

# **RISK BASED APPROACH (RBA) FOR ACHIEVING CONFORMANCE WITH THE NETHERLANDS' SDE+ SUSTAINABILITY REQUIREMENTS**



**FOR CATEGORY 2 BIOMASS SOURCED FROM  
SMALL FOREST MANAGEMENT UNITS (FMUS)  
(<500 HECTARES) IN THE US**

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**PUBLIC SUMMARY**

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# FOREWORD AND VENDOR QUALIFICATION

The American Forest Foundation (AFF) was engaged in January 2020 to develop a risk-based approach (RBA) for achieving conformance with the Netherlands subsidy scheme for renewable energy (or in Dutch, de stimuleringsregeling duurzame energieproductie or SDE+) sustainability requirements for Category 2 biomass sourced from small Forest Management Units (FMUs) (<500 hectares) in the US. AFF is a non-profit conservation organization that protects and measurably increases clean water, wildlife habitat, and sustainable wood supplies that come from family-owned forests. AFF works with landowners, partners, leading businesses, and policymakers to address key issues such as conserving biodiversity, reducing the risk of catastrophic wildfire, and addressing the threat of climate change.

AFF has engaged in and tracked processes associated with developing and implementing the Netherlands' SDE+ sustainability requirements for biomass over the last five years. AFF understands the complexity the legislation presents for all actors in the supply chain, including family landowners, pellet producers, and energy generators. With these complexities in mind, AFF is strategically positioned to support a solution for achieving conformance with the SDE+ framework for fiber originating in family woodlands in the US (Category 2) using a risk-based approach (RBA) under the Dutch Verification Protocol for Sustainable Solid Biomass for Energy Applications, January 2021.

As the trusted and valued partner to family forest owners in the United States, as well as a broad range of organizations, including federal and state public agencies, private industry, and conservation organizations, AFF is uniquely positioned and well-suited to develop an RBA, including the development and implementation of required on-the-ground mitigation activities. Similarly, AFF is recognized for its innovative approaches, cutting-edge use of technology, robust analyses, and credible technical expertise in the areas of sustainability assurance and stakeholder engagement.

To complement the expertise and skillset of AFF's team in support of the RBA development and further promote the RBA's integrity, AFF contracted with several external organizations with specific subject matter expertise to provide both specific section and full scope reviews of the RBA. AFF has engaged Southern Forestry Consultants (SFC), SCS Global Services (SCS), Peterson Consulting, and NatureServe. SFC has developed additions and appendices to existing Landscape Management Plans (LMP) in Florida and South Carolina, and Georgia. SCS provided consultation, pre-audit review, and advice on auditing options. Peterson provided consultation, pre-audit review, and advice on the application of the RBA. NatureServe provided data and expertise for risk assessments related to species and ecosystems. Detailed organization descriptions can be found in [Annex I](#).

# INTRODUCTION

According to the Netherlands Enterprise Agency (RVO) Verification Protocol for Sustainable Solid Biomass for Energy Applications commissioned by the Ministry of Economic Affairs and Climate policy, a biomass producer can demonstrate compliance with applicable SDE+ sustainability requirements using a risk-based approach for small forest lands by following the procedures outlined in Chapter 8 of the Verification Protocol, through the end of 2022. The risk-based approach is a viable pathway, well-matched to family woodlands, and is commensurate with the scale of sourcing at a landscape level.

To fully meet the SDE+ sustainability requirements, there is an increasing need for a risk-based approach to ensure sustainable biomass sourcing. AFF and key stakeholders have collaborated to develop an RBA to SDE+ under the Verification Protocol. Importantly, the RBA can work together with certification expansion, draw on existing AFF infrastructure for growth, and enable dual-purpose engagement - certification and monitoring - of landowners to meet mitigation needs.

In the short term (through the end of 2022), an RBA can be used to provide SDE+ compliant biomass. As noted in Chapter 8 of the Verification Protocol, “small-scale forest management units (less than 500 hectares) in a specific region do not need to undergo individual verification to demonstrate compliance with the SFM criteria.”

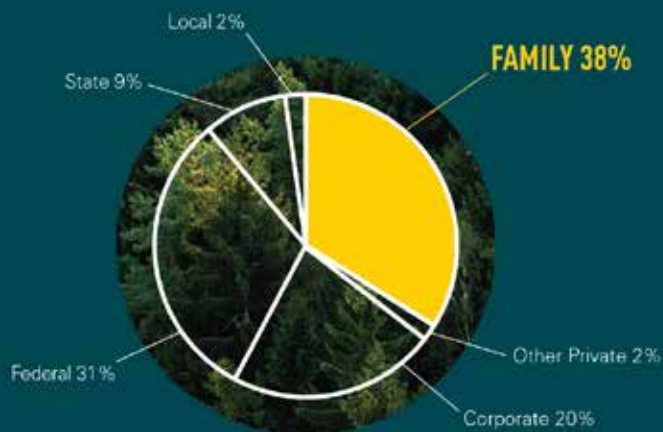
The RBA enables the consideration of family lands in aggregate as a segment source of feedstock and assessment of sustainability at a scale commensurate with sourcing. As such, it is a good option for family woodlands in the US, where the adoption of certification amongst smallholders is limited.

