the validation auditing process to ensure efficiency and effectiveness. The purpose of the Validation and Verification and Sampling Plan is to present a risk assessment for determining the nature and extent of validation procedures necessary to ensure the risk of auditing error is reduced to a reasonable level.

As defined by ISO 14064-3:2006 (E), "validation is the systematic, independent and documented process for the evaluation of a greenhouse gas assertion in a GHG project plan against agreed validation criteria". Specifically the project validation included the review of the requirements outlined in the Forest Carbon Project Standard, Version 2.1 (November 2010). The assessment included the following items: eligibility criteria, baseline approach, additionality,

project boundary, emissions, leakage, selected methodology, data and parameters, monitoring plan design, and environmental impacts.

3.2 GHG Project Plan

The Blandin Project's GHG Project Plan was found to be in compliance with ACR's Forest Carbon Project Standard, Version 2.1. For validation of the GHG Project Plan, a 100% review of all aspects of the GHG Project Plan was performed.

3.2.1 ACR Standard Requirements/Eligibility

Prior to the initiation of the project validation, ACR first conducts its own assessment of meeting all applicable requirements. ACR issued an approval email for ESI to proceed with validation and verification of the Blandin project on 20 April 2015.

The Blandin project was found to be in compliance with ACR's project eligibility requirements set forth in ACR's Forest Carbon Project Standard, Version 2.1 [Chapter 3 (C)]. Specifically, the GHG Project Plan outlined and described the following aspects of the project:

- The project start date was 27 July 2010, which is after the earliest allowable start date of 1 November 1997.
- Blandin Paper Company commits to a minimum project term of 40 years, meeting the ACR project term requirement.
- The project employs the ACR Forest Carbon Project Standard v2.1 requisite 20-year initial crediting period.
- Ownership of offsets is clear.
- Ownership titling of land is clear.
- Project lands were forest at the project start date.
- Leakage is addressed using the ACR-approved methodology Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands.
- Permanence is addressed by the project through ongoing assessment of risk using the VCS AFOLU Non-Permanence Risk Tool (dated 04 October 2012, version 3.2).
- Additionality is demonstrated.
- Net positive community and environmental impacts are demonstrated.
- The project uses Improved Forest Management techniques to increase stocking relative to the baseline.

3.2.2 Approved Methodology

The Blandin project utilized the following methodology and tools:

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- *ACR Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands*, Version 1.1, August 2014
 - VCS AFOLU Non-Permanence Risk Tool v3.2, 04 October 2012.

ESI confirms that the project meets the applicability requirements of the methodology under which the project was validated and verified:

- The project is implemented on non-federally owned forestland within the United States.
- The project is implemented on lands that are subject to commercial timber harvesting activities by entities owning or controlling timber rights on forestland under a forest management plan
- The project is implemented on land owned by a private organization, which is certified by SFI.
- The project has not utilized non-native species where adequately stocked native stands were converted for forestry or other land uses after 1997.
- The project does not implement draining or flooding of wetlands.
- The project proponent has demonstrated its ownership or control of timber rights for a period not less than 12 months prior to the project start date.
- The project has demonstrated an increase in on-site stocking levels above the baseline condition by the end of the Crediting Period.

3.3 Validation Findings and Conclusions

The ESI validation/verification team identified 67 Non-Conformity reports (NCRs), Clarifications (CL), and Opportunities for Improvement. All were addressed satisfactorily by the Offset Project Technical Consultant during the project validation process. These NCR's and CL's provided needed clarity to ensure that the GHG Project Plan was in compliance with ACR's Standard (Version 4.0, January 2015) and Forest Carbon Project Standard (Version 2.1, November 2010).

The complete list of validation finding and resolutions has been compiled and located in Appendix A.

ESI confirms all validation activities including objectives, scope and criteria, level of assurance and the GHG Project Plan's adherence to the Forest Carbon Project Standard (Version 2.1), as documented in this report, are complete and concludes without any qualifications or limiting conditions that the Blandin Project meets the requirements of ACR's Standard and the Forest Carbon Project Standard Version 2.1 (November 2010).

4 Verification Process, Findings, and Conclusions

The verification process closely followed the guidance provided by The American Carbon Registry, Forest Carbon Project Standard (Version 2.1), the Verification Guideline for GHG Projects (Version 1.0), ISO14064-3 and ISO 14065, and the ESI Management System and Management System Manual, Section V.15. A project specific Validation and Verification and Sampling Plan (note combined with validation) was developed to guide the verification auditing process to ensure efficiency and effectiveness. The purpose of the Validation and Verification and Sampling Plan is to present a risk assessment for determining the nature and extent of validation procedures necessary to ensure the risk of auditing error is reduced to a reasonable level.

As defined by ISO 14064-3:2006 (E), “verification is the systematic, independent and documented process for the evaluation of a greenhouse gas assertion in a GHG project plan against agreed verification criteria”. Specifically the project verification included the review of the requirements outlined in the Forest Carbon Project Standard, Version 2.1 (November 2010). The assessment included the following items: eligibility criteria, baseline approach, additionality, project boundary, emissions, leakage, quantification of GHG reductions/removals, monitoring, data and parameters, and adherence to the project-level principals (relevance, completeness, consistency, accuracy, transparency, conservativeness).

ESI’s verification was generally broken down into four parts: desktop assessment, site visit, quantitative review, and meetings/interviews.

4.1 Desktop Assessment

The desktop verification component included a full review of all project documentation/calculations received from the Project Proponent, including the VCS Project Description Document. The validation/verification team reviewed the Blandin GHG Project Plan and Monitoring Report to assess conformance with the requirements of the Forest Carbon Project Standard (Version 2.1). Key factors that impacted the reported emissions reductions were identified and the Validation and Verification and Sampling Plan was utilized to focus on the critical elements presenting potential risk for errors in reported data. These elements included:

- Implementation of appropriate and adequate eligibility criteria, by reviewing documentation and field conditions indicative of the pre-project conditions of the project area, and compliance with all eligibility requirements of the Forest Carbon Project Standard.
- Implementation of appropriate and adequate baseline approach, by reviewing documentation and field conditions indicative of the most-likely without-project scenario.

- Implementation of appropriate and adequate approach/tools for additionality, by reviewing documentation and field conditions which reflect the most-likely without-project scenario, as it deviates from the with-project scenario.
- Implementation of appropriate and adequate approach to project boundary definitions, by reviewing documentation of project boundaries and ownership status, and field conditions relative to clearly delineated ownership extents and control over management activities within the project area.
- Implementation of appropriate and adequate approach to baseline emissions calculations, by reviewing documentation and field conditions which reflect the most-likely without-project scenario and the emissions resulting from that scenario.
- Implementation of appropriate and adequate approach to inventory calculations and modeling, by reviewing documentation, reviewing conversion factors, and re-running selected calculations and modeling
- Implementation of appropriate and adequate monitoring, by confirming the application of approved/acceptable monitoring practices in the field, and the appropriate handling and analysis of field data once collated.
- Implementation of appropriate and adequate approach to data and parameters, by reviewing data handling practices, and reviewing documentation at each step of the data analysis procedure.
- Implementation and adherence to project-level principles, by reviewing documentation and discussing the application of project-level principles with core staff.

A complete list of documents received and reviewed is located in Appendix B.

4.2 Site Visit

Field sampling and techniques were based on the project parameters, scope, and best professional judgment of the validation/verification team in order to meet a reasonable level of assurance. A risk-based approach was used for the field sampling effort to select key areas for review of carbon losses by direct measurement, observation, followed by ground assessment of leakage issues and review of project activities.

ESI conducted an on-site assessment of the project lands on 11 – 15 May 2015. The site visit was used to review project records with representatives of Blandin Paper Company, discuss the calculation of carbon pools and sinks, visit portions of the ownership for reconnaissance and collect a subset of inventory data, to conduct a field review of the inventory standard operating procedures (SOPs), and project monitoring approach.

For the site visit, 3 strata were targeted for collection of sample data, with 15 plots in each. Direct measurements were taken based on the project's Inventory SOPs to sufficiently capture a detailed review of the field measurement methodology. Issues identified during the site visit

related to inventory design, inventory implementation procedures, and carbon stock estimates were resolved through the NCR/CL/OFI process described in Section 3.3. The data collected during the site visit were sufficient to satisfy the professional discretion of the Lead Verifier and to achieve reasonable assurance.

4.3 Quantitative Review

ESI focused on the quantitative analyses undertaken by the Offset Project Technical Consultant to assess the carbon pools accounted for by the project (above-ground biomass, below-ground biomass, deadwood (see below deviation explanation), and wood products). ESI's review included an assessment of the primary quantitative data supporting the GHG assertion including the direct sampling of soil and biomass carbon and the use of modeling, as well as the project Offset Project Technical Consultant's use of allometric methods and equations for calculating tree biomass, and the calculation of ERTs.

During the site visit, the verification team noted that standing dead heights were not measured correctly, decay class 4 was incorrect, and Excel workbook computational procedures were also incorrect. As a result of this finding, the Offset Project Technical Consultant reached out to ACR and received a determination on 14 October 2015 for deviation approval. ACR's determination was to permit exclusion of the standing dead wood pool from the baseline and with-project case for the present validation and first verification. ACR issued formal guidance in the document "ACR Methodology Deviation Request_ UPM Blandin Oct2015 with Determination.pdf" which outlined the non-conformity, proposed deviation, and ACR determination. The verification team performed a re-check of all project quantification worksheets and confirmed that the standing dead pool was no longer included for the baseline and project cases.

4.4 Meetings/Interviews

During the course of the project verification, ESI and Blandin Paper Company held multiple meetings. All other correspondence occurred via email. The details of the meetings are briefly described in the table below.

Date	Attendees	Topics Discussed
21 April 2015	Shawn McMahon (ESI) Matthew Perkowski (ESI) Cheryl Adams (Blandin Paper Company) Jamie Eaton (TerraCarbon*)	Pre-Site Visit Meeting Site visit logistics, lodging, travel, etc.



29 April 2015	Shawn McMahon (ESI) Matthew Perkowski (ESI) Cheryl Adams (Blandin Paper Company) Jamie Eaton (TerraCarbon)	Opening Meeting Preliminary review of verification and sampling plan, site visit details, project timeframes and deadlines.
05 June 2015	Shawn McMahon (ESI) Matthew Perkowski (ESI) David Shoch (TerraCarbon)	Modeling Call Overview of modeling, FVS calibration and projections, inventory, NPV, and legal constraints.
02 July 2015	Shawn McMahon (ESI) Eric Jaeschke (ESI) Matthew Perkowski (ESI) David Shoch (TerraCarbon)	NCR Round 1 Call Discussion of Round 1 NCRs
22 July 2015	Shawn McMahon (ESI) Eric Jaeschke (ESI) Matthew Perkowski (ESI) David Shoch (TerraCarbon)	NCR Round 1 Call TerraCarbon Responses Discussion of Round 1 NCRs and responses from TerraCarbon
23 September 2015	Shawn McMahon (ESI) Eric Jaeschke (ESI) Matthew Perkowski (ESI) David Shoch (TerraCarbon)	NCR Round NCR Call Discussion of Round 2 NCRs
01 December 2015	Shawn McMahon (ESI) David Shoch (TerraCarbon) Cheryl Adams (UMP)	Closing Meeting - Review of draft validation/verification report - Next steps - Request feedback on process

*Offset Project Technical Consultant

4.5 Verification Milestones

Project/Verification Activity	Date
ESI Internal Conflict of Interest (COI) process completed and approved (no issues).	3/19/2015
ACR approval of ACR-Specific COI Form	4/17/2015
ACR issues Certification	4/21/2015
Submission of Verification and Sampling Plan to Blandin Paper Company for approval	4/19/2015
Opening meeting with Blandin Paper Company	4/29/2015
Field Verification	5/11 – 5/15 2015
NCR/CL/OFI Round 1 submitted	6/22/2015
Round 1 Responses from Offset Project Technical Consultant received	8/19/2015
NCR/CL/OFI Round 2 submitted	9/18/2015
Round 2 Responses from Offset Project Technical Consultant received	10/19/2015
ESI completes Review	11/18/2015
Draft verification report submitted to Project Proponent/Offset Project Technical Consultant for review	11/30/2015
Closing Meeting with Project Proponent/Offset Project Technical Consultant	12/01/2015
ESI finalizes report and submits to ACR and Blandin Paper Company	12/01/2015

4.6 ACR Forest Carbon Project Standard Requirements

4.6.1 Eligibility Requirements

The Blandin Project is an IFM project that is intended to enhance carbon stocks in the project area through lengthening rotation age and harvesting cycles. The Blandin IFM Project is in compliance with ACR's project eligibility requirements set forth in ACR's Forest Carbon Project Standard, Version 2.1 [Chapter 3 (C)]. Specific details are located in the Validation portion of this report, Section 3.2.1.

4.6.2 Additionality

ESI confirms that the Blandin Project conducted the proper additionality analysis and conforms to the additionality requirements prescribed in ACR *Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands*, Version 1.1, August 2014. The Offset Project

Technical Consultant sufficiently demonstrated in the GHG Project Plan and through the verification process that as of the project start date that the project activities exceed enforced laws and regulations, exceed common practice in the geographic region and forest type and faced a financial implementation barrier.

4.6.3 Permanence and Risk Mitigation

Blandin Paper Company commits to a 40-year agreement with ACR. ESI confirms that Blandin Paper Company adequately addressed other potential causes of unintentional reversals including tree death from wildfire, disease, drought, or wind.

For the Blandin project the Offset Project Technical Consultant utilized the ACR-approved risk assessment tool. The approved tool employed was the *VCS AFOLU Non-Permanence Risk Tool, Version 3.2*. ESI reviewed and assessed the implementation and outputs of the tool provided by the Offset Project Technical Consultant and agrees with the overall project risk rating of 0.5 (sum of internal, external, and natural risk totals), which equates to a default non-permanence risk deduction buffer withholding of 10%.

4.6.4 Baseline and Leakage

The validation/verification team confirms the project baseline as the continuance of aggressive industrial harvesting regime.

The validation/verification team confirms the leakage assertions made within the GHG Project Plan. Leakage was limited to market leakage, as no activity-shifting leakage beyond the *de minimis* threshold is permitted, as prescribed by the Improved Forest Management Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands version 1.1 (August 2014). A review of the project's SFI certification demonstrated that no activity shifting leakage was noted in Blandin's operations. Market leakage is based upon the difference between the project scenario harvested wood products volume and the baseline scenario harvested wood products volume.

4.6.5 Monitoring

The validation/verification team confirmed the appropriateness and implementation of GHG Project Plan monitoring plan, which details monitored data and parameters, measurements, timing, and data storage methods. The extent of monitoring performed by the project included maintenance of the SFI Certification, harvest activity updates and emission reduction accounting updates.

A detailed review of the Blandin project Monitoring Report was performed including examination of project implementation status, data and parameters, and quantification of GHG emission reductions and removals.

4.6.6 Community and Environmental Impacts

The validation/verification team confirms the Blandin project's net positive community and environmental impacts. Blandin Paper Company allows for recreational use of the property and partners each year with the National Ruffed Grouse Society to provide areas for their annual hunt. They also facilitate ongoing research through a research partnership with the University of Wisconsin-Madison, and are involved in cooperative research with the Natural Resources Research Institute and the National Council on Air and Stream Improvement.

4.6.7 Stakeholders Comments

The validation/verification team reviewed stakeholder outreach methods through the Blandin Stakeholder Advisory Group. This group is made up of; MN DNR, The Conservation Fund, Forest History Center, MPCA, 2 Legislators, NRRI, MP, 2 City of Grand Rapids officials, USFS, and 2 citizens at large. Blandin Paper Company hold several meeting a year for stakeholders to receive updates and learn about the project results, as well as give feedback to Blandin Paper Company on possible improvements to their program.

4.6.8 GHG Emissions Reduction and Removal Enhancements (ERTs) for the monitoring period 28 July 2010 to 27 July 2014

ACR Account Year	Emission Reductions	Total Tradable Balance*
2010		-
2011	(118,319.8)	-
2012	151,865.2	33,545
2013	(74,343.9)	33,545
2014	219,706.1	178,907
Total	178,907.6	178,907

*Net of buffer allocation

4.7 Verification Findings

The ESI verification team identified 67 non-conformity reports (NCRs) and clarifications (CL). All were addressed satisfactorily by Blandin Paper Company during the project validation process. These NCR's and CL's provided needed clarity to ensure that the project was implemented in accordance to the validated GHG Project Plan and was in compliance with ACR's Standard (Version 2.1, October 2010) and Forest Carbon Project Standard (Version 2.1, November 2010).

The complete list of verification finding and resolutions has been compiled and located in Appendix A.

4.8 Verification Results/Conclusions


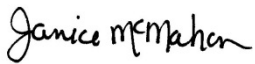
ESI confirms all verification activities including objectives, scope and criteria, level of assurance and the project's adherence to the Forest Carbon Project Standard (Version 2.1) and the validated



GHG Project Plan, as documented in this report, are complete and concludes without any qualifications or limiting conditions that the *Blandin Native American Hardwoods Conservation & Carbon Sequestration Project* meets the requirements of ACR's Standard and the Forest Carbon Project Standard Version 2.1 (November 2010).

The GHG assertion provided by the Blandin Paper Company and verified by ESI has resulted in the GHG emission removal of 178,907 MtCO₂e by the project during the verification period/reporting period (28 July 2010-27 July 2014).