Without a viable pathway for family woodlands, via the RBA, the Dutch sustainability requirements will disqualify the bulk of wood supplies and forgo the chance to drive forest conservation outcomes on the ground in the US through family landowner engagement. This RBA offers not only a match for the unique situation of American family landowners but also a rigorous method of demonstrating the sustainability of sourcing for the Dutch energy sector. While AFF is not involved in sourcing material, buyers of wood are looking for options for verifying non-certified sources' sustainability. Using an RBA paired with credible mitigation and monitoring systems can provide viable compliance with SDE+ at the landscape level.

## LAND OWNERSHIP CHARACTERISTICS OF THE U.S.

The United States is home to approximately 741 million acres, or 300 million hectares of forestland, representing 7.5% of the world's forests. The country has a strong culture and history of sustainable forestry that supports healthy forests and results in annual forest growth greater than annual harvests. The forests across the US provide companies, consumers, conservation groups, and government agencies with myriad benefits. Unlike many countries, where forest land is owned and managed primarily by the state, most US forest land (60%) is owned by private landowners, most of whom (more than 10 million) are family forest owners. Families and individuals, who own the largest portion of privately owned forests, are vital to ensuring the health and productivity of America's forests. The average ownership size for a family forest is 67 acres (27 hectares). Most of these landowners manage their forestland sustainably to ensure they can enjoy it today and that it will be part of their family's legacy for generations to come.

# FAMILY FOREST OWNERS OWN THE LARGEST PORTION OF U.S. FORESTS<sup>1</sup>



The average ownership size for a family forest is **27 HECTARES**.<sup>2</sup>



There are 21 million family forest owners in the U.S.<sup>3</sup>, or **1 IN 4** rural Americans.



Collectively, there are **117 MILLION HECTARES** of family-owned forests in the U.S. This is more than the area of Germany, Czech Republic, Switzerland, Poland, Italy and Austria combined.<sup>4</sup>

1 U.S. Forest Service. 2019. Forest Resources of the United States.

2 U.S. Forest Service. 2013. Forest Ownership of the United States.

3 Brett Butler, U.S. Forest Service. 2017. Proprietary research.

4 U.S. Forest Service. 2016. National Woodland Owner Survey.

## UNIQUE NATURE OF FAMILY WOODLANDS (CATEGORY 2, <500 HA) AND EVALUATION OF RISK

In developing an RBA as a comprehensive assurance system associated with sourcing on Category 2 lands (<500 hectares) against the SDE+ criteria, it is critical to consider the unique nature of family woodlands in the United States. It is especially important to put family woodlands in the context of the US South, a principle sourcing region worldwide and a setting with a strong presence of large, industrial forest operations.

In summary, several interdependent characteristics collectively describe the unique condition of Category 2 lands relative to other ownership classes in the region, and which underpin the general approach taken in applying the SDE+ Sustainable Forest Management (SFM) criteria to these lands: a) these lands are small in size relative to other classes of ownership. The small size of these lands, combined with their variably dispersed geographic locations, means any impacts on individual FMUs are equivalently small and diluted across the landscape; b) the overwhelming majority of these lands are managed at low intensity in terms of silvicultural interventions and related activities. Consequently, the potential for adverse ecological impacts on these FMUs is further attenuated by infrequent and moderated intensity of activities; c) applying FMU-level verification audits on hundreds of thousands of small properties is entirely cost-prohibitive; and, d) even though these lands are characteristically small and low impact because there are so many Category 2 FMUs throughout the region, they are a significant segment of the forest products market supply.

The SDE+ requirements were developed to apply globally and at the FMU level. By design, they are not well-matched to small-scale family ownerships and their operations, generally, and particularly in the context of the US South. Indeed, many of the criteria are poorly adapted for application at the average size, scale, and intensity of family ownerships. FMU level evaluation for Category 2 lands in the US is, in our view, not appropriate. This RBA offers not only a match for the unique situation of American family landowners but also a rigorous method of demonstrating the sustainability of sourcing for the Dutch energy sector.

Even as AFF works to expand certification each year, it is apparent that forest certification may have limitations in its application to family landowners in the United States. While AFF is not involved in sourcing material, buyers of wood are looking for options for verifying the sustainability of non-certified sources. Using a risk-based analysis, paired with credible mitigation and monitoring systems, can provide viable compliance with SDE+ at the landscape level.

# RBA OVERALL METHODOLOGY

## VIABILITY EVALUATION

AFF conducted an initial analysis to understand the viability of a Risk-Based Approach (RBA) methodology for achieving and demonstrating compliance for Category 2 biomass (originating on landholdings less than 1236 acres/500 hectares) under the Verification Protocol (January 2021 version). This desk review evaluated the suitability of the RBA for the demographic and identified potential pathways for assessing risk and demonstrating compliance for each indicator and made recommendations, drawing on alignment with existing laws, regulations, and applicable programs available in the US with a focus on the US South.

Drawing on this work, AFF developed a framework for the implementation of an RBA for South Carolina, Georgia, and northern Florida. This 3-state RBA sets the stage for a much larger deployment of the RBA approach, across the US southeastern region, including the other Gulf States and the mid-Atlantic regions, which have been identified priority regions for Dutch-bound biomass production.

## RISK-BASED APPROACH: OVERVIEW

Per the Verification Protocol, by following the procedures for an RBA, small-scale FMUs (< 500 ha) in a specific region do not need to undergo individual verification to demonstrate compliance with the SFM criteria. The RBA provides evidence to demonstrate that, for each of the SFM criteria, the (mitigated residual) risk level is “low.” The RBA can also be used for demonstrating compliance with the controlled biomass criteria.