Submittal Information:

Report Submitted to:	Blandin Paper Company American Carbon Registry
Report Submitted by:	Environmental Services Inc. Corporate Office 7220 Financial Way, Suite 100 Jacksonville, Florida 32257
ESI Lead Validator/Verifier Name and Signature:	 Shawn McMahon Lead Verifier
ESI Sr. Vice President/Technical Director Name and Signature	 Janice McMahon Sr. Vice President/Technical Director Forestry, Carbon and GHG Services Division
Date:	01 December 2015

SMM/EJ/JPM/rb/VO15017.00-Blandin-ACR Proj Val_Ver report-Final-20151201.doc
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Appendix A – ESI's Validation and Verification Findings

Item Number	1
ACR Standard Version 4.0 January 2015	Managing Data Quality
ACR Standard Version 4.0 Detail January 2015	The Project Proponent shall establish and apply quality assurance and quality control (QA/QC) procedures to manage data and information, including the assessment of uncertainty, relevant to the project and baseline scenarios. QA/QC procedures shall be outlined in the GHG Project Plan.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP Section D1
ESI Findings - Round 1 (22 June 2015)	QA/QC procedures provided for 3 of the 4 monitored parameters.
Round 1 NCR/CL/OFI	NCR: Please provide QA/QC procedures for CP,HWP,t.
Round 1 Response from Project Proponent (20 August 2015)	QA/QC procedures now provided for parameter CP,HWP,t. "Harvest volumes cut and delivered to the mill will be either (1) weighed at the mill on scales tested annually by the state of Minnesota Division of Weights and Measures and converted to wood volume in Cengea, or (2) directly scaled to volume by log scalers certified by the Minnesota Division of Weights and Measures."
ESI Findings - Round 2 (18 September 2015)	The GHG Plan now references suitable QA/QC procedures for the parameter CP,HWP,t. The item is addressed.
Round 2 NCR /CL/OFI	OFI: A reference to the Cengea resource planning and management software (i.e. website) might be useful to the reader.
Round 2 Response from Project Proponent (19 October 2015)	
Final ESI Findings (18 November 2015)	No response was given for this item and no action is needed. The item is addressed.

Item Number	2
ACR Forest Carbon Project Standard Version 2.1 Section November 2010	Direct Emissions

ACR Standard Version 4.0 Detail January 2015	<p>The Project Proponent is the individual or entity that undertakes, develops, and/or owns a project. The Project Proponent and forest landowner owner may be the same or different entities.</p> <p>The Project Proponent shall document that effective control exists over the GHG sources and/or sinks from which the reductions/ removals originate. The Project Proponent need not own the forest lands or GHG sinks thereon, provided the Project Proponent can document that control over GHG sources and sinks, land title, and offset title is clear, unique, and uncontested.</p>
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP Section A8
ESI Findings - Round 1 (22 June 2015)	Project proponent is different from landowner where the project proponent appears to assert control over the carbon crediting. Documentary evidence is needed to illustrate that the project proponent is granted control over the GHG sources and sinks, land title, and offset title.
Round 1 NCR/CL/OFI	CL: Please clarify the relationship between the project proponent and the landowner. In doing so, please provide documentary evidence that demonstrates the project proponent has control over the offset title and related materials.
Round 1 Response from Project Proponent (20 August 2015)	We have corrected the GHG Plan and monitoring report to clarify that Blandin Paper Company is both the project proponent and the landowner. Offset title is established by both land title and by Section 4.2 of the conservation easement that explicitly states that Blandin Paper Company retains rights to carbon credits.
ESI Findings - Round 2 (18 September 2015)	Instances of "UPM" throughout the GHG Plan and Monitoring Report have been appropriately revised to state "Blandin." Section A8 of the GHG Plan states Blandin Paper Company is both the Project Proponent and Project Landowner. The item is addressed.

Item Number	3
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	A1. SCOPE AND DEFINITIONS
ACR Standard Version 4.0 Detail January 2015	This methodology is designed to quantify GHG emission reductions resulting from forest carbon projects that reduce emissions by exceeding baseline forest management practices. Removals are quantified for increased sequestration through retention of annual forest growth when project activities exceed the baseline.

Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx - Section B1
ESI Findings - Round 1 (22 June 2015)	This is not a formal requirement but more broad introduction to the purpose of the methodology. In Section B1 of the Project Plan, the developers name the methodology but do not specify the version or date.
Round 1 NCR/CL/OFI	OFI: Please state the version and date of the IFM methodology in Section B1 of the Project Plan.
Round 1 Response from Project Proponent (20 August 2015)	We have clarified in the Project Plan the version and date of the IFM methodology used.
ESI Findings - Round 2 (18 September 2015)	Version and publish date of the IFM methodology is now included in Section B1. of the GHG Plan. The item is addressed.

Item Number	4
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	A2. APPLICABILITY CONDITIONS
ACR Standard Version 4.0 Detail January 2015	Project proponent must demonstrate its ownership or control of timber rights for a period not less than 12 months prior to the project start date.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section B.2
ESI Findings - Round 1 (22 June 2015)	Section B2 of the Project Plan states, "The entire project area has been under UPM ownership since fall of 2008 (the last land purchase by UPM), more than 12 months prior to July 28 2010." This criteria requires a demonstration this requirement is met.
Round 1 NCR/CL/OFI	CL: Please provide verifiable materials that demonstrate ownership or control of timber rights for 1 year or greater prior to the project start date.

Round 1 Response from Project Proponent (20 August 2015)	At the time of signature of the conservation easement in July 2010, title insurance was in effect for all lands under the easement (and remained in effect for 6 months thereafter). Title insurance established at the project start date that all lands under the easement were under uncontested ownership by Blandin. All project lands are under the easement, and no individual parcel was acquired by Blandin later than January 2, 2009 when the appraisal for all properties under the easement was conducted (the methodology requires that all project lands are under Blandin ownership on or before July 28 2009). All the lands in the easement had to be owned by Blandin to be in the appraisal, which was conducted to set state of Minnesota budget allocation for the easement. A copy of the title insurance (which is exhibit A of the easement) was given to ESI during its site visit in May 2015.
ESI Findings - Round 2 (18 September 2015)	Title insurance, as reviewed by auditors during the site visit, is sufficient to address this requirement. Ownership was granted approximately 1.5 years prior to start date of 28 July 2010 and occurred in the fall of 2008. The item is addressed.

Item Number	5
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	A3. POOLS AND SOURCES
ACR Standard Version 4.0 Detail January 2015	CH- Burning of biomass-Included-Non-CO2 gas emitted from biomass burning
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section B.4
ESI Findings - Round 1 (22 June 2015)	PD states that it is not included, as logging slash will not be burnt on the site. The methodology requires the inclusion of CH4 due to burning. As per the ACR Standard, "ACR will not permit, on a project-specific basis, changes to requirements related to additionality assessment or baseline establishment." As this applies to the baseline, exclusion of this pool does not appear to be an acceptable deviation.
Round 1 NCR/CL/OFI	NCR: Please include the greenhouse gas CH4 due to burning, as required by the methodology.
Round 1 Response from Project Proponent (20 August 2015)	GHG Plan Section B4 now specifies that CH4 due to burning is an included pool (but conservatively assumed to be zero in the baseline).



ESI Findings - Round 2 (18 September 2015)	The GHG Plan now includes the required Emissions from Biomass Burning pool. Conservative exclusion of biomass burning in the baseline is appropriate, no burning is expected in the with-project scenario as this is not in line with Blandin management objectives as stated in the GHG Plan. The item is addressed.
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Item Number	6
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	A3. POOLS AND SOURCES
ACR Standard Version 4.0 Detail January 2015	Activity Shifting Timber-Harvesting-Excluded Project Proponent must demonstrate no activity-shifting leakage beyond the de minimis threshold will occur as a result of project implementation.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section B.4, E.3
ESI Findings - Round 1 (22 June 2015)	PD Section E.3 states that no activity shifting leakage is demonstrated by certification under SFI following Section D6 of the methodology. This demonstration requirement for no leakage using SFI certification must apply to all Blandin paper company lands with active timber management plans.
Round 1 NCR/CL/OFI	CL: Please provide documentation that asserts SFI certification over all of Blandin Paper Company lands with active timber management programs.
Round 1 Response from Project Proponent (20 August 2015)	All lands subject to timber management by Blandin are under the conservation easement and are certified under SFI. SFI certificates from 2005 to 2015 have been provided to document this response. No new lands have been purchased by Blandin since the conservation easement was established, and the lands under the easement may not be subdivided (or new lands entered into the existing easement). Note that per the conservation easement, compliance with forest management restrictions in Sections 7.1 and 7.2 of the conservation easement must be demonstrated by either holding forest certification by an internationally-recognized forest certification program (Section 7.3), or through State of Minnesota oversight of forest management planning and implementation (Section 7.4). Since the project start date through the 2014 monitoring event, the Blandin forest has met these requirements through continuing certification under SFI.

ESI Findings - Round 2 (18 September 2015)	Certificate of Registration SFI Certificates were provided in response to this finding and serve to demonstrate overlapping certification since 2006 through 2017 for the project area. SFI certification also extends to a) "Forest management activities- Planning harvesting, transportation and silviculture on Blandin feeland and procurement of fiber from the Lake States and Ontario -Objective 1-20." (expires 02 July 2017) and b) "The sustainable Forestry Initiative® Standard (SFIS-2010-2014) as it applies to Blandin's Forestry Operations, including the integration of forest planning, wood procurement, harvest and delivery of forest products, silviculture, and forest renewal activities." (expired 03 July 2014). These SFI certificates are sufficient to demonstrate that Blandin Paper Company (entity-wide) management certification of sustainable practices which has active timber management programs. Therefore, leakage is appropriate de minimis following the Methodology. The item is addressed.
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Item Number	7
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	A3. POOLS AND SOURCES
ACR Standard Version 4.0 Detail January 2015	Market Effects Timber-Included-Reductions in product outputs due to project activity may be compensated by other entities in the marketplace. Those emissions must be included in the quantification of project benefits.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	PD Section B.4
ESI Findings - Round 1 (22 June 2015)	Market effects are quantified by the project as the only source of leakage. This emissions source should also be listed in Section B4 of the PD. Please also refer to Sections D.6 and D.7.
Round 1 NCR/CL/OFI	CL: Please include market leakage as an emissions source and a short justification in Section B4 of the PD.
Round 1 Response from Project Proponent (20 August 2015)	GHG Plan Section B4 now specifies market leakage as an emission source included in the project accounting boundary and explains the rationale.
ESI Findings - Round 2 (18 September 2015)	Section B4. of the GHG Plan now includes the market leakage pool, its inclusion and justification statement - assuming demand is constant less wood harvested in the project scenario results in wood supply elsewhere increasing. The item is addressed.

Item Number	8
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	B1. PROJECT ELIGIBILITY
ACR Standard Version 4.0 Detail January 2015	This methodology applies to non-federal U.S. forestlands that are able to document 1) clear land title or timber rights and 2) offsets title. Projects must also meet all other requirements of the ACR Standard and ACR Forest Carbon Project Standard.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Project Plan
ESI Findings - Round 1 (22 June 2015)	Blandin Paper Company holds clear land title and timber rights, however it is unclear who holds the offset title.
Round 1 NCR/CL/OFI	CL: Please provide the offset title per this requirement.
Round 1 Response from Project Proponent (20 August 2015)	Offset title is established by both land title and by Section 4.2 of the conservation easement that explicitly states that Blandin Paper Company retains rights to carbon credits. The easement has been provided to ESI and ESI has conducted a spot check of parcel titles during its May 2015 site visit.
ESI Findings - Round 2 (18 September 2015)	The Conservation Easement (CE), Conservation Easement - Itasca Co - Recorded.pdf," provided in Section 4.2 specifically grants the provision of carbon sequestration credits. This permission is justifiably based upon carbon credit generation is subordinate to the CE, doesn't result in physical harm to the "Conservation Values, and is in conformance with the CE. Here it is clear that Blandin Paper Company holds the land title and offsets title following the rights outlined in the CE. The item is addressed.

Item Number	9
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	B1. PROJECT ELIGIBILITY

ACR Standard Version 4.0 Detail January 2015	Proponents must use the U.S. Forest Service Forest Inventory & Analysis Program definition to demonstrate the project area meets the definition of Forestland conditions. Forestland is defined as land at least 10 percent stocked by forest trees of any size, and not currently developed for non-forest uses.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin_ProjectArea_2014.07.11b
ESI Findings - Round 1 (22 June 2015)	Stratification and canopy cover of the project area was reviewed by verifiers using 2013 NAIP full color imagery. During review, verifiers noted stands of non-forest included in the project area where this requirement states it must be forestland with at least 10% stocking. Stands 53270205, 53241901, 53242003 appears to be a clear cut with <10% stocking and should be removed from the project area. Other stands have poorly delineated stand boundaries where substantial amounts of non-forest was included, for instance Stand 53270319, 53243229, 53243120, 53242951, 60240837. Some instances of non-forest are scrub-shrub wetlands and unable to support a forest. However, other non-forested areas are clearly recent harvests.
Round 1 NCR/CL/OFI	NCR: Please fix all instances of non-forest present in the project area which do not meet this requirement for definition of forest. Please also provide a harvest shapefile or similar to confirm locations of harvests within the project area during the reporting period.
Round 1 Response from Project Proponent (20 August 2015)	See full response to this finding in accompanying document "narrative responses to Blandin findings.doc."
ESI Findings - Round 2 (18 September 2015)	The document "narrative responses to Blandin findings 19Aug.docx" was supplied in response to this finding. Project proponents removed not only 78.76 of water bodies from the project area but also uninventoried parcels. Newly delineated project boundaries were submitted and reviewed in ArcMap and compared against the USGS National Hydrography dataset waterbodies features. Waterbodies have been appropriately excluded from the project area in all cases. Auditors agree with the project proponents assertion of harvest area exclusion, these areas are indeed temporarily unforested and no action is needed. The item is addressed.

Item Number	10
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	B2. PROJECT GEOGRAPHIC BOUNDARY



ACR Standard Version 4.0 Detail January 2015	The Project Proponent must provide a detailed description of the geographic boundary of project activities. Note that the project activity may contain more than one discrete area of land, that each area must have a unique geographical identification, and that each area must meet the eligibility requirements. Information to delineate the project boundary must include:
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	GHG Plan UPM Blandin Native American Hardwoods Conservation & Carbon Sequestration Project Final.pdf - Section A4, Blandin_PA_2014.07.11b.shp
ESI Findings - Round 1 (22 June 2015)	<p>The project plan contains a sufficient detailed description of the discrete geographic boundaries, including a map (Figures A1 and A2) and shapefile (Blandin_PA_2014.07.11b.shp). Verifiers noticed, and there is a statement in the project plan explaining, the discrepancy in acreage between the inventory and GIS computations. Since GIS computed areas form the basis for most pre-stratification inventory planning, additional information is requested to justify the georeferencing/orthorectification error and to correct it for consistent acreage for project accounting and reporting. Discrepancies in acreages are generally rectified during post-inventory stratification corrections.</p> <p>Bias in geospatial representation may be significant on the ground due to the large size and discrete parcelized nature of the project area.</p>
Round 1 NCR/CL/OFI	CL: Please justify why the project has chosen to use different acreages for inventory quantification related elements and reporting, as well as whether this issue can be fixed for consistency and accuracy. Else, please fix acreages to be applied consistently across all project computations.
Round 1 Response from Project Proponent (20 August 2015)	We have corrected the project area to conform exactly with the forest inventory sample area, now excluding all areas (a ~1% reduction) that did not receive representation in sampling, and revised total and strata acreages. The new project area is 173,464.3 acres (from 175,300.6 acres).
ESI Findings - Round 2 (18 September 2015)	Auditors reviewed the file "Blandin_PA_2015.07.14" provided in response to this finding. The areas reported in project documentation and in all computation files are correctly reflective of the revised project area and associated stand acreages. The item is addressed.

Item Number	11
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	B2. PROJECT GEOGRAPHIC BOUNDARY

ACR Standard Version 4.0 Detail January 2015	1) Project area delineated on USGS topographic map
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx - Section A4/A5
ESI Findings - Round 1 (22 June 2015)	The project area is not currently presented on a USGS quad topographic map(s) in the project plan.
Round 1 NCR/CL/OFI	NCR: Following this requirement, please delineate the project area on a USGS topographic map.
Round 1 Response from Project Proponent (20 August 2015)	We have produced and submit with our responses a map of the project area superimposed onto a USGS topographic map.
ESI Findings - Round 2 (18 September 2015)	A sufficient topo map was submitted in response to this finding entitled "UPM_topo.jpg." The map illustrated USGS quad maps mosaiced and meets this requirement. The item is addressed.

Item Number	12
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	B2. PROJECT GEOGRAPHIC BOUNDARY
ACR Standard Version 4.0 Detail January 2015	3) Property parcel map
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx - Section A4/A5
ESI Findings - Round 1 (22 June 2015)	Figure A1 in the project plan shows counties, but is absent of property parcel descriptors. Here the requirement suggests that townships and ranges the project geographic boundaries fall into are needed. A localized parcel map of the discrete project geographic boundaries would not be readable.
Round 1 NCR/CL/OFI	NCR: Please present a map in the project plan showing the delineated project geographic boundaries with descriptions of property parcels following this requirement.
Round 1 Response from Project Proponent (20 August 2015)	We have produced and submit with our response a detailed map showing project area parcel locations and their unique identifiers. Note that the methodology does not require that this map be included in the GHG Plan, and we have referenced it as an annex due to its large size.

ESI Findings - Round 2 (18 September 2015)	Auditors are unsure of which map the project proponents are referring to in the response to this finding, an ArcMap .mxd file was supplied. Further, there does not appear to be referenced annex in project documents, only "Annex A, Conservation Easement."
Round 2 NCR /CL/OFI	NCR: Please appropriately reference the map for this requirement in project documentation. Please also direct auditors for the map provided to meet this requirement.
Round 2 Response from Project Proponent (19 October 2015)	Sorry for the confusion. We have produced and submitted with our response a GIS database ("UPM_GIS") in a zipped folder. This GIS database links with the shapefile, "Blandin_PA_2015.07.14.shp", which depicts all parcel locations in the project area and their unique identifiers. This file has been added to the project database. The GIS database is now directly referenced in the GHG Plan in Section A4.
Final ESI Findings (18 November 2015)	Auditors reviewed the submitted ArcMap .mxd file and confirmed that a map was appropriately included to depict all the project parcel locations and their unique identifiers. Appropriate mention was also made in the GHG Plan Section A4. The item is addressed.