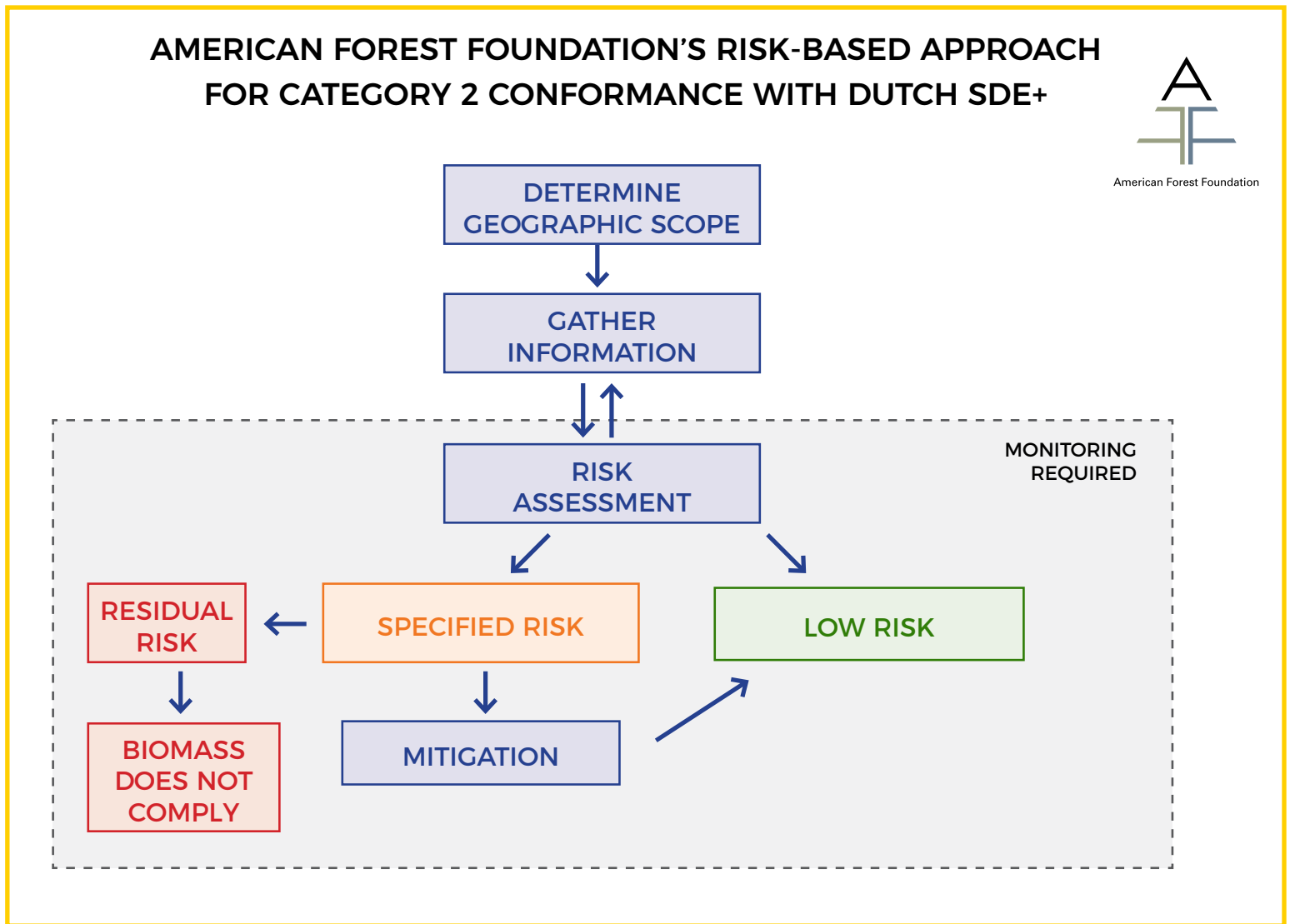
During verification, the biomass producer shows the Conformity Assessment Body (CAB) that the RBA was conducted in accordance with the requirements described in the verification protocol. As part of the verification, the CAB consults relevant stakeholders. When applying an RBA for small FMUs, the biomass producer must maintain documentation to demonstrate biomass originates from in FMUs smaller than 500 ha.

This RBA was developed by AFF by the commission of the Dutch Biomass Certification Foundation (DBC) Foundation to support use by biomass producers and may cover the supply bases of several biomass producers together.

The RBA involves the following process steps:

- determination of the region;
- gathering of information in relation to the SFM requirements;
- risk assessment;
- mitigation measures (establishment and regular monitoring of measures to prevent the sourcing of biomass with a specified);
- regular monitoring of the risk assessment and the mitigation measures put in place.

Figure X. AFF's Risk-Based Approach (RBA) Process



## DETERMINATION OF THE REGION

### Geographic Scope for the RBA Assessment of Northern Florida, Georgia, and South Carolina Methodology

The geographic scope for the RBA includes northern Florida (FL), Georgia (GA), and South Carolina (SC), covering a region that is interrelated through legal, cultural, operational, jurisdictional, ecological, and functional characteristics.

## GATHERING INFORMATION IN RELATION TO THE SFM REQUIREMENTS

The Verification Protocol specifies that the development of an RBA process includes gathering information on identified areas relevant for the risk analysis with respect to the SFM requirements. This includes:

- Gathering relevant documentation, such as laws and regulations, government statistics, NGO reports, expert studies, and maps.
- Consultation with stakeholders and experts.



## **RISK ASSESSMENT**

AFF conducted a thorough assessment of each of the sustainability indicators that apply to Category 2, in accordance with the directions outlined in Chapter 8 of the SDE+ Verification Protocol. The VP establishes that criterion level conformance is determined by and reliant upon demonstrated conformance with each corresponding indicator. Where indicators were not suitable for a risk assessment at the regional level (e.g., indicators can only be used at an FMU level), other means of verification were deployed and substantiated. An evaluation method was identified for each indicator. Recognizing the complexity of many of the sustainability elements addressed in the SDE+ requirements and the multiple variables that influence performance, where feasible, AFF sought to include both quantitative and qualitative analyses, as well as two analytical methods, to yield the most robust conclusion. Analyses were conducted by qualified professionals with relevant experience and expertise to ensure the RBA's credibility overall. Secondary reviews were conducted by SCS Global Services (US) and Peterson (Netherlands) to provide additional assurance as to the quality of the risk assessment.

## **IDENTIFICATION OF RISK**

In accordance with section 8.3.2 of the Verification Protocol, the risk of non-compliance for each requirement applying to Category 2 is expressed as "low risk" or "specified risk" based on the analyses conducted and the indicators set out in the protocol. Risk is evaluated for each criterion and its associated indicators at the scale of the RBA Region. For each of the indicators, a rationale for risk designation is provided, drawing on the analyses conducted. As a result, for indicators with specified risk, the related criterion is also designated with specified risk aligning with the Verification Protocol's requirement that compliance with criteria is dependent on compliance with all applicable underlying indicators.

## **RISK MITIGATION AND MEASURES**

For a criterion designated with "specified risk," AFF's RBA defines mitigating measures in order to reduce the risk level to "low risk." Mitigation measures required of this RBA are specific to the unique nature of sourcing from family-owned forests, Category 2, in this region of the US.

In the event that the risk of non-compliance for one or more SFM criteria remains a "specified risk" even after the introduction of mitigation measures, biomass from that region cannot be classified as sustainable.

## **ESTABLISHMENT AND REGULAR MONITORING OF MITIGATION MEASURES**

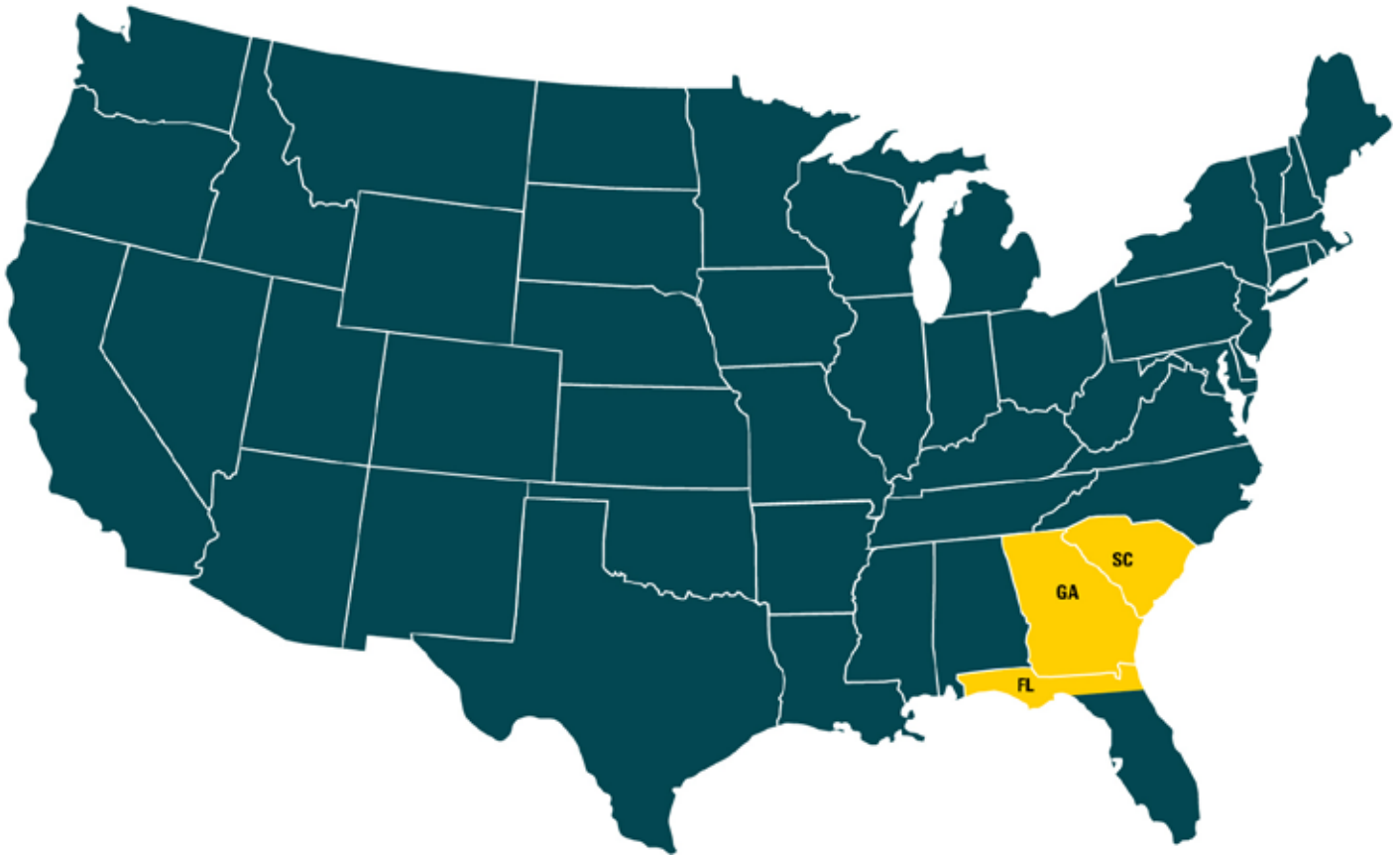
Monitoring of the RBA and mitigation activities is essential for maintaining the system's integrity in providing assurance of compliance with SDE+ for Category 2 sourcing on family-owned woodlands in the geographic scope.