Item Number	13
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	C2. BASELINE STRATIFICATION
ACR Standard Version 4.0 Detail January 2015	If the project activity area is not homogeneous, stratification must be carried out to improve the precision of carbon stock estimates. Different stratifications may be required for the baseline and project scenarios in order to achieve optimal accuracy and precision of the estimates of net GHG emissions reductions or GHG removal by sinks. For estimation of baseline carbon stocks, strata must be defined on the basis of parameters that are key variables for estimating changes in managed forest carbon stocks, for example.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx - Section E1

ESI Findings - Round 1 (22 June 2015)	<p>The Project Plan states that the project area was delineated into 9 strata "reflecting broad similarities in species composition and management regimes, then appended an additional stratum to sample an area not included in the original inventory design." The same stratification is being used for the project and baseline scenarios. This requirement states that for estimation of baseline stocks the strata be defined by key variables, which in this case are species composition and management regimes. However, the "ADD" strata includes "the forest cover classes above are represented in the "Add" stratum" and is not reflective of these key variables or industry best practice for precision and accuracy of forest carbon estimates.</p> <p>The ADD stratum, though stratified independently in the inventory from others, was then lumped into other stratum for baseline modeling as seen in Project Plan Table E7 and reviewed under another requirement within this review.</p>
Round 1 NCR/CL/OFI	<p>NCR: Please fix baseline stratification to reflect the key variables used to define strata and achieve better precision and accuracy of carbon stock change estimates. Provide relevant supporting materials and identify changes made to quantification methods where relevant.</p>
Round 1 Response from Project Proponent (20 August 2015)	<p>ACR has reviewed our approach to inventory stratification and baseline modeling projections and agrees that it aligns with the intent of the methodology. We also received correspondence from methodology co-author Matt Delaney on 15 July 2015 confirming that the intent of the "baseline stratification" requirements is to guide modeling management in the baseline (to a meaningful level of detail), but were not intended to be prescriptive on inventory design. We have addressed the methodology intent by breaking out the Add stratum into stands, each modeled separately, that reflect the variables referenced in methodology section C2.</p>
ESI Findings - Round 2 (18 September 2015)	<p>ESI was copied on email exchanges between TerraCarbon (technical consultant for Blandin), the methodology developers and ACR. The methodology developer stated "As stated in Section C2-- stratification is meant to help achieve accurate and precise estimates of GHG emission reductions (i.e. for purposes of baseline modeling). It was not our intent to be prescriptive on stratification approaches for purposes of the inventory." ACR permitted this approach in stating, "For the purposes of this verification, we have determined that the method used by UPM, where the stands within the add-stratum were either bundled with the larger stratum of the same type, or modeled separately is a reasonable approach and in the spirit of the methodology requirements, and also, seemingly, accomplished in a manner that avoided bias." The item is addressed.</p>

Item Number	14
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C3. BASELINE NET REDUCTIONS AND REMOVALS
ACR Standard Version 4.0 Detail January 2015	<p>Equation 4. 4 - where: t Time in years GHG BSL Twenty-year average value of greenhouse gas emissions (in metric tons CO₂e) resulting from the implementation of the baseline. BSBSL_t Carbon stock (in metric tons CO₂) in logging slash burned in the baseline in year t. ERCH₄ Methane (CH₄) emission ratio (ratio of CO₂ as CH₄ to CO₂ burned). If local data on combustion efficiency is not available or if combustion efficiency cannot be estimated from fuel information, use IPCC default value¹⁶ of 0.012 16/44 Molar mass ratio of CH₄ to CO₂ GWPCH₄ 100-year global warming potential (in CO₂ per CH₄) for CH₄ (IPCC SAR-100 value of 21 per the Fourth Assessment Report)¹⁷ Carbon stock calculation for logging slash burned (BSBSL_t) shall use the method described in Section 3.1.1 for bark, tops and branches, and section 3.1.2 if dead wood is selected. The reduction in carbon stocks due to slash burning in the baseline must be properly accounted in equations 1 and 2.</p>
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E1. Baseline; BlandinACR_Calcs.xlsx
ESI Findings - Round 1 (22 June 2015)	Verifiers noted that equation 4 was omitted.
Round 1 NCR/CL/OFI	NCR: Please compute equation 4, in line with the approach described in the methodology.
Round 1 Response from Project Proponent (20 August 2015)	Equation 4 is now referenced in Section E1 and the outcome calculated as zero - "Emissions due to burning logging slash are conservatively assumed in the baseline to be zero. This is in fact an accurate assumption, as Blandin does not burn logging slash as part of its management operations, nor would it be motivated to in a profit maximization scenario. Thus, parameter BSBSL equals zero and the outcome of equation 4 of the methodology, parameter GHGBSL, equals zero."
ESI Findings - Round 2 (18 September 2015)	Developers assertion that no biomass burning occurs in the baseline is reasonable. Although emissions from biomass burning are a required pool, it is assumed zero in the baseline. Therefore, the result of equation 4 is appropriately set at 0 as seen in submitted calc file "BlandinACR_Calcs revAug2015.xlsx." The item is addressed

Item Number	15
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1 Stocking Level Projections in the Baseline
ACR Standard Version 4.0 Detail January 2015	CBSL,TREE,t and CBSL,DEAD,t must be estimated using models of forest management across the baseline period. Modeling must be completed with a peer reviewed forestry model that has been calibrated for use in the project region. The GHG Plan must detail what model is being used and what variants have been selected. All model inputs and outputs must be available for inspection by the verifier. The baseline must be modeled over a 20-year period.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E1. Baseline
ESI Findings - Round 1 (22 June 2015)	Verifiers examined degrow procedures used to grow the 2014 inventory to the 2010 start date, used for baseline modeling. The described approach degrow diameter and height values. Verifiers confirmed the degrowth of these elements yet noted that degrown mortality was not incorporated into these computations. The verifiers are uncertain how this can be considered conservative as mortality, reflected in TPA estimates, would change between the start date and the 2014 inventory.
Round 1 NCR/CL/OFI	CL: Please justify that the assumption of no mortality between the start date and the inventory date is an appropriate estimate. Otherwise, please include mortality adjustment into the degrow procedures.
Round 1 Response from Project Proponent (20 August 2015)	see full response to this finding in accompanying document "narrative responses to Blandin findings.doc"
ESI Findings - Round 2 (18 September 2015)	Verifiers examined the provided response and the provided analysis. Verifiers agree that based on the deminimis nature of the mortality in the degrow that it can be omitted. The item has been addressed.

Item Number	16
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1 Stocking Level Projections in the Baseline
ACR Standard Version 4.0 Detail January 2015	Parameterized for the specific conditions of the project
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E1. Baseline; FVS Key files
ESI Findings - Round 1 (22 June 2015)	Verifiers examined FVS key files and noted that sprouting was turned off for prescriptions where stands were to be converted to plantations. It is unclear that this is appropriate given that verifiers expect that some sprouting would occur in harvested hardwood stands.
Round 1 NCR/CL/OFI	CL: Please provide justification for no sprouting to occur in stand prescriptions converted from hardwoods to plantations. Please justify that no sprouting would occur or that the region would be sanitized to ensure no sprouting would occur in the baseline case. Otherwise please include sprouting in relevant stands.
Round 1 Response from Project Proponent (20 August 2015)	In hardwood stands modeled to convert to white spruce plantations, sprouting is turned off in the FVS-LS projection settings. This reflects the fact that releases, which include competition control, are conducted in years 3, 5 and 7 (as explained in GHG Plan table E9), and also that the old (mostly > 60 years old) northern hardwood stands converted are not dominated by vigorously sprouting stems like aspen. Table E11 has been revised to include the following text for NH strata: "Sprouting is turned off in the model to reflect mechanical control of hardwood competition conducted during release interventions in year 3, 5 and 7." Further, to the GHG Plan Section E we have added the following explanatory text "Regeneration assumptions were developed in consultation with Cheryl Adams of Blandin and reflect her 20+ years of experience as a forest manager of the project area."
ESI Findings - Round 2 (18 September 2015)	The intense level of management performed for release prescriptions with selected crop trees at Blandin suggests that turning on sprouting in FVS is unnecessary. The text added to Table E11 and the response to this finding are sufficient. The item is addressed.



Item Number	17
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1 Stocking Level Projections in the Baseline
ACR Standard Version 4.0 Detail January 2015	Parameterized for the specific conditions of the project
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E1. Baseline; FVS Key files
ESI Findings - Round 1 (22 June 2015)	Verifiers examined key files and noted that no seeding of natural species was performed in areas where natural seedling regeneration would occur.
Round 1 NCR/CL/OFI	CL: Please justify that natural seedling development would not regenerate into stands harvested in the baseline. In the absence of justification, please include appropriate seedling growth into prescriptions.
Round 1 Response from Project Proponent (20 August 2015)	All regeneration assumptions were made in consultation with Cheryl Adams and reflect her 20+ years of experience as a forest manager in the region. Natural seeding is excluded from model assumptions to reflect mechanical removal of non-target management species during release operations, and Table E11 in the GHG Plan is now updated to explain this. An exception is that natural regeneration in Black Spruce stands is modeled, at 3,000 stems per acre recruiting after clearcut harvest. Natural regeneration in aspen stands is dominated by resprouting, and is modeled by turning on sprouting in FVS.
ESI Findings - Round 2 (18 September 2015)	Table E11 in the GHG Plan now reflects more detail to describe management scenarios among stand types. Absence of natural regeneration in some modeled stands is reflected by mechanical removal of non-target species when crop trees are released. The item is addressed.

Item Number	18
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1 Stocking Level Projections in the Baseline
ACR Standard Version 4.0 Detail January 2015	Parameterized for the specific conditions of the project
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E1. Baseline; FVS Key files
ESI Findings - Round 1 (22 June 2015)	Verifiers were unable to locate documentary justification confirming discussion with Chery Adam, confirming sound baseline regeneration values.
Round 1 NCR/CL/OFI	CL: Please provide documentary evidence confirming regeneration values to be sound.
Round 1 Response from Project Proponent (20 August 2015)	In response to this finding, Cheryl Adams has submitted the following statement to ESI: "I have reviewed all regeneration assumptions incorporated in the Blandin project GHG Plan, detailed in Table E11, and confirm that they were developed in direct consultation with me and reflect my more than 20 years experience as a professional forest manager in Minnesota."
ESI Findings - Round 2 (18 September 2015)	The assertion by Cheryl Adams of Blandin is sufficient to confirm that regeneration assumptions and associated management methods are valid for the region. The item is addressed.

Item Number	19
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1.1 Tree Carbon Stock Calculation

ACR Standard Version 4.0 Detail January 2015	Step 1: Determine the biomass of the merchantable component of each tree based on appropriate volume equations published by USDA Forest Service (if locally derived equations are not available use regional or national equations as appropriate) and oven-dry tree specific gravity for each species.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin_baselineA live stock proj.xls; PP- Section E1. Baseline
ESI Findings - Round 1 (22 June 2015)	Verifiers examined computation used for stem biomass computation. Total volume was used for determination of biomass computation. Per the requirement, merchantable volume should be used in determining stem volume. Further, stem weight was computed, however not correctly converted into stem biomass.
Round 1 NCR/CL/OFI	NCR: Please compute step 1 using the correct modeled cubic foot volume. Additionally, please ensure correct computation of stem biomass as described in Step 1. of the methodology.
Round 1 Response from Project Proponent (20 August 2015)	We received the follow-up note concerning this finding from ESI on 7/7/2015: "We looked at these elements and noted that TCuFt were used. Based on the call we understood your response and had no issue with the provided explanation." Stem biomass calculations referenced stem volumes calculated by FVS-LS referencing regional volume equations from the National Volume Estimator Library. No defect was recorded in the inventory, and stem biomass references estimated sound stem volume. The relevant volume output from the FVS tree list is "TCuFt", which is according to the FVS DBS Users Guide 2.0: "Total cubic feet (Merchantable cuft volume (pulpwood + sawtimber) in eastern variants)"
ESI Findings - Round 2 (18 September 2015)	Verifiers confirmed that Tcuft was appropriate for stem merchantable volume. Further verifiers examined provided computations for step 1 and confirm it to be correct. The item has been addressed.

Item Number	20
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1.1 Tree Carbon Stock Calculation
ACR Standard Version 4.0 Detail January 2015	Step 1: Determine the biomass of the merchantable component of each tree based on appropriate volume equations published by USDA Forest Service (if locally derived equations are not available use regional or national equations as appropriate) and oven-dry tree specific gravity for each species.

Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin_baselineA live stock proj.xls; PP- Section E1. Baseline
ESI Findings - Round 1 (22 June 2015)	Verifiers noted that oven-dry specific gravity for jack pine was improperly sourced from the FFE table described in the Project Plan and related documentation.
Round 1 NCR/CL/OFI	NCR: Please ensure that Jack pine oven-dry tree specific gravity is properly sourced.
Round 1 Response from Project Proponent (20 August 2015)	We have corrected the specific gravity of Jack Pine to 24.9 lbs/ft ³ (now conforming with Table 4.11.5 of the FVS FFE guide) and have revised all biomass calculations accordingly in the baseline and project scenario.
ESI Findings - Round 2 (18 September 2015)	Jack pine specific gravity has been corrected in all instances where it was previously incorrect in calculation worksheets. The item is addressed.

Item Number	21
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1.1 Tree Carbon Stock Calculation
ACR Standard Version 4.0 Detail January 2015	Step 2: Determine the biomass of bark, tops and branches, and below-ground biomass as a proportion of the bole biomass based on component proportions from Jenkins et al (2003).
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin_baselineA live stock proj.xls; PP- Section E1. Baseline
ESI Findings - Round 1 (22 June 2015)	Verifiers examined biomass computation and noted that bark, tops and branch biomass were not computed. Additionally, root biomass ratios were computed, however root biomass was not calculated. The computation for total live tree carbon biomass was incorrectly computed.
Round 1 NCR/CL/OFI	NCR: Please compute Step 2. correctly, including correct computation of stem bark, tops and branch and root biomass computations based on the Jenkins 2003 publication. Further, please correct computation of total live tree biomass in accordance with the Step 2. procedure of the methodology.
Round 1 Response from Project Proponent (20 August 2015)	ACR has agreed that biomass measurements using the CRM, deriving ratios from the measured merchantable bole component, is valid. We have removed foliage from biomass estimates and updated all calculations accordingly.

ESI Findings - Round 2 (18 September 2015)	Verifiers confirmed that biomass measurements using the CRM approach is appropriate. Verifiers confirmed that calculations were corrected and now exclude foliage. The item has been addressed.
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Item Number	22
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1.1 Tree Carbon Stock Calculation
ACR Standard Version 4.0 Detail January 2015	Step 4: Determine the tree biomass estimate for each stratum by calculating a mean biomass per acre estimate from plot level biomass derived in step 3 multiplied by the number acres in the stratum.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin_baselineA live stock proj.xls; PP- Section E1. Baseline
ESI Findings - Round 1 (22 June 2015)	Verifiers confirmed that biomass was computed at the stand level, in line with the modeling approach. Verifiers were unable to witness computations combined at a stratum level.
Round 1 NCR/CL/OFI	NCR: Please compute tree biomass for each stratum in line with Step 4. of the methodology.
Round 1 Response from Project Proponent (20 August 2015)	Strata are modeled by breaking down among stand components - this approach has been deemed acceptable per ACR (see response to finding row 18).
ESI Findings - Round 2 (18 September 2015)	ESI was copied on email exchanges between TerraCarbon (technical consultant for Blandin), the methodology developers and ACR. The methodology developer stated "As stated in Section C2-- stratification is meant to help achieve accurate and precise estimates of GHG emission reductions (i.e. for purposes of baseline modeling). It was not our intent to be prescriptive on stratification approaches for purposes of the inventory." ACR permitted this approach in stating, "For the purposes of this verification, we have determined that the method used by UPM, where the stands within the add-stratum were either bundled with the larger stratum of the same type, or modeled separately is a reasonable approach and in the spirit of the methodology requirements, and also, seemingly, accomplished in a manner that avoided bias." The item is addressed.

Item Number	23
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1.2 Dead Wood Calculation
ACR Standard Version 4.0 Detail January 2015	Step 3: Biomass must be estimated using the component ratio method used for live trees for decomposition classes 1,2, and 3 with deductions as stated in Step 4 (below). When the standing dead tree is in decomposition class 4, the biomass estimate must be limited to the main stem of the tree. If the top of the standing dead tree is missing, then top and branch biomass may be assumed to be zero. Identifiable tops on the ground meeting category 1 criteria may be directly measured. For trees broken below minimum merchantability specifications used in the tree biomass equation, existing standing dead tree height shall be used to determine tree bole biomass.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin_baselineA snag proj.xls; PP- Section E1. Baseline
ESI Findings - Round 1 (22 June 2015)	While on site, verifiers noted that standing dead break height was not measured for trees not located within height measurement plots. Verifiers examined computational procedures in the excel baseline document and noted that procedures for dead trees were not performed in line with the live tree procedures. Further, computation for decay class 4 species was not performed correctly.
Round 1 NCR/CL/OFI	NCR: Please use existing broken top tree height for all broken topped standing dead trees, in line with Step 3 of the methodology.
Round 1 Response from Project Proponent (20 August 2015)	see full response to this finding in accompanying document "narrative responses to Blandin findings.doc"
ESI Findings - Round 2 (18 September 2015)	Pending ACR approval for methodology deviation.
Round 2 NCR /CL/OFI	
Round 2 Response from Project Proponent (19 October 2015)	



Final ESI Findings (18 November 2015)	Although no request was issued at Round 2 for this item, another finding for dead tree decay classes was issued and the resolution to that finding has relevance here. Through dialogue between ESI, the project's technical consultant (TerraCarbon), and ACR, a determination was made to completely exclude the standing dead carbon pool from the project. ACR issued formal guidance in the document "ACR Methodology Deviation Request_ UPM Blandin Oct2015 with Determination.pdf" which outlined the non-conformance, proposed deviation, and ACR determination. Since standing dead wood is no longer a pool within the project this criteria is no longer applicable. The item is addressed.
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Item Number	24
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1.2 Dead Wood Calculation
ACR Standard Version 4.0 Detail January 2015	Step 3: Biomass must be estimated using the component ratio method used for live trees for decomposition classes 1,2, and 3 with deductions as stated in Step 4 (below). When the standing dead tree is in decomposition class 4, the biomass estimate must be limited to the main stem of the tree. If the top of the standing dead tree is missing, then top and branch biomass may be assumed to be zero. Identifiable tops on the ground meeting category 1 criteria may be directly measured. For trees broken below minimum merchantability specifications used in the tree biomass equation, existing standing dead tree height shall be used to determine tree bole biomass.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin_baselineA snag proj.xls; PP- Section E1. Baseline
ESI Findings - Round 1 (22 June 2015)	While on site, verifiers noted that standing dead break height was not measured for trees not located within height measurement plots. Verifiers examined computational procedures in the excel baseline document and noted that procedures for dead trees were not performed in line with the live tree procedures. Further, computation for decay class 4 species was not performed correctly.
Round 1 NCR/CL/OFI	NCR: For decay classes 1-3, please correctly compute standing dead biomass in line with the procedures used for live tree biomass. For decay class 4 species, please ensure that biomass is computed in line with Section 3. of the methodology.
Round 1 Response from Project Proponent (20 August 2015)	see full response to this finding in accompanying document "narrative responses to Blandin findings.doc"

ESI Findings - Round 2 (18 September 2015)	The provided response does not address the deviating computational methods used for the computation of biomass for standing dead trees in the baseline. The original NCR stands.
Round 2 NCR /CL/OFI	NCR: For decay classes 1-3, please correctly compute standing dead biomass in line with the procedures used for live tree biomass. For decay class 4 species, please ensure that biomass is computed in line with Section 3. of the methodology.
Round 2 Response from Project Proponent (19 October 2015)	In response to this finding, we submitted a deviation request to ACR on 9 Oct 2015, and had a follow up conversation with Jessica Orrego of ACR on 14 Oct 2015. ACR's determination was to permit exclusion of the standing dead wood pool from the baseline and with-project case for the present validation and first verification. The formal determination and deviation approval was issued by ACR on 14 Oct 2015. The exclusion should not be non-conservative, as with heavier harvesting in the baseline, it can be expected that the standing dead wood pool would be lower (e.g. due to incidental damage by skidders and less retention of non-commercial structural components). Accordingly, we have updated the GHG Plan and monitoring report and worksheets "BlandinACR_Calcs.xls" and "BlandinACR_Calcs 2014 Monitoring.xls" to exclude the standing dead wood pool from accounting. We also remove worksheet "Blandin_baselineA snag proj_revAug15.xls" from the project database to avoid confusion as it is no longer relevant.
Final ESI Findings (18 November 2015)	<p>Through dialogue between ESI, the project's technical consultant (TerraCarbon), and ACR, a determination was made to completely exclude the standing dead carbon pool from the project. ACR issued formal guidance in the document "ACR Methodology Deviation Request_ UPM Blandin Oct2015 with Determination.pdf" which outlined the non-conformance, proposed deviation, and ACR determination. Since standing dead wood is no longer a pool within the project this criteria is no longer applicable.</p> <p>Computation worksheets for validation and verification were re-checked and confirmed correct. The item is addressed.</p>

Item Number	25
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.1.2 Dead Wood Calculation



ACR Standard Version 4.0 Detail January 2015	Step 3: Biomass must be estimated using the component ratio method used for live trees for decomposition classes 1,2, and 3 with deductions as stated in Step 4 (below). When the standing dead tree is in decomposition class 4, the biomass estimate must be limited to the main stem of the tree. If the top of the standing dead tree is missing, then top and branch biomass may be assumed to be zero. Identifiable tops on the ground meeting category 1 criteria may be directly measured. For trees broken below minimum merchantability specifications used in the tree biomass equation, existing standing dead tree height shall be used to determine tree bole biomass.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin_baselineA snag proj.xls; PP- Section E1. Baseline
ESI Findings - Round 1 (22 June 2015)	Verifiers noted that oven-dry specific gravity for jack pine was improperly sourced from the FFE table described in the Project Plan and related documentation.
Round 1 NCR/CL/OFI	NCR: Please ensure that Jack pine oven-dry tree specific gravity is properly sourced.
Round 1 Response from Project Proponent (20 August 2015)	We have corrected the specific gravity of Jack Pine to 24.9 lbs/ft ³ (now conforming with Table 4.11.5 of the FVS FFE guide) and have revised all biomass calculations accordingly in the baseline and project scenario.
ESI Findings - Round 2 (18 September 2015)	Jack Pine specific gravity was confirmed to have been appropriately corrected in all computation worksheets. The item is addressed.

Item Number	26
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.2 Wood Products Calculation
ACR Standard Version 4.0 Detail January 2015	Wood products shall be calculated using the U.S. DOE 1605(b) method. The following steps must be followed to determine the amount of carbon in harvested wood:
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx Section E1

ESI Findings - Round 1 (22 June 2015)	Section E1 of the project plan states, "Long-term storage in wood products was calculated from FVS projections of removals referencing the US DOE 1605(b) guidance (Table 1.6 from the Forestry Appendix of the Technical Guidelines of the U.S. Department of Energy's Voluntary Reporting of Greenhouse Gases Program) and Smith et al 2006 (values for North Central US)." Detailed assessment of steps 1 and 2 are below. The project plan describes some of the important elements for HWP computations but should provide additional detail to explain steps undertaken to compute baseline and project HWP following the steps below.
Round 1 NCR/CL/OFI	CL: Please elaborate in the project plan the steps undertaken to compute project and baseline scenario harvested wood products. In doing so, please refer to elements where the project has selected particular methods for application of the 1605(b) method.
Round 1 Response from Project Proponent (20 August 2015)	We have expanded the explanation in Section E1 with the following text: "Projected harvested volumes were broken out into the following categories: softwood sawlog, softwood pulp, hardwood pulp and hardwood sawlog. Biomass carbon in units of t CO ₂ e in each category was then multiplied by the percentages of carbon remaining stored in wood products (in-use wood products and landfill) for 100 years, are detailed in Table E13. The percentages are derived from fraction of growing stock volume (referenced from volumes reported in the FVS Cut List output file) removed as roundwood (Smith et al 2006 Table 5), ratio of industrial roundwood to growing stock volume removed as roundwood (Smith et al 2006 Table 5), and finally percentages remaining stored 100 years after production in in-use wood products and landfill (Smith et al 2006 Table 6). Red pine stands are managed for pulp and saw logs, all other stands are managed for pulp, as per the baseline scenario assumptions derived above (see table E8). Calculations are documented in supporting document "Blandin_baselineA wood prod proj.xls" We also make note that the Smith et al 2006 tables are the same as the tables from the 1605b guidelines – see: http://www.nrs.fs.fed.us/carbon/tools/#gtrne343
ESI Findings - Round 2 (18 September 2015)	The additional text describing steps performed to compute harvested wood products is sufficient and was confirmed to have been added to the GHG Plan. References to application of the 1605(b) method are adequate. The item is addressed.

Item Number	27
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.2 Wood Products Calculation

ACR Standard Version 4.0 Detail January 2015	Step 1: Calculate the annual biomass of the total volume extracted from within the project boundary, with extracted timber volume differentiated into hardwood sawtimber, hardwood pulpwood, softwood sawtimber, or softwood pulpwood and converted to carbon using specific gravity for each species.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx Section E1, Blandin voles harvested 2010_2014.xls, Blandin_baselineA wood prod proj.xls
ESI Findings - Round 1 (22 June 2015)	<p>Project scenario: Biomass extracted within the project boundary were found in cords and MBF in "Blandin voles harvested 2010_2014.xls" for total harvests Jul 1 2010 to Jul 31 2014. Product types were not differentiated into hardwood sawtimber, hardwood pulpwood, softwood sawtimber, or softwood pulpwood but instead by species groups and pallets, pulp, and sawnwood. Cords of pulpwood and MBF of sawnwood were converted from ft3 to m3 by multiplying by 0.0283 which follows the 1605(b) method.</p> <p>Here the requirement states that conversion to carbon must use species level specific gravity and this step does appear to have been performed correctly as species were grouped (ex. aspen birch) by Species category / forest type using assumptions referenced from the 1605(b) supplement: Smith 2003. Wood density values for each species should be used to determine carbon volume for each cubic volume of wood delivered to processing facilities following the 1605(b) method.</p> <p>Baseline: Annual biomass from trees harvested in the baseline is the result of the FVS cutlist. Verifiers were unable to locate a product category breakdown following this requirement and species level specific gravity used in quantification.</p> <p>Though this requirement is contained in the baseline section, following 5.1 of the methodology, quantification is the same for the project scenario.</p>
Round 1 NCR/CL/OFI	<p>NCR: Project scenario: Please differentiate the harvested timber into the required product categories and convert to carbon using specific gravity where available for individual species. If available data based on mill destination does not differentiate product categories, please provide evidence to justify a deviation from the required product categories. For harvest sale data lacking species, please substantiate assumptions for specific gravity values used for species groups. Please also reference locations of default values obtained from Smith 2003 or 1605(b) supplement files and insert other references as needed in the HWP computation file when responding to this request.</p> <p>Baseline: Please break down biomass annually into the required product categories for the 1605(b) process.</p>
Round 1 Response from Project Proponent (20 August 2015)	see full response to this finding in accompanying document "narrative responses to Blandin findings.doc"

ESI Findings - Round 2 (18 September 2015)	<p>The project proponents have differentiated harvested wood into the appropriate product categories and followed the 1605(b) method for project-case HWP annual values in the reporting period. Methods applied by the project proponent to determine the results of Step 1 wood harvested sequestered for 100 years are sufficiently followed for the baseline, where these values are added to the FVS cutlist. Auditors recognize the perceived "double-counting" is also actually a function of building back in cut biomass (using Smith 2003) into live, project case stock estimates.</p> <p>As noted by the proponents, the methodology doesn't reference methods to build back in a degrown inventory. Auditors believe this is because baseline HWP values are to be based on perpetual NPV maximization. It never seemed to be the intent of the methodology to account for actual harvested wood in both scenarios, but instead an NPV scenario and project scenario. Worth noting is that the methodology is largely silent on methods to derive baseline wood products with the exception of maximizing NPV and usage of the 1605(b) method. Clarification is still needed that in the baseline case, adding back in actual harvested volumes is appropriate since the projected baseline is an approximation of NPV maximization.</p> <p>Finally, it is unclear where ex-ante project case HWP annual volumes beyond the initial reporting period are sourced from.</p>
Round 2 NCR /CL/OFI	<p>CL: Please justify how the project case management prescriptions in the first 4 years of the project are in line with the NPV maximisation of the baseline as required by the methodology. Further, please provide evidence of harvesting prescriptions used to source material in order to substantiate practices are in line with NPV maximisation.</p>
Round 2 Response from Project Proponent (19 October 2015)	<p>We explain the context and rationale for the harvest of stocks not included in the inventory and modeling in the accompanying document "narrative for incorp 2010_14 hvst in 2010 inventory", which we reviewed together with ESI on 14 October 2015. In summary, stocks harvested in 2010-2014 prior to the 2014 inventory had to be built back into the 2010 stock estimate to provide a full accounting of stocks at the project start date. While live tree stocks could be estimated from the gross volume data available, they could not be disaggregated into tree-level data, and consequently cannot be modeled in FVS. It is important to note that these stocks do not represent different stands than those inventoried and modeled (they are a component of those SAME stands). It is unrealistic to assume this component of stocks would not be harvested in the baseline scenario. Harvest of these stocks in 2010-2014 should effectively correct for a conservative bias in the NPV maximization analysis results (which could not consider them, thus postponing the economic optimum harvest year) and is not inherently non-conservative or inconsistent with the intent of the methodology.</p>

Final ESI Findings (18 November 2015)	Auditors recognize the effort here by the project technical consultant to build back in harvested stocks to the inventory stock estimates. The consultant is correct that it is a conservative approach to handle NPV maximisation which would be inherently pushed back due to the absence of the harvested stocks. Other rationale is reasonable for the methods employed and described in previous findings. To conclude, in the absence of clear requirements from the methodology for "truing up" harvested stocks for the inventory and modeling, and a need for full accounting of stocks at the start date, ESI determined this approach permissible. The item is addressed.
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Item Number	28
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.2 Wood Products Calculation
ACR Standard Version 4.0 Detail January 2015	Step 1: Calculate the annual biomass of the total volume extracted from within the project boundary, with extracted timber volume differentiated into hardwood sawtimber, hardwood pulpwood, softwood sawtimber, or softwood pulpwood and converted to carbon using specific gravity for each species.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx Section E1, Blandin vols harvested 2010_2014.xls, Blandin_baselineA wood prod proj.xls
ESI Findings - Round 1 (22 June 2015)	
Round 1 NCR/CL/OFI	
Round 1 Response from Project Proponent (20 August 2015)	
ESI Findings - Round 2 (18 September 2015)	Please see top level finding for details.
Round 2 NCR /CL/OFI	NCR: Please adjust accounting for harvested volumes at year 0 (2010), as year 0 is indicative of starting stock values (i.e. prior to implementation of management) and should be reflective of initial stocks. Please correct other values currently computed at year 0.

Round 2 Response from Project Proponent (19 October 2015)	<p>We have reviewed the year numbering and have confirmed that accounting of all stocks is ascribed to the correct years, contrary to the finding. To clarify, the GHG Plan Table E11 (revised numbering, formerly Table E14) states in the caption that "For the live and dead tree pools, stocks represent stocks on Jul 28 2010 of the corresponding year. For harvested wood products (HWP), stocks represent stocks harvested in the year interval beginning July 28 of the corresponding year" and this convention is held throughout the documents and calculations for projections; the reason being that live tree stocks represent a point in time and harvested wood products represent an input to the pool over an annual interval. The convention applies in spreadsheet "Blandin_baselineA wood prod proj_revAug15.xls" (see tab "summary WP bsl" column BX), where 2010 represents harvests over the interval Jul 28 2010 - Jul 27 2011, and thus ascribed in accounting to account year 2011, i.e. year 1 (account year is named for the year at the end of the annual interval; this convention is established in the GHG Plan Table A1 caption "Throughout the GHG Plan, the convention is employed that project year refers to the year at the end of the annual interval, i.e. 2011 emission reductions represent emission reductions realized from July 28 2010 to July 27 2011"). This can be confirmed by inspecting spreadsheet "BlandinACR_Calcs revOct015" tab "Blandin Calcs" row 23, in which deltaC project for account year 2011 (year 1), cell E23, is calculated referencing column D for harvested wood products, which represent wood products harvested from July 28 2010 to July 27 2011; deltaC project baseline (row 16) references the 20 yr average. Change in live tree stocks is also correct, as cell E23 references column E (stocks on Jul 28 2011) - column D (stocks on Jul 28 2010) to produce change in stocks for account year 11, i.e. year 1 (change from Jul 2010 - Jul 2011).</p>
Final ESI Findings (18 November 2015)	<p>Auditors agree with the assertions by the project's technical consultant that year 0 applies to the actual project start with pool changes at regular annual intervals. Harvested wood products are accounted at the end of a given year appropriately. Calculations within the project worksheets are correct in this regard. The item is addressed.</p>

Item Number	29
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.2 Wood Products Calculation
ACR Standard Version 4.0 Detail January 2015	<p>Step 1: Calculate the annual biomass of the total volume extracted from within the project boundary, with extracted timber volume differentiated into hardwood sawtimber, hardwood pulpwood, softwood sawtimber, or softwood pulpwood and converted to carbon using specific gravity for each species.</p>

Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx Section E1, Blandin vols harvested 2010_2014.xls, Blandin_baselineA wood prod proj.xls
ESI Findings - Round 1 (22 June 2015)	
Round 1 NCR/CL/OFI	
Round 1 Response from Project Proponent (20 August 2015)	
ESI Findings - Round 2 (18 September 2015)	Please see top level finding for details.
Round 2 NCR /CL/OFI	CL: Please clarify the source of the ex-ante project-case HWP values after the end of the reporting period.
Round 2 Response from Project Proponent (19 October 2015)	We now clarify the source of ex ante project-case HWP values in the GHG Plan Section E6, adding the text "and as for live tree carbon stocks, were based on FVS-LS 10-year cycle projections." Projections are documented in worksheet "Blandin_WP2014_revAug15.xls"
Final ESI Findings (18 November 2015)	The source of the ex-ante HWP values, in addition to the tree stock estimates, are now appropriately cited in Section E6 of the GHG Plan. The item is addressed.

Item Number	30
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C.3.2 Wood Products Calculation
ACR Standard Version 4.0 Detail January 2015	Step 2: Calculate the proportion of extracted timber that remains sequestered after 100 years. Instead of tracking annual emissions through retirement, burning and decomposition, the methodology calculates the proportion of wood products that have not been emitted to the atmosphere 100 years after harvest and assumes that this proportion is permanently sequestered. The method uses Table 1.6 from the Forestry Appendix of the Technical Guidelines of the U.S. Department of Energy's Voluntary Reporting of Greenhouse Gases Program (known as Section 1605b). Users must determine the region the project is located in (using Figure 1.1 of the same document) and whether the timber is softwood or hardwood. The proportions defined as "In Use" and "Landfill" 100 years after production shall be used.

Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx Section E1, Blandin vols harvested 2010_2014.xls, Blandin_baselineA wood prod proj.xls
ESI Findings - Round 1 (22 June 2015)	<p>Project scenario: The PP computed total t CO₂ according to pallettes, pulp and sawnwood for conversion to proportion sequestered for 100 years in worksheet "Blandin_baselineA wood prod proj.xls." In-use and landfill factors were computed based on growing stock fractions from Smith 2003 Table D9 and Table 1.6 from the 1605(b) document, and an unknown value. Pallettes were included in the sawnwood category, as noted in the above finding request, this product category is not permissible. A single tree species was considered for each species group (also note jack pine has an incorrect lbs/cu ft. value transcribed from Table 4.11.5 from FFE guide) instead of accounting for all species harvested in a given product category. Also, it is not clear from these methods whether both above and below ground biomass are being included, this requirement states only annual biomass of the total volume extracted is to be accounted for.</p> <p>Baseline: Verifiers located computations for the proportion sequestered for 100 years for in-use and landfill HWP at the individual tree level in worksheet "Blandin_baselineA wood prod proj.xls" and sourced from the FVS cutlist. This step requires inputs according to the required product category following the 1605(b) method. Related, table E6 title states above and belowground biomass harvested, but one column states "Total ABG live tree biomass extracted t CO₂."</p> <p>Though this requirement is contained in the baseline section, following 5.1 of the methodology, quantification is the same for the project scenario.</p>
Round 1 NCR/CL/OFI	<p>NCR: Project scenario: Please use correct product categories to formulate 100 yr sequestered estimates of carbon. Please explain the source and justify all values used in quantification of both in-use and landfill factors. Please remove the palette category from this step and use the required product categories. Please also revise computations to account for all species harvested in conversions from lbs/cu ft.</p> <p>Baseline: Please compute in-use and landfill values using the required product categories from the previous step. Finally, please also revise table E6 and in the text above to reflect the correct stocks accounted for in the Project Plan and ensure below ground biomass stocks are not included in HWP estimates.</p>
Round 1 Response from Project Proponent (20 August 2015)	see full response to this finding in accompanying document "narrative responses to Blandin findings.doc"
ESI Findings - Round 2 (18 September 2015)	Step 2 was followed appropriately where wood sequestered after 100 years was computed following the 1605(b) method. Product categories were correctly employed. A detailed finding to proponents quantification methods is above in Step 1. The item is addressed.