As the party responsible for the development and maintenance of the RBA, AFF is responsible for overall RBA monitoring and monitoring (validation) of mitigation as a key facet of the system.

In addition, AFF is responsible for monitoring and evaluating the effectiveness of mitigation. The monitoring of mitigation activities is central to the function of the RBA. The performance of mitigation activities is a key input into monitoring the RBA as a whole and must be consistently implemented and reported.

# DETERMINATION OF THE REGION

## GEOGRAPHIC SCOPE FOR THE RBA ASSESSMENT OF NORTHERN FLORIDA, GEORGIA, AND SOUTH CAROLINA



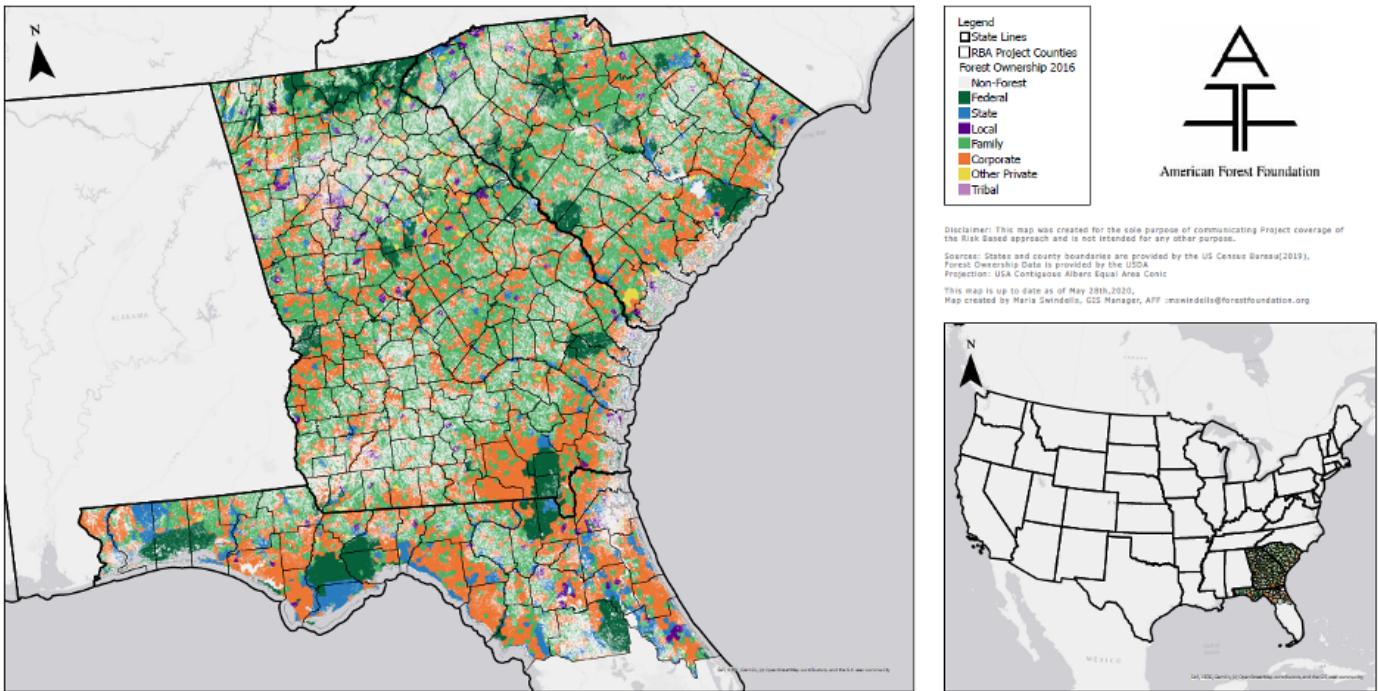
### METHODOLOGY

The geographic scope of this RBA is located within the conterminous United States and spans the entire states of Georgia and South Carolina and a subset of counties in northern Florida, roughly the upper third of the state. The southern two-thirds of Florida was not included in this scope, both because this area falls outside the dominant regions for biomass sourcing and because the habitat types in southern Florida are distinct from the rest of the scope. This is a region that is interrelated through jurisdictional, ecological, and functional characteristics.

## ADMINISTRATIVE AND REGULATORY DIVISIONS

Although these states do have some differences in state-level (and local-level) regulation, they also share many similarities, as described below. Additionally, overarching federal-level regulations serve to align state regulation and create further homogeneity across each state.

Map 1: Risk-Based Approach Project Area – Georgia, South Carolina, North Florida



## GEOGRAPHIC AND ECOLOGICAL EXTENT

The diversity that exists in forests across the southeastern US is part of what makes this region so incredibly valuable. This diversity is managed at a local level by foresters who work on the ground with individual landowners. However, biological systems and communities can be identified at a landscape level and inform management at fine and regional scales.