Item Number	31
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	C5. ESTIMATION OF BASELINE UNCERTAINTY
ACR Standard Version 4.0 Detail January 2015	<p>Therefore, - and then a large equation - see page 25 where:</p> <p>UNCBSL Percentage uncertainty in the combined carbon stocks in the baseline.</p> <p>CBSL,TREE,1 Carbon stock in the baseline stored in above and below ground live trees (in metric tons CO₂) for the initial inventory in year 1.</p> <p>CBSL,DEAD,1 Carbon stock in the baseline stored in dead wood (in metric tons CO₂) for the initial inventory in year 1.</p> <p>CBSL,HWP Twenty-year baseline average value of annual carbon (in metric tons CO₂) remaining stored in wood products 100 years after harvest.</p> <p>GHG BSL Twenty-year average value of annual greenhouse gas emissions (in metric tons CO₂e) resulting from the implementation of the baseline.</p> <p>eBSL,TREE Percentage uncertainty expressed as 90% confidence interval percentage of the mean of the carbon stock in above and below ground live trees (in metric tons CO₂) for the initial inventory in year 1.</p> <p>eBSL,DEAD Percentage uncertainty expressed as 90% confidence interval percentage of the mean of the carbon stock in dead wood (in metric tons CO₂) for the initial inventory in year 1.</p>
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E1. Baseline; BlandinACR_Calcs.xlsx
ESI Findings - Round 1 (22 June 2015)	Verifiers noted equation for uncertainty omits GHG BSL as required by the methodology.
Round 1 NCR/CL/OFI	NCR: Please include GHG BSL as required in equation 10 of the methodology.
Round 1 Response from Project Proponent (20 August 2015)	Spreadsheet BlandinACR_Calcs.xls and project GHG plan narrative concerning uncertainty calculation now include GHGbsl in equation 10 (as explained previously, conservatively assumed to be zero in the baseline)
ESI Findings - Round 2 (18 September 2015)	As evaluated elsewhere in this review, parameter GHGbsl is set to zero which is allowable. The zero value was appropriately and correctly included in computations for Equation 10. The item is addressed.



Item Number	32
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D1. WITH-PROJECT STRATIFICATION
ACR Standard Version 4.0 Detail January 2015	<p>If the project activity area is not homogeneous, stratification must be carried out to improve the precision of carbon stock estimates. Different stratifications may be required for the baseline and project scenarios in order to achieve optimal accuracy and precision of the estimates of net GHG emissions reductions or GHG removal by sinks. For estimation of baseline carbon stocks strata must be defined on the basis of parameters that are key variables in any method used to estimate changes in managed forest carbon stocks, for example:</p> <ul style="list-style-type: none">a. Management regimeb. Species or cover typesc. Size and density classd. Site class
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx Section E1, Blandin SOPs 2014 04 18.doc
ESI Findings - Round 1 (22 June 2015)	<p>The Project Plan states that the project area was delineated into 9 strata "reflecting broad similarities in species composition and management regimes, then appended an additional stratum to sample an area not included in the original inventory design." The "ADD" strata includes "the forest cover classes above are represented in the "Add" stratum" and is not reflective of industry best practice for precision and accuracy of carbon estimates.</p> <p>During the site visit, verifiers noted Plot 1524 S, N, & W were predominantly comprised of black spruce though this strata is labelled red pine. As this strata uses the red pine site index (62 base age 50), these cluster samples are not representative of black spruce SI (38 base age 50). Since the same stratification is being used for the project and baseline scenarios, there may be implications for the degrow and baseline projections. Further, since the methodology does not require periodic re-inventory, incorrect projections may be present for length of the crediting period. The current stratification approach, and evidence from the site visit suggests it may not be appropriate for baseline modeling.</p> <p>Since the project case stratification is identical to the baseline, this item is also pending a finding request made in Section C2.</p>

Round 1 NCR/CL/OFI	NCR: Please justify methods for stratification, specifically the "ADD" stratum and whether current methods are able to improve precision of carbon stock estimates following this requirement. Provide evidence to support assertions as needed. Please also justify the current stratification approach in the context of whether this approach is appropriate for inputs to FVS given site index is modeled at the plot/stand level and has implications for the entire crediting period.
Round 1 Response from Project Proponent (20 August 2015)	see full response to this finding in accompanying document "narrative responses to Blandin findings.doc"
ESI Findings - Round 2 (18 September 2015)	<p>Auditors reviewed the narrative response to this finding and comment on the current baseline stratification. Delineation of strata boundaries is largely based on the balance of meeting inventory precision and accuracy objectives and the expense associated. Auditors recognize strata boundaries are difficult to refine on larger projects. Although the methodology does not require plot level modeling, stock estimates are contingent upon homogeneous representations of the population samples. Auditors believe that stratification bias is not distributed equally between the project and baseline cases because the baseline stratification is not required to be revised for the crediting period where project "Established strata may be merged if reason for their establishment has disappeared."</p> <p>ACR's approval of row 18, baseline stratification inclusive of the "ADD" stratum, set precedent for allowable stratification methods. The item is addressed.</p>

Item Number	33
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	D2. MONITORING PROJECT IMPLEMENTATION
ACR Standard Version 4.0 Detail January 2015	Professionally accepted principles of forest inventory and management are implemented
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	Blandin SOPs 2014 04 18.doc
ESI Findings - Round 1 (22 June 2015)	During the site visit verifiers noted clusters were directly adjacent to a road and would have constituted a lower tree tally or no-tally due to the road presence. The current inventory SOPs do not address presence of roads within stands. Unbiased plot locations would allow plots to fall upon roads and noting the no-tally.



Round 1 NCR/CL/OFI	CL: Please confirm SOPs followed by inventory personnel for both roads within stands and potential resulting no-tally clusters. Please define SOPs in the SOP document providing clear and precise guidance for situations of roads.
Round 1 Response from Project Proponent (20 August 2015)	The following text was added to the end of Section 2.1 of the SOPs. "Where the center of a sampling plot is located in a road (and the road is within the project boundary), the plot should be sampled in the same manner as other sampling plots. Plot centers are not to be moved. Where a plot center is in a road, the center of the plot should be temporarily marked with flagging. Next a bearing and distance from a stationary object (e.g., tree or rebar) should be recorded in the field notes and on the stationary object (or permanent tag affixed to the object) to ensure the plot center can be found again (example: plot center is 3.35 meters at 120 degrees).
ESI Findings - Round 2 (18 September 2015)	The response to this finding and additional text in the SOP document is sufficient. The text provides clear and concise guidance for situations of roads and location of plot centers. The item is addressed.

Item Number	34
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	D2. MONITORING PROJECT IMPLEMENTATION
ACR Standard Version 4.0 Detail January 2015	Professionally accepted principles of forest inventory and management are implemented
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	Blandin SOPs 2014 04 18.doc; 2014 Blandin Inventory Proofed.xlsx

ESI Findings - Round 1 (22 June 2015)	SOP's dictate that heights should be measured at center plots. This height data was used to develop regression equations that predict total height for non-sampled tree heights. Height regressions were developed using a logarithmic form for individual tree species and species groups, where samples were small in number. Verifiers confirmed heights were taken at height plots in accordance with the SOP's. A review of height regressions were performed to ensure that approaches were statistically appropriate. Verifiers examined both proponent data used to fit the equations and site visit verifier measured height data. Verifiers noted that for the quaking aspen/bigtooth aspen regression both original inventory data and verifier data indicated a bias of regression over prediction. Verifiers noted a positive bias (over prediction) for pine species and other hardwoods, when compared to verifier measurements. Additionally verifiers noted a negative bias (under prediction) for maples and other conifer species, when compared to verifier measurements. Given relatively weak fitting statistics for some of these models it is unclear how these model forms are appropriate for height prediction.
Round 1 NCR/CL/OFI	CL: Please address/justify the appropriateness of height related modeling elements identified in the finding.
Round 1 Response from Project Proponent (20 August 2015)	see full response to this finding in accompanying document "narrative responses to Blandin findings.doc"
ESI Findings - Round 2 (18 September 2015)	Verifiers examined the provided response and the support of the 1997 inventory from the Blandin property. Based on the provided evidence and the regressions/values plotted on the larger datasets, verifiers agree that the provided height regressions are appropriate. The item has been addressed.

Item Number	35
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	D2. MONITORING PROJECT IMPLEMENTATION
ACR Standard Version 4.0 Detail January 2015	The forest management plan, together with a record of the plan as actually implemented during the project shall be available for validation and verification, as appropriate
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx, Blandin Smart Forestry Project Monitoring Rpt 2014 2015.04.30.docx - Section B



ESI Findings - Round 1 (22 June 2015)	The Project Plan in Section A6 mentions that the Forest Management Plan provides guidance for implementation of management prescriptions during the reporting period. An essential component of monitoring of project implementation involves recording and tracking these activities. The Monitoring Report only mentions that the project has maintained SFI certification and this is insufficient to describe implementation of the Blandin Forest Management Plan.
Round 1 NCR/CL/OFI	NCR: Please explicitly state in the Monitoring Plan Section B how the Forest Management Plan was actually implemented during the reporting period. As this is the initial reporting period, please ensure methods for recording implementation of the Forest Management Plan can be consistently applied in future verification periods.
Round 1 Response from Project Proponent (20 August 2015)	The methodology in section D2 species that "The forest management plan, together with a record of the plan as actually implemented during the project shall be available for validation and verification, as appropriate." Because the Blandin management plan does not, nor is intended to, set detailed management prescriptions, instead remaining adaptive with conditions constantly assessed and re-assessed, a record of implementation, such that prescriptions could be matched to management/harvest as implemented, is not appropriate.
ESI Findings - Round 2 (18 September 2015)	Auditors requested a more in-depth summary of management activities implemented during the monitoring period. As stated by the proponents, the requirement is more prescriptive to the availability of the management plan for validation and verification. Therefore, no additional detail describing management implemented during the monitoring period can be required to be added to the monitoring plan. The item is addressed.

Item Number	36
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	D3. MONITORING OF CARBON STOCKS IN SELECTED POOLS
ACR Standard Version 4.0 Detail January 2015	Information shall be provided, and recorded in the GHG Plan, to establish that professionally accepted principles of forest inventory and management are implemented. Standard operating procedures (SOPs) and quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be applied. Use or adaptation of SOPs already applied in national forest monitoring, or available from published handbooks, or from the IPCC GPG LULUCF 2003, is recommended. The forest management plan, together with a record of the plan as actually implemented during the project shall be available for validation and verification, as appropriate.

Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx, Blandin Smart Forestry Project Monitoring Rpt 2014 2015.04.30.docx - Section B
ESI Findings - Round 1 (22 June 2015)	The Project Plan states live tree and standing dead stocks will be monitored through periodic forest Inventory but does not specify when stocks are to be remeasured. The methodology specifies a level of sampling precision but not sampling frequency.
Round 1 NCR/CL/OFI	CL: Please state the expected frequency of inventory updates in the monitoring plan of the Project Plan document.
Round 1 Response from Project Proponent (20 August 2015)	In the monitoring plan in the GHG Plan we have added introductory text to clarify that the frequency of inventory remeasurement is every 5 years (as per ACR Forest Project Standard requiring full verification every 5 years). Note that remeasurement frequency was already established as every 5 years or less in the parameter tables.
ESI Findings - Round 2 (18 September 2015)	The monitoring plan section of the GHG Plan now states "Live tree and standing dead wood stocks will be monitored via periodic forest inventory conducted every 5 years or less, with field measurement and estimation procedures consistent with those outlined in Section E1 below." This is sufficient to meet this requirement. The item is addressed.

Item Number	37
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D3. MONITORING OF CARBON STOCKS IN SELECTED POOLS
ACR Standard Version 4.0 Detail January 2015	The 90% statistical confidence interval (CI) of sampling can be no more than $\pm 10\%$ of the mean estimated amount of the combined carbon stock across all strata ²⁷ . If the Project Proponent cannot meet the targeted $\pm 10\%$ of the mean at 90% confidence, then the reportable amount shall be the lower bound of the 90% confidence interval.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx, Blandin Smart Forestry Project Monitoring Rpt 2014 2015.04.30.docx - Section B
ESI Findings - Round 1 (22 June 2015)	This requirement suggests a certain level of precision required for monitored stocks. No mention is made in the Project Plan that this element will be considered as part of monitoring.
Round 1 NCR/CL/OFI	NCR: Please includes details of sampling error considerations of the stocks undergoing monitoring within the Project Plan.



Round 1 Response from Project Proponent (20 August 2015)	In the parameter tables in the monitoring plan in the project GHG Plan, under QA/QC procedures, we have added discussion of sampling error and inventory design.
ESI Findings - Round 2 (18 September 2015)	QA/QC procedures are now better developed within the parameter tables of the GHG Plan and are sufficient. Sampling error considerations are now included for the main pools and main inventoried parameters. The item is addressed.

Item Number	38
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D3. MONITORING OF CARBON STOCKS IN SELECTED POOLS
ACR Standard Version 4.0 Detail January 2015	Project area
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx
ESI Findings - Round 1 (22 June 2015)	No mention is made of monitoring this parameter in the Project Plan Section D1.
Round 1 NCR/CL/OFI	CL: Please include this required parameter as part of monitoring.
Round 1 Response from Project Proponent (20 August 2015)	Project area parameter table has been added to monitoring plan in project GHG Plan.
ESI Findings - Round 2 (18 September 2015)	The required parameter was appropriately included in the GHG Plan. The item is addressed.

Item Number	39
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D3. MONITORING OF CARBON STOCKS IN SELECTED POOLS

ACR Standard Version 4.0 Detail January 2015	Sample plot area
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx
ESI Findings - Round 1 (22 June 2015)	No mention is made of monitoring this parameter in the Project Plan Section D1.
Round 1 NCR/CL/OFI	CL: Please include this required parameter as part of monitoring.
Round 1 Response from Project Proponent (20 August 2015)	Sample plot area parameter table has been added to monitoring plan in project GHG Plan.
ESI Findings - Round 2 (18 September 2015)	The required parameter was appropriately included in the GHG Plan. The item is addressed.

Item Number	40
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	D3. MONITORING OF CARBON STOCKS IN SELECTED POOLS
ACR Standard Version 4.0 Detail January 2015	Tree species
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx
ESI Findings - Round 1 (22 June 2015)	No mention is made of monitoring this parameter in the Project Plan Section D1.
Round 1 NCR/CL/OFI	CL: Please include this required parameter as part of monitoring.
Round 1 Response from Project Proponent (20 August 2015)	Tree species parameter table has been added to monitoring plan in project GHG Plan.
ESI Findings - Round 2 (18 September 2015)	The required parameter was appropriately included in the GHG Plan. The item is addressed.



Item Number	41
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D3. MONITORING OF CARBON STOCKS IN SELECTED POOLS
ACR Standard Version 4.0 Detail January 2015	Wood products volume
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx
ESI Findings - Round 1 (22 June 2015)	The Project Plan states in Section D2, "Harvested wood products will be monitored via UPM's established tracking systems." This statement describes little of how harvested wood products will be monitored and The Cp,HWP,t parameter table states that "Wood volumes harvested will be monitored using Cengea: WTS (Computer software)" also does not explain monitoring methods performed by the project.
Round 1 NCR/CL/OFI	CL: Please elaborate on monitoring methods for harvested wood products, specifically methods for recording and tracking in an accurate and consistent manner.
Round 1 Response from Project Proponent (20 August 2015)	See response to finding 3. The parameter table for CP,HWP,t has been expanded to detail the following monitoring approach carried out by Blandin: "Harvested wood delivered to the mill is scaled at its final destination, and the scale receipts are returned to the Blandin forest manager, Wood is scaled either by weight scales that are certified by the State of Minnesota or by certified scalers (see QA/QC procedures below)."
ESI Findings - Round 2 (18 September 2015)	The GHG Plan now references suitable QA/QC procedures for the parameter CP,HWP,t which directly pertains to wood product volume. The item is addressed.

Item Number	42
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D4. MONITORING OF EMISSION SOURCES
ACR Standard Version 4.0 Detail January 2015	Emissions from biomass burning must be monitored during project activities. When applying all relevant equations provided in this methodology for the ex-ante calculation of net anthropogenic GHG removals by sinks, Project Proponents shall provide transparent estimations for the parameters that are monitored during the Crediting Period. These estimates shall be based on measured or existing published data where possible. In addition Project Proponents must apply the principle of conservativeness. If different values for a parameter are equally plausible, a value that does not lead to over-estimation of net anthropogenic GHG removals by sinks must be selected.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Blandin Smart Forestry Project GHG Plan 16Oct2014.docx - Section D1
ESI Findings - Round 1 (22 June 2015)	Verifiers note that parameter GHGBSL (Equation 4) is not currently quantified in the baseline but is a required source since dead wood has been selected. The parameter which also is to be monitored is BSp,t.
Round 1 NCR/CL/OFI	NCR: Please include required monitored parameter GHGP,t as part of the Monitoring Plan.
Round 1 Response from Project Proponent (20 August 2015)	GHGp parameter table has been added to monitoring plan in project GHG Plan.
ESI Findings - Round 2 (18 September 2015)	This parameter was appropriately added to the parameters section of the GHG Plan. The item is addressed.

Item Number	43
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D5. ESTIMATION OF PROJECT EMISSION REDUCTIONS OR ENHANCED REMOVALS

ACR Standard Version 4.0 Detail January 2015	This section describes the steps required to calculate ΔCP_t (net annual carbon stock change under the project scenario; tons CO ₂ e). This methodology requires: 1) carbon stock levels to be determined in each time period, t, for which a valid verification report is submitted, and 2) the change in project carbon stock be computed from the prior verification time period, t-1.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E5. REDUCTIONS AND REMOVAL ENHANCEMENTS; Blandin_2014 stocks&UNC.xls; Blandin_2010 stock ests.xls; BlandinACR_Calcs.xlsx
ESI Findings - Round 1 (22 June 2015)	Verifiers noted that degrow procedures were not followed for the years of 2011, 2012 and 2013, were instead determined on a linear rate based on 2010 degrow and 2014. It is unclear how this approach is justified given that the degrow is based on an individual tree approach. Additionally, verifiers noted that degrow procedures did not incorporate mortality, this element is discussed in more depth in the baseline section and related NCR.
Round 1 NCR/CL/OFI	CL: Please clarify how the approach used to degrow for the years 2011, 2012 and 2013 are in line with the degrown approach described in the Project Plan.
Round 1 Response from Project Proponent (20 August 2015)	see full response to this finding in accompanying document "narrative responses to Blandin findings.doc"
ESI Findings - Round 2 (18 September 2015)	Verifiers examined the narrative described by the project proponent. While verifiers agree that the language in Section C.3.1. in the methodology is vague in the scope of annualization. Verifiers agree that the described approach used for the project is performed in parallel to the approach used for the baseline annualization. The item has been addressed.

Item Number	44
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D5. ESTIMATION OF PROJECT EMISSION REDUCTIONS OR ENHANCED REMOVALS

ACR Standard Version 4.0 Detail January 2015	<p>13 - where:</p> <p>t Time in years</p> <p>GHG_{P,t} Greenhouse gas emission (in metric tons CO₂e) resulting from the implementation of the project in year (t).</p> <p>BSP_t Carbon stock (in metric tons CO₂) in logging slash burned in the project in year t.</p> <p>ERCH₄ Methane (CH₄) emission ratio (ratio of CO₂ as CH₄ to CO₂ burned). If local data on combustion efficiency is not available or if combustion efficiency cannot be estimated from fuel information, use IPCC default value of 0.01228 16/44 Molar mass ratio of CH₄ to CO₂</p> <p>GWPC_{H4} 100-year global warming potential (in CO₂e per CH₄) for CH₄ (IPCC SAR-100 value of 21 per the Fourth Assessment Report)</p>
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E5. REDUCTIONS AND REMOVAL ENHANCEMENTS; Blandin_2014 stocks&UNC.xls; Blandin_2010 stock ests.xls; BlandinACR_Calcs.xlsx
ESI Findings - Round 1 (22 June 2015)	Verifiers noted that computation for equation 13 was omitted.
Round 1 NCR/CL/OFI	NCR: Please compute equation 13 in accordance with the approach described within the methodology.
Round 1 Response from Project Proponent (20 August 2015)	The output of equation 13 is GHG _P , which is GHG emissions due to burning logging slash in the project scenario. The project monitoring report states that "No burning of any kind was performed in the course of management in the project area, confirmed via continuous surveillance by on-site land managers during the monitoring period, thus parameter GHGP is equal to zero." GHGP is the outcome of equation 13. To be more specific, we have added the following text to the monitoring plan narrative Section D1 and GHG Plan Section E6: "Thus, parameter BSP equals zero and the outcome of equation 13 of the methodology, parameter GHGP, equals zero." We have added the calculation of equation 13 to "BlandinACR_Calcs 2014 Monitoring.xls"
ESI Findings - Round 2 (18 September 2015)	Equation 13 was confirmed to have been added to the calc worksheet, it is a monitored parameter resulting in zero for the period as no logging slash was burned. Clarifying language added to the Monitoring Report makes this more clear. The item is addressed.

Item Number	45
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D5. ESTIMATION OF PROJECT EMISSION REDUCTIONS OR ENHANCED REMOVALS

ACR Standard Version 4.0 Detail January 2015	14 - t Time in years DCP,t Change in the project carbon stock (in metric tons CO ₂) for year t. DCP,TREE,t Change in the project carbon stock stored in above and below ground live trees (in metric tons CO ₂) for year t. DCP,DEAD,t Change in the project carbon stock stored in dead wood pools live trees (in metric tons CO ₂) for year t. CP,HWP,t Carbon remaining stored in wood products 100 years after harvest (in metric tons CO ₂) for the project in year t. GHGP,t Greenhouse gas emission (in metric tons CO ₂ e) resulting from the implementation of the project in year (t).
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E5. REDUCTIONS AND REMOVAL ENHANCEMENTS; Blandin_2014 stocks&UNC.xls; Blandin_2010 stock ests.xls; BlandinACR_Calcs.xlsx
ESI Findings - Round 1 (22 June 2015)	Verifiers noted that the equation omits GHG component.
Round 1 NCR/CL/OFI	NCR: Please include the computation for GHGP,t in line with computational procedures described in the methodology.
Round 1 Response from Project Proponent (20 August 2015)	See above. We have also added the calculation of equation 13 to "BlandinACR_Calcs.xls"
ESI Findings - Round 2 (18 September 2015)	The result of Equation 13 (GHG,p) is now included in quantification of Equation 14, though the value is set to zero since no logging slash was burned in the monitoring period. The item is addressed.

Item Number	46
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D.5.1 Tree Biomass, Dead Wood Carbon Calculation, Wood Products
ACR Standard Version 4.0 Detail January 2015	The Project Proponent must use the same set of equations used in Section C3.1.1, C3.1.2, and C3.2 to calculate carbon stocks in the project scenario.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PP- Section E5. REDUCTIONS AND REMOVAL ENHANCEMENTS; Blandin_2014 stocks&UNC.xls; Blandin_2010 stock ests.xls; BlandinACR_Calcs.xlsx
ESI Findings - Round 1 (22 June 2015)	Verifier noted that the equations for C3.1.1, C3.1.2 and C3.2 are improperly computed.

Round 1 NCR/CL/OFI	NCR: Please compute the tree biomass, dead wood carbon and wood products are computed in line with equations in C3.1.1, C3.1.2, and C3.2, noting NCRs related to the computation of equations in C3.1., C3.1.2, and C3.2.
Round 1 Response from Project Proponent (20 August 2015)	ACR has agreed that biomass measurements using the CRM, deriving ratios from the measured merchantable bole component, is valid. We have removed foliage from biomass estimates and updated all calculations accordingly. We have also revised calculations of standing dead wood and harvested wood products per responses to findings 28 and 29 and 32 and 33.
ESI Findings - Round 2 (18 September 2015)	Verifiers examined the resubmitted computations using the CRM approach. Verifiers independently computed the values and can confirm that biomass has been correctly computed for the project emissions. The item has been addressed.

Item Number	47
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	D6. MONITORING OF ACTIVITY-SHIFTING LEAKAGE
ACR Standard Version 4.0 Detail January 2015	Entity-wide management certification that requires sustainable practices (programs can include FSC, SFI, or ATFS). Management certification must cover all entity owned lands with active timber management programs.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	PP Section E3
ESI Findings - Round 1 (22 June 2015)	Certificate found and confirmed on the SFI website (CERT-0080071).
Round 1 NCR/CL/OFI	CL: Please clarify if any land acquisitions have taken place since the certificate was issued. If so please provide assurance these are covered under the current certificate.
Round 1 Response from Project Proponent (20 August 2015)	No new land acquisitions by Blandin have taken place since December 15 2008 (date of last land acquisition by Blandin). Throughout the monitoring period, all forestland under Blandin management is under the conservation easement, which has maintained SFI certification throughout.
ESI Findings - Round 2 (18 September 2015)	The response is sufficient to address this finding and requirement, further all forestland owned by Blandin under management was confirmed to have SFI certification. The item is addressed.

Item Number	48
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	D8. ESTIMATION OF WITH-PROJECT UNCERTAINTY
ACR Standard Version 4.0 Detail January 2015	<p>Therefore, - see page 32 where:</p> <p>UNCP,t Percentage uncertainty in the combined carbon stocks in the project in year t.</p> <p>CP,TREE,t Carbon stock in the project stored in above and below ground live trees (in metric tons CO₂) in year t.</p> <p>CP,DEAD,t Carbon stock in the baseline stored in dead wood (in metric tons CO₂) in year t.</p> <p>CP,HWP,t Annual carbon (in metric tons CO₂) remaining stored in wood products in the project 100 years after harvest in year t.</p> <p>GHGP,t Greenhouse gas emission (in metric tons CO₂e) resulting from the implementation of the project in year t.</p> <p>eP,TREE Percentage uncertainty expressed as 90% confidence interval percentage of the mean of the carbon stock in above and below ground live trees (in metric tons CO₂) for the last remeasurement of the inventory prior to year t.</p> <p>eP,DEAD Percentage uncertainty expressed as 90% confidence interval percentage of the mean of the carbon stock in dead wood (in metric tons CO₂) for the last remeasurement of the inventory prior to year t.</p>
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	BlandinACR_Calcs.xlsx
ESI Findings - Round 1 (22 June 2015)	Computations for project uncertainty following Equation 18 were found in "BlandinACR_Calcs.xlsx." Project stocks of AG and BG, HWP are included but GHGP,t are missing. Due to the other issues noted in this review for biomass computations, uncertainty will be reassessed at next submission.
Round 1 NCR/CL/OFI	NCR: Please compute project level uncertainty using parameter GHGP,t.
Round 1 Response from Project Proponent (20 August 2015)	We have added parameter GHGP,t to computation of project uncertainty in spreadsheet "BlandinACR_Calcs 2014 Monitoring". Note that for ex ante purposes, in spreadsheet "BlandinACR_Calcs" project uncertainty, UNCP,t is assumed to be equal to baseline uncertainty UNCbsl, and this is now clarified in the GHG Plan ex ante section E6.

ESI Findings - Round 2 (18 September 2015)	Parameter GHG _{p,t} was appropriately added to computations. Auditors agree that setting project uncertainty equal to baseline uncertainty is reasonable in the ex-ante case and this was confirmed added to Section E6 of the GHG Plan. Equation 18, UNC _t is correctly computed using separate baseline and project uncertainties. Equation 19 is also correctly computed in the validation ERT calc worksheet. The item is addressed.
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Item Number	49
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	F1. METHODS FOR QUALITY ASSURANCE
ACR Standard Version 4.0 Detail January 2015	Standard operating procedures (SOPs) and quality control / quality assurance (QA/QC) procedures for forest inventory including field data collection and data management shall be documented. Use or adaptation of SOPs already applied in national forest monitoring, or available from published handbooks, or from the IPCC GPG LULUCF 2003, is recommended.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	2014 BLANDIN INVENTORY PROOFED.xlsx, Blandin SOPs 2014 04 18.doc, 2014InventoryAdd_2014.07.14.shp
ESI Findings - Round 1 (22 June 2015)	<p>A set of SOPs for establishment of the forest inventory was provided to verifiers. During the site visit, incidences occurred where the inventory SOPs lacked guidance for field sampling of verification data. Further, during the initial review verifiers noted some gaps in the inventory methodology.</p> <p>Verifiers observed that one cluster (Add-6, 3306) was removed from "2014 BLANDIN INVENTORY PROOFED.xlsx" due to moving by a field crew. Verifiers were unable to locate a documented procedure in the inventory SOPs document for cluster removal. This plot was also contained in the plot location shapefile "2014InventoryAdd_2014.07.14.shp." Related, verifiers also note that some non-forest plots (no tally) were excluded from quantification, but procedures for field sampling no-tally plots is not documented in the inventory methodology.</p> <p>During the site visit, verifiers noted the slope assessment technique lacked a breakpoint (min slope) for how slope should be assessed for area computations. The procedure needs greater detail to enable quality control.</p>

Round 1 NCR/CL/OFI	<p>CL: Please assert the SOP for entire cluster removal and further explain removal of Add-6. Please also amend the inventory methods document to reflect SOPs for cluster/plot removal. Please explain procedures for field sampling of no tally plots and amend the inventory methodology as needed.</p> <p>Please also elaborate in the inventory methodology data collection for slope as noted in the finding.</p>
Round 1 Response from Project Proponent (20 August 2015)	<p>see full response to this finding in accompanying document "narrative responses to Blandin findings.doc"</p>
ESI Findings - Round 2 (18 September 2015)	<p>The response from the developers indicated that a plot was incorrectly moved during inventory to tally trees and subsequently the plot was removed from the inventory. On the ground, this plot was a zero tally and as a result of this finding it has been added back into all project calcs (inventory data, FVS modeling).</p> <p>No SOPs were written about cluster/plot removal in the SOPs document as it is not permitted. Section 2.5 describes the mirage method for situations where a plot is adjacent to a property or strata boundary. Though there was the case that a plot was moved in order to inventory trees, all other no-tally plots were recorded appropriately.</p> <p>Language addressing SOPs for data collection of plot slope was confirmed to have been added to the Inventory SOPs document. Though not all crew members are identical in height, the approach is reasonable.</p> <p>The item has been addressed.</p>

Item Number	50
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non- Federal U.S. Forestlands Section, Version 1.1, August 2014	F3. CALCULATION OF TOTAL PROJECT UNCERTAINTY

ACR Standard Version 4.0 Detail January 2015	<p>see page 35</p> <p>19 - where:</p> <p>UNC_t Total project Uncertainty in year t, in %</p> <p>DCBSL_t Change in the baseline carbon stock and GHG emissions (in metric tons CO₂e) for year t. (Section C3)</p> <p>UNCBSL Baseline uncertainty, in % (Section C5)</p> <p>DCP_t Change in the project carbon stock and GHG emissions (in metric tons CO₂e) for year t. (Section D5)</p> <p>UNCP_t With-project uncertainty in year t, in % (Section D8)</p> <p>If calculated UNC in equation (19) is <10%, then UNC shall be considered 0% in equation (20).</p>
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	BlandinACR_Calcs.xlsx
ESI Findings - Round 1 (22 June 2015)	Equation 19 appears to have been computed wrong. The PP is using UNCBSL (baseline uncertainty) directly for UNC _t (total project uncertainty) in the ERT calc worksheet. UNCP _t (project uncertainty) does not appear to have been quantified using CPTREE _t (AG and BG project stocks) as a separate parameter.
Round 1 NCR/CL/OFI	NCR: Please fix computations for total project uncertainty, accounting for project level uncertainty using project stock parameters.
Round 1 Response from Project Proponent (20 August 2015)	Equation 19 is calculated using UNC _P estimates for both ex ante calculations and project monitoring calculations. For ex ante purposes, in spreadsheet "BlandinACR_Calcs" project uncertainty, UNC _{P,t} is assumed to be equal to baseline uncertainty UNC _{BSL} , and this is now clarified in the GHG Plan ex ante section E6. And note that the methodology does not specify how uncertainty is determined ex ante in relevant Section E. Calculation of equation 19 in actual project monitoring, documented in spreadsheet "BlandinACR_Calcs 2014 Monitoring", row 25 in worksheet "Blandin calcs" references project uncertainty UNC _P calculated in worksheet "UNC."
ESI Findings - Round 2 (18 September 2015)	Auditors agree that setting project uncertainty equal to baseline uncertainty is reasonable in the ex-ante case and this was confirmed added to Section E6 of the GHG Plan. In the monitoring case for Equation 19, UNC _t is correctly computed using separate baseline and project uncertainties. Equation 19 is also correctly computed in the validation ERT calc worksheet. The item is addressed.



Item Number	51
ACR - IFM Methodology for Quantifying GHG Removals and Emission Reductions through Increased Forest Carbon Sequestration on Non-Federal U.S. Forestlands Section, Version 1.1, August 2014	G. CALCULATION OF ERTs
ACR Standard Version 4.0 Detail January 2015	<p>another equation page 36</p> <p>20 - where:</p> <p>CACR,t Annual net greenhouse gas emission reductions (in metric tons CO₂e) at time t.</p> <p>DCP,t Change in the project carbon stock and GHG emissions (in metric tons CO₂e) for year t. (Section D5)</p> <p>DCBSL,t Change in the baseline carbon stock and GHG emissions (in metric tons CO₂e) for year t. (Section C3)</p> <p>LK Leakage discount (Section D7)</p> <p>UNCt Total Project Uncertainty, (in %) for year t (Section F3). UNCt will be set to zero if the project meets ACR's precision requirement of within ±10% of the mean with 90% confidence. If the project does not meet this precision target, UNCt should be the half-width of the confidence interval of calculated net GHG emission reductions.</p> <p>BUF The non-permanence buffer deduction as calculated in Section B5. BUF will be set to zero if an ACR approved insurance product is used.</p>
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	BlandinACR_Calcs revAug2015.xlsx
ESI Findings - Round 1 (22 June 2015)	
Round 1 NCR/CL/OFI	
Round 1 Response from Project Proponent (20 August 2015)	

ESI Findings - Round 2 (18 September 2015)	<p>No finding was issued at Round 1 for this equation due to related uncertainty requests. In the validation worksheet "BlandinACR_Calcs revAug2015.xlsx" auditors note that parameter UNC,t within Equation 19 does not account for the confidence interval "half-width" when the precision target isn't met for some years.</p> <p>This requirement pertains to language in the Standard, Chapter 2, part C, which states "If the Project Proponent cannot meet the targeted $\pm 10\%$ of the mean at 90% confidence, then the reportable amount shall be the mean minus the lower bound of the 90% confidence interval, applied to the final calculation of emission reductions/removal enhancements. The precision target is applied across the project, not within particular carbon pools or strata."</p>
Round 2 NCR /CL/OFI	NCR: Please revise computations for Equation 20 to account for total project uncertainty when the precision target isn't met.
Round 2 Response from Project Proponent (19 October 2015)	We have clarified in discussions with ESI on 23 Sep 2015 that calculation of Equation 20 is correct and references the half width of the confidence interval.
Final ESI Findings (18 November 2015)	Auditors confirm during discussions with the project technical consultant that Equation 20 was performed correctly and in adherence with the methodology. No action is needed. The item is addressed.