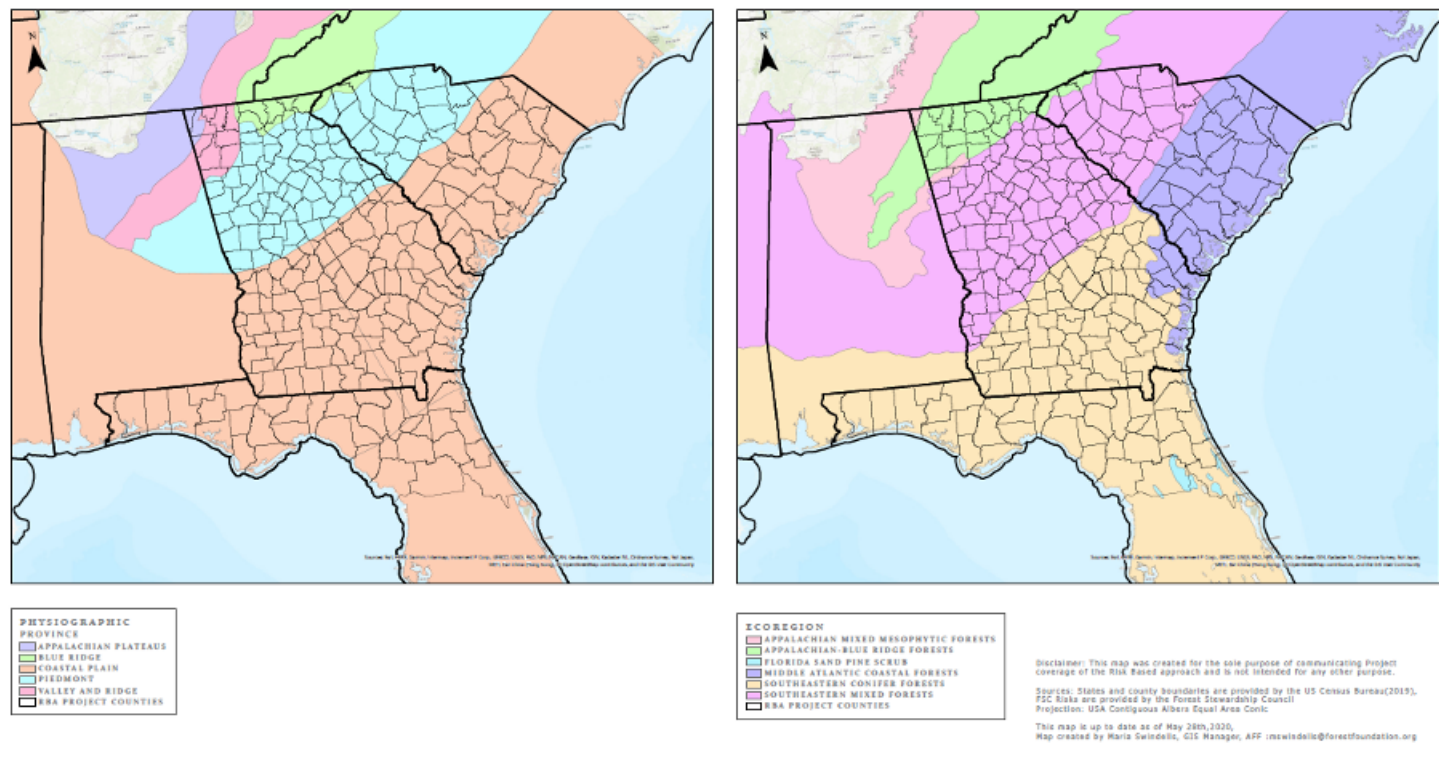
## ECOLOGICAL CHARACTERISTICS

The landscapes within our geographic scope share similar interacting biotic and abiotic characteristics and functions. AFF draws on the World Wildlife Fund's (WWF) recognized system of biomes pertaining to this region. The geographic scope of the RBA falls across two temperate forest biomes: temperate broadleaf and mixed forests and temperate coniferous forests. Within these biomes, forests can be grouped into one of two ecoregions (which are subsets of biomes): Southeastern mixed forests and Southeastern conifer forests (Olsen, 2001).

## PHYSIOGRAPHIC PROVINCE

Drawing on the United States Geological Survey, the geographic scope for this assessment is encompassed almost entirely by the Southeastern Coastal Plains and, further inland, the Piedmont physiographic provinces. A small portion of northwest Georgia reaches into the Appalachian Plateaus Province as well; however, this area makes up a very small portion of our geographic scope.