Item Number	52
VCS AFOLU Non- Permanence Risk Tool, Version 3.2 04 Oct 2012	Internal Risks
ACR Standard Version 4.0 Detail January 2015	Management team does not include individuals with significant experience in all skills necessary to successfully undertake all project activities (i.e., any area of required experience is not covered by at least one individual with at least 5 years experience in the area).
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Risk Tool Section A1.1
ESI Findings - Round 1 (22 June 2015)	Years of experience are listed but not specifics of skills and background. Though TerraCarbons skills are known by the verifier, future readers and auditors of this report may not be as familiar so examples of projects where skills were gained should be included here.
Round 1 NCR/CL/OFI	CL: In the risk tool please state the skills required and the persons/companies filling these roles.
Round 1 Response from Project Proponent (20 August 2015)	Please see response to finding 58.



ESI Findings - Round 2 (18 September 2015)	The capable TerraCarbon group has the necessary skills and background required to implement the project. Details regarding TerraCarbon's expertise is now appropriately includes specifics of their skills and background in the Risk Report. The item is addressed.
Item Number	53
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	Internal Risks
ACR Standard Version 4.0 Detail January 2015	Mitigation: Management team includes individuals with significant experience in AFOLU project design and implementation, carbon accounting and reporting (e.g., individuals who have successfully managed projects through validation, verification and issuance of GHG credits) under the VCS Program or other approved GHG programs.
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Risk Tool Section A1.1
ESI Findings - Round 1 (22 June 2015)	Provides a high level description of skills but does not provide examples of experience. Though TerraCarbons skills are known by the verifier, future readers and auditors of this report may not be as familiar so examples of projects where skills were gained should be included here.
Round 1 NCR/CL/OFI	CL: In the risk tool please state the skills required and the persons/companies filling these roles. Please state specific project where skills were demonstrated.
Round 1 Response from Project Proponent (20 August 2015)	The management team also has access to forest carbon experts with TerraCarbon, who have collectively over 20 years of experience in AFOLU project design and implementation, including carbon accounting and reporting. As of 2015, TerraCarbon has successfully validated and/or verified over 20 forest carbon projects under a variety of standards including ACR, VCS, CCBA, and ARB, and has provided technical advisory on a host of AFOLU carbon projects worldwide. TerraCarbon's experience includes the successful validation and verification of another AFOLU project under the American Carbon Registry - "Restoration of Bottomland Hardwood Forests at National Wildlife Refuges in the south central US and verified numerous projects under the VCS". --> the project risk assessment has been revised to include the experience above under management team and mitigation.
ESI Findings - Round 2 (18 September 2015)	Specific examples of relevant skills for AFOLU project design and implementation are now included in the Risk Report. The individuals responsible for implementation are also noted in Risk Factor (c). Please also see related finding above for Project Management. The item is addressed.

Item Number	54
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	Internal Risks
ACR Standard Version 4.0 Detail January 2015	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section E1, Risk Tool Section Opportunity Cost
ESI Findings - Round 1 (22 June 2015)	<p>The NPV comparison analysis did not have all the components for the project case (verification costs, etc.).</p> <p>PD page 35 states "We assumed that only pulp would be sold for Aspen, Black Spruce, Jack Pine, Northern Hardwoods and White Spruce. " Table E6 shows sawn wood for "lowland hardwood" with a footer that shows "lowland hardwood = black ash". The NPV analysis spreadsheet does not reflect the totals from table E6.</p>
Round 1 NCR/CL/OFI	NCR: Please provide a comparison of the baseline and project NPV which includes all costs.
Round 1 Response from Project Proponent (20 August 2015)	The NPV analysis now includes a full accounting of costs and expected revenue. Wood products assumptions by forest type/stratum are accurate and reflect best current understanding of regional wood markets and Blandin inventory (Cheryl Adams personal communication). Note that sawlogs harvested from the lowland hardwood strata at Blandin from 2010 to 2014 (Table E6) were from a small stand of black ash of veneer quality. Cheryl Adams confirms that this was an exceptional case, and in fact the last veneer logs of black ash harvested at Blandin were from the late 1970s/early 1980s. No further harvests of black ash or other hardwood sawlogs are anticipated at Blandin in the next 20 years.
ESI Findings - Round 2 (18 September 2015)	The worksheet "Blandin_WP_cash flows 20 yrs revJul2015.xls" was supplied as part of the response to this finding. A 20 year NPV comparison was shown with and without the project and the costs associated with the carbon project development were also appropriately included. "UPM Blandin NPV baseline 20 yrs_revAug15.xlsx" was also supplied which demonstrates that a risk rating of 6 is appropriate as "NPV from the most profitable alternative land use activity is expected to be between 50% and up to 100% more than from project activities." The item is addressed.



Item Number	55
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	Internal Risks
ACR Standard Version 4.0 Detail January 2015	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section E1, Risk Tool Section Opportunity Cost
ESI Findings - Round 1 (22 June 2015)	The source of the data appears to be government timber sales on public lands.
Round 1 NCR/CL/OFI	CL: Please provide clarification of the source of the price database "Taucmain.accdb". As it appears the source is from a public pricing database, please clarify how this is appropriate and reflective of private timber sales in the region.
Round 1 Response from Project Proponent (20 August 2015)	The price data included in the "Taucmain.accdb" originates from public auctions and is made available through county and state governments (including http://www.dnr.state.mn.us/forestry/timbersales/stumpage.html AND http://www.co.itasca.mn.us/Home/Departments/Land/Documents/Timber%20Auctions/Results/AuctionResultsMay29.pdf). From these sources, price data of relevance to Blandin's wood basket in the Grand Rapids area is collected to populate its price database. The Blandin mill directly references these prices for accounting internal sales, subject to financial audits. The same government auction data typically serve as the basis for negotiating sales of logs delivered to other mills, and other private transactions. Further, the VCS AFOLU risk tool opportunity cost assessment is driven by comparative NPVs, expressed as a percent difference between the project activity and the most profitable alternative, thus it is the relative NPVs that are important in determining the outcome of the risk assessment, not the exact magnitude of each NPV. For all wood sales, the price data from public auctions used by Blandin should produce an accurate estimate of relative differences in revenues, as prices would not be expected to be different between with- and without-project scenarios.
ESI Findings - Round 2 (18 September 2015)	<p>Auditors confirm that the source of stumpage data used is reputable and appropriate. In some portions of the country, public timber sale auctions do form the basis for prices agreed upon at private sales.</p> <p>However, it is unclear whether this stumpage pricing data is applied consistently throughout all project computations, for example prices from 2010 stumpage price data and the values which feed into the NPV comparison. Clarification is requested here which reflects NPV analyses for purposes of the Risk Report and per the methodology.</p>

Round 2 NCR /CL/OFI	CL: Per the finding, please confirm that stumpage prices throughout all project computations are sourced from the evidence noted in the Round 1 response.
Round 2 Response from Project Proponent (19 October 2015)	In our first response we identified and justified the source of the price data used in all NPV analyses. The process of obtaining this information, which is done by Cheryl Adams of UPM Blandin, we clarify in the following direct communication from Cheryl received 24 Sep 2015: "After a timber auction, the county, state, or federal government issues the results of the auction which Blandin receives. Blandin enters the pricing by species into our database (Taucmain.accdb) along with the source and the auction dates so that for any year since the database begin (about 2002) the average price/ species can be determined." All analyses in the GHG Plan reference price data relevant to the project start date in July 2010, and we queried the database to return price data from auctions taking place Jan 1 2010 to Dec 31 2010 - tab "2010 stumpage price data" in worksheet "UPM Blandin NPV analysis_revAug15.xls" directly imported from the database. We reference average purchase price per cord, and assume 80 ft ³ per cord.
Final ESI Findings (18 November 2015)	This explanation is sufficient to confirm that stumpage prices compiled in the Blandin database (Taucmain.accdb) are used for project computations. Data imported into "UPM Blandin NPV analysis_revAug15.xls" is appropriate and correct. The item is addressed.

Item Number	56
VCS AFOLU Non- Permanence Risk Tool, Version 3.2 04 Oct 2012	Internal Risks
ACR Standard Version 4.0 Detail January 2015	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents	PD Section E1, Risk Tool Section Opportunity Cost
ESI Findings - Round 1 (22 June 2015)	The NPV analysis does not appear to include the lowland hardwood sawlogs.
Round 1 NCR/CL/OFI	CL: Please clarify why "lowland hardwoods" sawlogs reported in the PD are not reflected in the "UPM Blandin NPV Analysis" spreadsheet. If it is determined that it should include, please provide justification for any price used. Please ensure all baseline harvests are reflected in the NPV analysis.
Round 1 Response from Project Proponent (20 August 2015)	Sawlogs harvested from the lowland hardwood strata at Blandin from 2010 to 2014 (Table E6) were from a small stand of black ash of veneer quality. Cheryl Adams confirms that this was an exceptional case, and in fact the last veneer logs of black ash harvested at Blandin were from the late 1970s/early 1980s. No further harvests of black ash or other hardwood sawlogs are anticipated at Blandin in the next 20 years.

ESI Findings - Round 2 (18 September 2015)	<p>Although harvesting of veneer black ash occurred, and despite it is in an exceptional case, they should be reflected in the revenues for the NPV analysis. All other harvested species during the reporting period were included and the justification for only excluding black ash is not sufficient. Although the volume of this category is low, the value may have been disproportionately higher per unit volume.</p> <p>Section 2.2.3 of the Risk Tool states "taking into consideration a conservative estimate of revenue from... and other project revenue streams." This suggests all available revenues must be accounted for "in a transparent manner."</p>
Round 2 NCR /CL/OFI	CL: Please justify further exclusion of black ash from the NPV analysis. Else, please include the relevant revenue generated from sale of black ash veneer logs.
Round 2 Response from Project Proponent (19 October 2015)	For the risk assessment related to opportunity cost, we have revised the NPV analyses to include the value of veneer grade black ash harvested from 2010-2014 and updated the spreadsheets "Blandin_WP_cash flows 20 yrs revOct2015.xls" and "UPM Blandin NPV baseline 20 yrs_revOct15.xls", and the risk assessment and the financial barrier section of the GHG Plan section C3. As the net revenue is realized equally in the baseline and project scenarios, its inclusion does not change the outcome of the opportunity cost analysis, nor the outcome of the financial barrier analysis for additionality. Volume of black ash veneer quality sawlogs, harvested in 2013, was sourced from spreadsheet "Blandin vols harvested 2010_2014" tab "by products", and was 7.8 m ³ (see also Table E4 of the GHG Plan). Negotiated price (in 2013) of \$361.56 per MBF was obtained from correspondence with Cheryl Adams Oct 2015. To present a full accounting of all revenue in the NPV analyses, we have amended the analyses to include revenue from all harvests (not just the black ash flagged here in the finding).
Final ESI Findings (18 November 2015)	Auditors reviewed the revised worksheets submitted in response to this finding. Black ash sale revenue is now included, and all timber revenue. Black ash volume applied was confirmed correct. Values were appropriately reported in the GHG Plan. The risk score item did not change. The item is addressed.

Item Number	57
VCS AFOLU Non- Permanence Risk Tool, Version 3.2 04 Oct 2012	Internal Risks
ACR Standard Version 4.0 Detail January 2015	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated

Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section E1, Risk Tool Section Opportunity Cost
ESI Findings - Round 1 (22 June 2015)	Palletwood is shown in the PD table E6 but not within the "UPM Blandin NPV Analysis", nor are there any prices.
Round 1 NCR/CL/OFI	CL: As the PD (table E6) shows palletwood, please explain where prices are derived from and where they are applied.
Round 1 Response from Project Proponent (20 August 2015)	Sale of wood for palettes represented only 3% of harvested volumes from 2010-2014 and is not considered an important market for driving financial decisions by Blandin.
ESI Findings - Round 2 (18 September 2015)	Auditors agree that pallette wood is an insignificant portion of wood harvested collectively in the reporting period. Given that pallettes are unlikely to increase in value, this exclusion from the NPV analysis is reasonable. The item is addressed

Item Number	58
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	Internal Risks
ACR Standard Version 4.0 Detail January 2015	NPV from the most profitable alternative land use activity is expected to be at least 100% more than that associated with project activities; or where baseline activities are subsistence-driven, net positive community impacts are not demonstrated
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section E1, Risk Tool Section Opportunity Cost
ESI Findings - Round 1 (22 June 2015)	For stands converted to plantation in the baseline natural regeneration was not accounted for in the modeling.
Round 1 NCR/CL/OFI	NCR: Please discuss if herbicidal application or mechanical controls are standard practice for the project region. If this can be justified as common practice, please include the costs in the baseline NPV analysis.
Round 1 Response from Project Proponent (20 August 2015)	Mechanical control of competition is standard practice in the region, and mechanical control is carried out as part of planting and release (at years 3, 5 and 7) activities. Costs of mechanical control are included in planting and release costs included in the worksheet "costs" in spreadsheet "UPM Blandin NPV baseline 20 yrs.xls", and thus are already included in the baseline NPV analysis.
ESI Findings - Round 2 (18 September 2015)	Costs of mechanical controls are inherently built into planting and regeneration costs for aspen and conifer species types. Mechanical control is standard silvicultural practice for the region. The item is addressed.

Item Number	59
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	Internal Risks
ACR Standard Version 4.0 Detail January 2015	NPV from the most profitable alternative land use activity is expected to be between 50% and up to 100% more than from project activities
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section E1, Risk Tool Section Opportunity Cost
ESI Findings - Round 1 (22 June 2015)	With project scenario NPV does not include carbon project management and validation/verification costs.
Round 1 NCR/CL/OFI	NCR: Spreadsheet "Blandin_WP_cash flows 20 yrs.xls" does not appear to include additional management costs in the project scenario (carbon project management from TerraCarbon, validation and period verification costs, etc.). Please address.
Round 1 Response from Project Proponent (20 August 2015)	In spreadsheet "Blandin_WP_cash flows 20 yrs.xls" we have added carbon project development, validation and verification costs in the project scenario to provide a full accounting of costs in the analysis.
ESI Findings - Round 2 (18 September 2015)	Auditing costs for the project are now appropriately included in the NPV analysis for the project scenario. The item is addressed.

Item Number	60
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	Internal Risks
ACR Standard Version 4.0 Detail January 2015	With legal agreement or requirement to continue the management practice
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section A3, Risk Tool Section A1.1 Project Longevity
ESI Findings - Round 1 (22 June 2015)	Easement references "Exhibit A"...Protected Property", however Exhibit A" was not provided.
Round 1 NCR/CL/OFI	NCR: Please provide Exhibit A from the conservation easement so that the geographic coverage of the easement can be confirmed.
Round 1 Response from Project Proponent (20 August 2015)	Exhibit A of the conservation easement is the title insurance (including referenced titles, deeds and easements), which was provided to ESI during their site visit in May 2015.

ESI Findings - Round 2 (18 September 2015)	The conservation easement and accompanying title insurance was reviewed at length during the auditor site visit in May 2015. It was sufficient to confirm the easement's geographic scope. The item is addressed
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Item Number	61
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	External Risks
ACR Standard Version 4.0 Detail January 2015	Ownership and resource access/use rights are held by same entity(s)
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section G, Risk Tool Section A1.1 Land Tenure
ESI Findings - Round 1 (22 June 2015)	<p>During the site visit the ownership was discussed. A document covering title insurance was provided conducted in 2009. A spot review of the titles were conducted and all were consistent but one property for which ownership appears to have been transferred to the State of MN since 2009. From the title insurance document "Blandin_Paper_Atkin_County_125.pdf", 253419.pdf Quitclaim from Burlington Northern to Meridian Oil. Though it is likely included in the title insurance because Meridian has given an easement to Blandin, the title insurance states this parcel in section 29, township 45, range 22 belongs to Meridian Oil (presumably because Meridian has granted an easement to Blandin), however the Atkin GIS shows it as owned by the State of Minnesota.</p> <p>PD does not state if land was divesting or purchase since 2010. Need to include a detailed update on land status as title insurance is dated.</p>
Round 1 NCR/CL/OFI	<p>NCR: Please discuss/address the title issue for the Meridian property as stated in the finding.</p> <p>NCR: Additionally, the PD Section G and Risk Report needs to include a detailed update on ownership status as title insurance is dated. In the PD and Risk Report please provide specifics regarding how the ownership has been vetted since 2010.</p>
Round 1 Response from Project Proponent (20 August 2015)	The Meridian property is not included in the project area. The project area, all within the conservation easement, continues to be titled to Blandin, and in fact per the easement language these lands may not be sub-divided or sold, thus addressing this risk element in perpetuity.
ESI Findings - Round 2 (18 September 2015)	This ownership element was discussed between auditors and the proponent's technical consultant. The Meridian property was confirmed to have not been included in the project area. This is further substantiated by the state of Minnesota easement process. The item is addressed.

Item Number	62
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	External Risks
ACR Standard Version 4.0 Detail January 2015	In more than 5% of the project area, there exist disputes over land tenure or ownership
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section G, Risk Tool Section A1.1 Land Tenure
ESI Findings - Round 1 (22 June 2015)	Though it is understood it is hard to prove a negative, without a rural appraisal how was it determined that no disputes exist?
Round 1 NCR/CL/OFI	CL: Please clearly state in the Risk Report how was it determined that no disputes exist.
Round 1 Response from Project Proponent (20 August 2015)	Since the project start date in 2010, no disputes over ownership of any parcels within the project area and larger conservation easement area have been raised or brought to litigation.
ESI Findings - Round 2 (18 September 2015)	The lack of litigation resulting from property disputes is sufficient to address this requirement. Disputes of this nature are justifiably low risk. The item is addressed.

Item Number	63
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	External Risks
ACR Standard Version 4.0 Detail January 2015	There exist disputes over access/use rights (or overlapping rights)
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	PD Section G, Risk Tool Section A1.1 Land Tenure
ESI Findings - Round 1 (22 June 2015)	Though it is understood it is hard to prove a negative, without a rural appraisal how was it determined that no disputes exist?
Round 1 NCR/CL/OFI	CL: Please clearly state in the Risk Report how was it determined that no disputes exist.
Round 1 Response from Project Proponent (20 August 2015)	Since the project start date in 2010, no disputes over ownership of any parcels within the project area and larger conservation easement area have been raised or brought to litigation.
ESI Findings - Round 2 (18 September 2015)	The lack of litigation resulting from property disputes is sufficient to address this requirement. Disputes of this nature are justifiably low risk. The item is addressed.