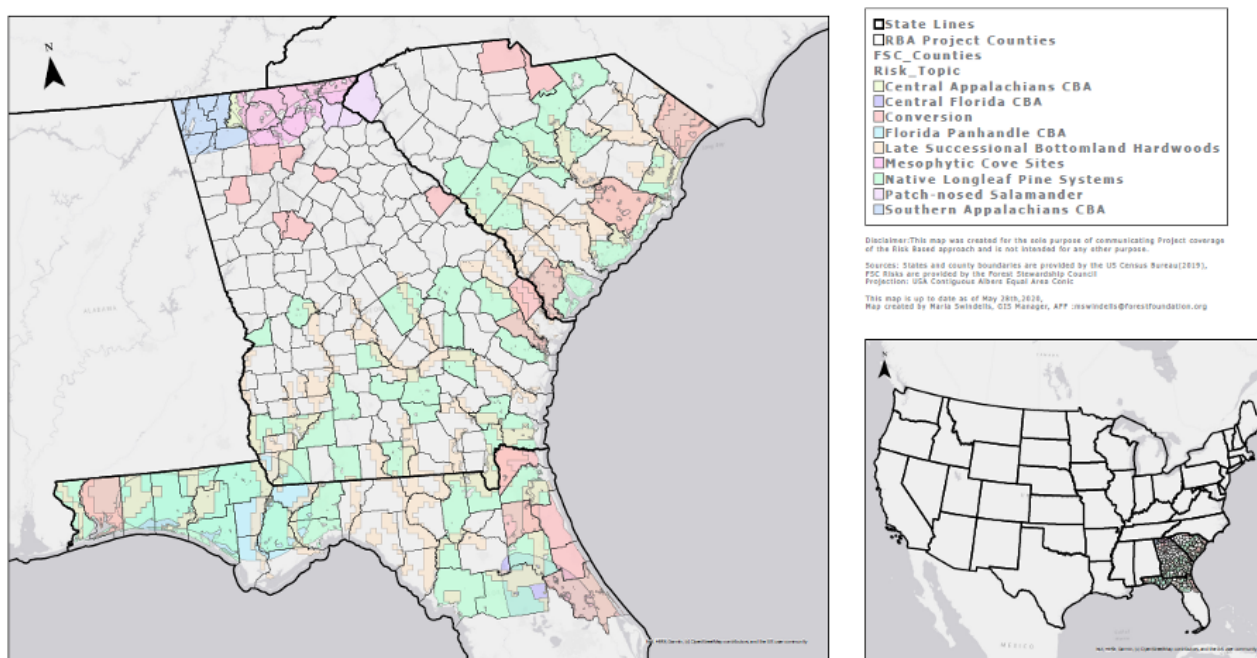
Map 2: Ecoregion and Physiographic Province – Georgia, South Carolina, and North Florida



## FUNCTIONAL CHARACTERISTICS AND SHARED MANAGEMENT GOALS

From a functional standpoint, biomass sourcing regions are the first level of geographic framing for this scope. The Southeastern states of Florida, Georgia, and South Carolina are part of a critical forest region for the United States, both ecologically and economically. Although this geographic scope focuses on three Southeastern states, the ownership trends evident in these states are also apparent across the wider southeast and share a common theme in terms of historical and current land use and management.

Map #3: FSC specified risks in the geographic scope of RBA



## CONCLUSION

The determination of this region, as required by the Verification Protocol, is supported by various interacting, shared characteristics. These characteristics exist on multiple scales. The interaction of these characteristics leads to a level of relative homogeneity with regard to management practices, land use, risk areas, and other factors relevant to this RBA. Based on the characteristics discussed above, the scale and extent of the area under assessment makes practical sense and is appropriate for this RBA.

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- Forest Stewardship Council National Risk Assessment US: <https://us.fsc.org/en-us/certification/controlled-wood/fsc-us-controlled-wood-national-risk-assessment-us-nra>
- See also: section 8.3 of this RBA- sources consulted in 8.3 were additionally reviewed and used in support of the geographic scope.

# GATHERING INFORMATION IN RELATION TO THE SFM REQUIREMENTS

AFF undertook a robust information gathering and stakeholder consultation process to develop the RBA.

## DOCUMENTS AND DATA SOURCES

AFF gathered information, data, and documents on the specified geographic region relevant for a risk analysis with respect to the sustainable forest management requirements. A set of evaluation criteria was developed and utilized to support data and document selection for inclusion in the risk assessment and mitigation measures.

Documents and data sources referenced in the formulation of the RBA include but are not limited to:

- Laws and regulations
- Government statistics
- Datasets and reports compiled by local, state, and federal governments, NGOs, academic institutions, trade organizations, and others
- Expert studies
- Maps
- Stakeholder, practitioner, and expert interviews

All reference documents include appropriate citations and references so that they can be verified by the Conformity Assessment Body (CAB) and other external parties, if appropriate.

## CONSULTATION OF STAKEHOLDERS AND EXPERTS

The consultation with stakeholders and experts is essential to the initial development and ongoing maintenance of the RBA. Stakeholders are also an important source of data in the formulation of the risk assessment and mitigation measures.

Stakeholders and experts are actively solicited for their input as a key component of two fundamental processes that are critical to the initial risk assessment and ongoing monitoring and updating of the RBA.

1. First, stakeholders are an important source of data in the formulation of the risk assessment. Stakeholder perspectives were solicited and considered in the initial development of the RBA. Stakeholders were invited to provide their perspectives on key issues relating to sustainable forest management on family forest lands. Results of this initial stakeholder consultation were fed into the risk assessment process and considered along with other relevant information in formulating determinations of risk for SDE+ criteria. A detailed description of this process is provided at the end of this section.
2. Secondly, after the completion of the RBA, as part of the monitoring process, stakeholders and experts are consulted on an ongoing basis to provide feedback on conclusions of the risk assessment, effectiveness of mitigation measures, and as a source of new information or changing conditions relevant to the RBA. A summary of the RBA has been made publicly available on AFF's website. Stakeholders have been notified and invited to provide feedback to AFF at any time.