Item Number	64
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	External Risks
ACR Standard Version 4.0 Detail January 2015	Less than 50 percent of households living within the project area who are reliant on the project area, have been consulted
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Risk Tool Section A1.2
ESI Findings - Round 1 (22 June 2015)	The Risk Report states that a public consultation was conducted by the State of Minnesota sufficient to meet the Risk Tool requirement for evidence of "...social assessments such as household surveys and participatory rural appraisals."
Round 1 NCR/CL/OFI	NCR: Please provide a report of the findings from the State of Minnesota's assessment or a link to these findings.
Round 1 Response from Project Proponent (20 August 2015)	The encumbrance on the project area and larger land area under the conservation easement was funded in part by the state of Minnesota's "Legacy Fund", established through a 2008 state voter referendum. In the development of the easement terms, elements of public interest (e.g. recreational access to the property, restrictions maintaining conservation value) were represented and incorporated by the state of Minnesota.
ESI Findings - Round 2 (18 September 2015)	The framework in place to administer and grant conservation easements through governments in U.S.A. is often at a level sufficient to capture the community engagement requirements of the Risk Tool. No mitigation is being counted here and a score of zero is appropriate given no households live within/rely on the project area. The item is addressed.

Item Number	65
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	External Risks
ACR Standard Version 4.0 Detail January 2015	Mitigation: The project generates net positive impacts on the social and economic well-being of the local communities who derive livelihoods from the project area
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Risk Tool Section A1.2

ESI Findings - Round 1 (22 June 2015)	The Risk Tool states "Where local populations are not reliant on the project area, the risk is not relevant to the project and the risk rating for community engagement (CE) shall be zero." Since the project supports that there are no communities reliant on the project area, the mitigation score cannot be applied and the overall CE score should be 0.
Round 1 NCR/CL/OFI	NCR: Please remove the mitigation score of -5 and revise the overall CE score to 0 based on the finding.
Round 1 Response from Project Proponent (20 August 2015)	Overall score of risk rating for community engagement has been revised to zero.
ESI Findings - Round 2 (18 September 2015)	The community engagement score has been appropriately revised to zero and overall risk rating appropriately updated. The item is addressed.

Item Number	66
VCS AFOLU Non- Permanence Risk Tool, Version 3.2 04 Oct 2012	External Risks
ACR Standard Version 4.0 Detail January 2015	Pest and Disease
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Risk Tool Section A1.3
ESI Findings - Round 1 (22 June 2015)	<p>The project reports a likelihood of incidence of all pests at once every 100 years. MNDNR reports that several outbreaks of forest tent caterpillars in the Grand Rapids region have occurred in the past 100 years, with outbreaks common every 10 - 16 years lasting a duration of 3 to 7 years on average. This is inconsistent with the 100 year likelihood stated by the project.</p> <p>The maps provided in the report indicate that the outbreaks exceeded 5% of the project area. http://files.dnr.state.mn.us/assistance/backyard/treecare/forest_health/ftc/ftc-FactSheet-2014.pdf As stated by the report "The main impact of several years of defoliation is a reduction in growth. However if trees are stressed from drought, root damage, or are over-mature, they also become vulnerable to secondary pests that can kill them in one to three years. Although healthy trees can withstand two to three years of defoliation, repeated, heavy defoliation of aspen mixed-wood forests by forest tent caterpillars reduces forest production and influences forest composition."</p>
Round 1 NCR/CL/OFI	NCR: Please adjust the likelihood of pests to reflect the information supported by MN DNR.

Round 1 Response from Project Proponent (20 August 2015)	We have adjusted the likelihood of pests in the risk assessment to every 10-25 years. Our original likelihood score considered a major 25-50% loss of stocks. Likelihood is a function of significance. For the revised likelihood of every 10-25 years, we revise the corresponding significance to insignificant (less than 5% loss of carbon stocks). Both spruce budworm and tent caterpillar outbreaks result in reduced productivity due to defoliation (lasting e.g. 2-4 years with tent caterpillars) but seldom result in mortality, thus any reversal produced would not be expected to exceed 5% of project carbon stocks (also mitigated by the large non-contiguous project area). The overall score for pest and disease is now revised from 0 to 1, and natural risk rating has been updated (and incorporated a mitigation value of 0.5). Of further relevance, Cheryl Adams of Blandin confirms that no forest stands at Blandin have been lost to fire, pest or drought since she began work for Blandin in 1999.
ESI Findings - Round 2 (18 September 2015)	The proponent has revised the pests risk slightly to reflect an insignificant level of risk at a likelihood interval of every 10 to less than 25 years. A score of 1 here is appropriate given the documented presence of tent caterpillars and known effects. Here, a 0.5 mitigation score is allowable as the collaboration between MN DNR and Blandin ensures prevention measures are implemented as needed for Blandin to adopt IPM procedures. The item is addressed

Item Number	67
VCS AFOLU Non-Permanence Risk Tool, Version 3.2 04 Oct 2012	External Risks
ACR Standard Version 4.0 Detail January 2015	Extreme Weather – Changes in Weather Patterns
Evidence Used to Assess (Location in GHG Plan, MR or Supporting Documents)	Risk Tool Section A1.3
ESI Findings - Round 1 (22 June 2015)	Drought risk is not addressed by the Risk Report. The US Drought Monitor (http://droughtmonitor.unl.edu/MapsAndData/DataTables.aspx?MN) shows that severe drought has occurred across the project areas (>5%) within the past 5 years and has occurred historically with a frequency of roughly 5-10 years.
Round 1 NCR/CL/OFI	NCR: Please address drought risk.
Round 1 Response from Project Proponent (20 August 2015)	We have added drought risk to our discussion of extreme weather risk in the risk assessment. The score does not change however, because we are unaware of any droughts in the region resulting in significant mortality. Cheryl Adams of Blandin confirms that no forest stands at Blandin have been lost to drought since she began work for Blandin in 1999.



**ESI Findings - Round 2
(18 September 2015)**

Auditors agree with the proponents assertion that drought highly infrequently affects carbon stocks of stands in MN. The short statement added to the Extreme Weather section of the Risk Report is sufficient to mention drought as a potential risk in the project area. Here the score does not need to be changed. The item is addressed.

Appendix B – List of Documents Received and Reviewed by ESI

Documents received 13 February 2015

- Validation and Verification RFP_Blandin_Feb_2015_ESI.pdf
- 22.05.14 v2 uploaded BLANDIN ACR pipeline listing form FINAL.docx

Documents received 16 February 2015

- 2014InventoryPlots_2014.04.17.shx
- 2014InventoryAdd_2014.07.14.dbf
- 2014InventoryAdd_2014.07.14.prj
- 2014InventoryAdd_2014.07.14.sbn
- 2014InventoryAdd_2014.07.14.sbx
- 2014InventoryAdd_2014.07.14.shp
- 2014InventoryAdd_2014.07.14.shp.xml
- 2014InventoryAdd_2014.07.14.shx
- 2014InventoryPlots_2014.04.17.dbf
- 2014InventoryPlots_2014.04.17.prj
- 2014InventoryPlots_2014.04.17.sbn
- 2014InventoryPlots_2014.04.17.sbx
- 2014InventoryPlots_2014.04.17.shp
- 2014InventoryPlots_2014.04.17.shp.xml

Documents received 20 April 2015 (from ACR website)

- GHG Plan UPM Blandin Native American Hardwoods Conservation & Carbon Sequestration Project Final 17Oct2014.pdf

Documents received 21 April 2015 (from ACR website)

- 017-Blandin-ACR212 Project-Specific VVB Conflict of Interest-final-20150414.pdf
- 017-Blandin-ACR212 Project-Specific VVB Conflict of Interest-final-20150420.pdf

Documents received 21 April 2015 (from ACR)

- ACR212 pipeline listing review FINAL.docx
- ACR review of UPM project Plan_Final CERTIFICATION APPROVAL.pdf

Documents received 21 April 2015

- 2010_2014vols harvested
 - Blandin vols harvested 2010_2014.xls
- 2014 monitoring report
 - BlandinACR_Calcs 2014 Monitoring.xlsx
 - Blandin Smart Forestry Project Monitoring Rpt 2014.docx
- Additionality
 - UPM Blandin NPV baseline 20 yrs.xlsx
 - Blandin_WP_cash flows 20 yrs.xls
- Baseline
 - nc_2001_Stone_001.pdf
 - Blandin_baselineA live stock proj.xls
 - Blandin_baselineA snag proj.xls
 - Blandin_baselineA wood prod proj.xls



- BlandinACR_Calcs.xlsx
 - cfans_asset_249722.pdf
 - MN Silvicultural Practices 2008.pdf
- ex ante
 - Blandin_WP2014.xls
 - Blandin_WP2014.key
- FVS-LS
 - Suppose.loc
 - Blandin_BSL_2010A.key
 - Blandin_BSLA_2010.xls
 - Blandin_Database.mdb
 - Blandin_unmanaged.key
 - Blandin_unmanaged.xls
 - Blandin2010_clearcut.key
 - Blandin2010_clearcut.xls
 - Blandin2010_Database.mdb
 - Blandin2010_unmanaged.key
 - Blandin2010_unmanaged.xls
- GIS data
 - Blandin_PA_2014.07.11b.shx
 - BlandinInventory
 - 2014InventoryPlots_2014.04.17.shx
 - 2014InventoryAdd_2014.07.14.dbf
 - 2014InventoryAdd_2014.07.14.prj
 - 2014InventoryAdd_2014.07.14.sbn
 - 2014InventoryAdd_2014.07.14.sbx
 - 2014InventoryAdd_2014.07.14.shp
 - 2014InventoryAdd_2014.07.14.shp.xml
 - 2014InventoryAdd_2014.07.14.shx
 - 2014InventoryPlots_2014.04.17.dbf
 - 2014InventoryPlots_2014.04.17.prj
 - 2014InventoryPlots_2014.04.17.sbn
 - 2014InventoryPlots_2014.04.17.sbx
 - 2014InventoryPlots_2014.04.17.shp
 - 2014InventoryPlots_2014.04.17.shp.xml
 - redpine_whitespruce_100114_onlyplant
 - redpine_whitespruce_100114_onlyplant.shx
 - redpine_whitespruce_2000_2010.dbf
 - redpine_whitespruce_2000_2010.prj
 - redpine_whitespruce_2000_2010.sbn
 - redpine_whitespruce_2000_2010.sbx
 - redpine_whitespruce_2000_2010.shp
 - redpine_whitespruce_2000_2010.shp.xml
 - redpine_whitespruce_2000_2010.shx
 - _whitespruce_100114_onlyplant.dbf
 - redpine_whitespruce_100114_onlyplant.prj
 - redpine_whitespruce_100114_onlyplant.sbn
 - redpine_whitespruce_100114_onlyplant.sbx
 - redpine_whitespruce_100114_onlyplant.shp



- redpine_whitespruce_100114_onlyplant.shp.xml
 - Blandin_PA_2014.07.11b.dbf
 - Blandin_PA_2014.07.11b.prj
 - Blandin_PA_2014.07.11b.sbn
 - Blandin_PA_2014.07.11b.sbx
 - Blandin_PA_2014.07.11b.shp
 - Blandin_PA_2014.07.11b.shp.xml
- Inventory
 - Blandin2014_SampleSize 2014 07 14.xlsx
 - 2014 BLANDIN INVENTORY PROOFED.xlsx
 - 2014BlandinPlots_2014.07.14.xlsx
 - add plot pictures.zip
 - Blandin SOPs 2014 04 18.doc
- NPV
 - UPM Blandin NPV analysis.xlsx
 - Taucmain.accdb
- Risk
 - WB gov indices 2014Aug.xlsx
 - Assessment of Anthropogenic Disturbances to Mesic Northern Forests and Summary of Restoration Strat.pdf
 - Blandin 2014 risk analysis 16Oct2014.docx
 - Canham_and_Loucks_1984_Ecol_65_803-809.pdf
 - cfans_article_249466.pdf
 - cleland.pdf
 - Lorimer and White 2003.pdf
- Blandin project area_2014 09 30.xlsx
- Blandin Smart Forestry Project GHG Plan 16Oct2014.docx
- Blandin_2010 stock ests.xls
- Blandin_2014 stocks&UNC.xls
- Blandin_FVSLS annual growth derived.xls

Documents received 30 April 2015

- Blandin Smart Forestry Project Monitoring Rpt 2014 2015.04.30.docx
- Blandin 2014 risk analysis 2015.04.30.docx

Documents received 01 May 2015

- 095- ACR Validation Sampling Plan-v4.1Completedcja.doc

Documents received 05 May 2015

- 095- ACR Validation Sampling Plan-v4.1Completedcja.doc

Documents received 08 May 2015

- Conservation Easement - Itasca Co - Recorded.pdf

Documents received 15 May 2015

- Public Version Blandin Management Plan2007.doc

Documents received 16 July 2015



- VO15017_Blandin_ACR_Round1b_COMPLETE_NCRs_2015-06-22 TerraCarbon responses.xlsx
- narrative responses to Blandin findings.docx

Documents received 19 August 2015

- VO15017_Blandin_ACR_Round1b_COMPLETE_NCRs_2015-06-22 TerraCarbon responses.xlsx
- narrative responses to Blandin findings 19Aug.docx

Documents received 20 August 2015

- VO15017_Blandin_ACR_Round1b_COMPLETE_NCRs_2015-06-22 TerraCarbon responses.xlsx
- Supporting Data
 - UPM_topo.jpg
 - 2014Inventory_2015.07.09
 - 2014Inventory_2015.07.09.shx
 - 2014Inventory_2015.07.09.dbf
 - 2014Inventory_2015.07.09.kmz
 - 2014Inventory_2015.07.09.prj
 - 2014Inventory_2015.07.09.sbn
 - 2014Inventory_2015.07.09.sbx
 - 2014Inventory_2015.07.09.shp
 - 2014Inventory_2015.07.09.shp.xml
 - Blandin_PA_2015.07.14.dbf
 - Blandin_PA_2015.07.14.prj
 - Blandin_PA_2015.07.14.sbn
 - Blandin_PA_2015.07.14.sbx
 - Blandin_PA_2015.07.14.shp
 - Blandin_PA_2015.07.14.shp.xml
 - Blandin_PA_2015.07.14.shx
 - UPM_GIS.mxd
- 97_98 Blandin data.xlsx
- 2014 BLANDIN INVENTORY PROOFED_revAug15.xlsx
- Blandin 2014 risk analysis revJul2015.docx
- Blandin HWP harvested 2010_2014 baseline and project.xls
- Blandin Smart Forestry Project GHG Plan rev Jul2015.docx
- Blandin Smart Forestry Project Monitoring Rpt 2014 revJul2015.docx
- Blandin SOPs revJul2015.doc
- Blandin US governance risk updated.xlsx
- Blandin vols harvested 2010_2014_revAug15.xls
- Blandin_2010 stock ests_revAug15.xls
- Blandin_2014 stocks&UNC_revAug15.xls
- Blandin_baselineA live stock proj_revAug15.xls
- Blandin_baselineA snag proj_revAug15.xls
- Blandin_baselineA wood prod proj_revAug15.xls
- Blandin_DatabaseR.mdb
- Blandin_WP_cash flows 20 yrs revJul2015.xls
- Blandin_WP2014_revAug15.xls



- Blandin2010_Database.mdb
- BlandinACR_Calcs 2014 Monitoring revAug2015.xlsx
- BlandinACR_Calcs revAug2015.xlsx
- ht reg validations.xlsx
- Memo for TableE11 GHG7_2015.docx
- mortality der from FVSLS 10 yr no mgt proj.xls
- narrative responses to Blandin findings 19Aug.docx
- SFI Certificate2005_2009.pdf
- SFI Certificate2010_2014a.pdf
- SFI Certificate2010_2014b.pdf
- SPAS-009582-A-00263689-S1-Summary Public Report-ENG.pdf
- UPM Blandin NPV analysis_revAug15.xlsx
- UPM Blandin NPV baseline 20 yrs_revAug15.xlsx
- UPM_PA_2015 07 14b.xlsx

Documents received 17 September 2015

- Blandin2010_unmanaged_2AS2rev.key
- Blandin_BSL_2010A_2AS2rev.key
- Blandin_unmanagedR.key
- Blandin2010_clearcut_2AS2rev.key

Documents received 14 October 2015 – From ACR

- ACR Methodology Deviation Request_ UPM Blandin Oct2015 with Determination.pdf

Documents received 19 October 2015

- VO15017_Blandin_ACR_Round2_DRAFT_NCRs_2015-09-18 TC responses Oct2015.xlsx
- UPM Blandin NPV baseline 20 yrs_revOct15.xlsx
- UPM_GIS
 - UPM_GIS.mxd
 - Blandin_PA_2015.07.14.dbf
 - Blandin_PA_2015.07.14.prj
 - Blandin_PA_2015.07.14.sbn
 - Blandin_PA_2015.07.14.sbx
 - Blandin_PA_2015.07.14.shp
 - Blandin_PA_2015.07.14.shp.xml
 - Blandin_PA_2015.07.14.shx
- Blandin 2014 risk analysis revOct2015.docx
- Blandin Smart Forestry Project GHG Plan rev Oct2015.docx
- Blandin Smart Forestry Project Monitoring Rpt 2014 revOct2015.docx
- Blandin_WP_cash flows 20 yrs revOct2015.xls
- BlandinACR_Calcs 2014 Monitoring revOct2015.xlsx
- BlandinACR_Calcs revOct015.xlsx
- narrative for incorp 2010_14 hvst in 2010 inventory.docx

Documents received 19 October 2015

- Blandin 2014 risk analysis revNov2015.docx
- Blandin Smart Forestry Project GHG Plan rev Nov2015.docx



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- Blandin Smart Forestry Project Monitoring Rpt 2014 revNov2015.docx

Documents received 24 November 2015

- Blandin Smart Forestry Project Monitoring Rpt 2014 revNov2015.docx
- Blandin 2014 risk analysis revNov2015.docx
- Blandin Smart Forestry Project GHG Plan rev Nov2015.docx

Documents received 01 December 2015

- Blandin Smart Forestry Project Monitoring Rpt 2014 revNov2015 FINAL.docx
- Blandin Smart Forestry Project GHG Plan rev Nov2015 FINAL.docx