Additionally, stakeholders and experts will be proactively contacted to provide their perspectives as part of an annual review of the RBA conducted by AFF. To identify potential stakeholders, AFF identified sectors, organizations, and individuals that may have an interest in decisions or activities undertaken in association with the various elements of this RBA. Representatives of these groups were targeted for inclusion in AFF's stakeholder consultation. AFF deliberately targeted stakeholders and special interest groups considered most likely to be impacted by the implementation of the RBA. Relevant stakeholder lists provided by external sources were also incorporated into the RBA consultation, as appropriate. Additionally, after carefully reviewing the range of issues addressed in the SDE+ sustainability requirements, AFF identified specific areas of expertise required to conduct a robust risk assessment of all applicable sustainability criteria and consulted with corresponding subject area experts. Examples of stakeholders consulted include the following environmental, social, and economic actors:

- NGOs
- family forest landowners
- foresters and other resource management practitioners
- local communities
- all Federally recognized Native American Tribes located within the RBA region
- workers or unions
- governments
- pellet producers
- associations
- qualified and independent experts

### **RESPONSIBILITIES FOR THE STAKEHOLDER CONSULTATION PROCESS:**

AFF is responsible for conducting stakeholder consultation to inform the risk assessment during the development of an RBA as well as in the ongoing maintenance of the RBA. If pellet producers use elements of this RBA, they may undertake additional stakeholder engagement or may receive unsolicited stakeholder input. In such instances, pellet producers are responsible for maintaining records and reporting to AFF all stakeholder consultation activities, including input received, responses to stakeholder input as well as any actions taken by pellet producers in response to stakeholder input. All stakeholder input, whether received by AFF or pellet producers, will be considered in ongoing annual reviews of the RBA.

### **CORE STAGES OF STAKEHOLDER CONSULTATION**

Drawing on the requirements set forth in the Dutch SDE+ and Verification Protocol requirements, the Stakeholder Consultation process supporting the development of the RBA included the following essential steps:

1. Identification of stakeholders and experts. Organizations and individuals are identified that may have an interest in decisions or activities associated with sourcing woody biomass from small family forests in SC, FL, and GA. Stakeholder lists are updated periodically to ensure an appropriate range of perspectives, experiences, expertise, and geographies are consulted.
2. Proactive stakeholder consultation. Identified stakeholders are invited to provide their comments and perspectives on issues relating to SDE+ SFM requirements specific to family forest lands in the geographic region of interest. Stakeholders are contacted in a proactive way using various modes of communication and provided with adequate time (30 days) to respond.

3. Targeted consultation of qualified experts. Qualified and independent experts are consulted directly where specialized knowledge is required to identify, characterize, and assess operational context and associated potential risks.
4. Public posting of RBA results. An updated summary of the RBA results, along with summary results from stakeholder consultation, are made publicly available.
5. Annual monitoring and review of the RBA. Ongoing monitoring and maintenance are required to ensure the RBA remains current with evolving realities. Stakeholder input is a critical factor in the monitoring of the RBA.
  - a. As a core component of the annual review process, AFF proactively solicits input from stakeholders regarding the RBA or information relevant to the RBA. Relevant comments or additional information provided by stakeholders is welcomed and is considered in ongoing monitoring and revision of the RBA
  - b. Biomass producers using the RBA provide AFF with a complete report of any stakeholder consultation activities performed, including input received, responses to input, and actions taken. AFF incorporates and considers all stakeholder consultation provided through biomass producers in annual reviews and revisions of the RBA.
  - c. AFF documents and maintains records of all stakeholder input received, as well as responses provided and any actions taken as a result of stakeholder input.
  - d. Publication of a public monitoring summary and resulting revisions to the RBA.

## **DETAILED INITIAL STAKEHOLDER CONSULTATION PROCEDURE**

Stakeholder perspectives were solicited and considered in the initial development of the RBA. Stakeholders were invited to provide their perspectives on key issues relating to sustainable forest management on family forest lands. Results of this initial stakeholder consultation were fed into the risk assessment process and considered along with other relevant information in formulating determinations of risk for SDE+ criteria. The following steps detail the stakeholder consultation process used in the initial development of the RBA.

1. Identification of stakeholders and development of the stakeholder contact list, drawing on the list of potential interested or affected stakeholders outlined above. Wherever possible, existing stakeholder consultation lists compiled to support the development of state Forest Action Plans within the RBA region have been leveraged for this process.
2. As part of the initial information gathering process, stakeholders were contacted directly by email or telephone to inform them of the RBA project and what they could expect.
3. Stakeholders were proactively invited to submit any comments or input via email in May 2020 with a link to an online survey containing a list of questions to serve as guidance. The primary initial stakeholder consultation activity involved over 23,000 individuals and organizations. The consultation period remained open for a period of one month (30 days) to allow stakeholders sufficient time to respond.
4. Upon the close of the initial consultation period, AFF staff ensured proper collection and documentation of all stakeholder comments.
5. AFF staff members or subject matter experts have reviewed all comments by stakeholders and incorporated them as appropriate in the final draft RBA report. Results from stakeholder consultation were used to inform the risk assessment, mitigation measures and to identify issues of concern that may require special attention and/or additional expertise.



6. AFF has responded to all stakeholders who participated in the consultation process and explained how their comments were considered.
7. A summary report of the initial stakeholder consultation results has been made publicly available on AFF's website.
8. Consultation of qualified and independent experts where specialized knowledge is required:
  - a. Qualified and independent experts are included within the stakeholder list and included in the notification and invitation for feedback.
  - b. Qualified and independent experts are also directly contacted, as needed, throughout the development of the RBA based on subject matter expertise.

## **SUMMARY**

As part of the development and monitoring of the risk assessment and broader RBA process, AFF conducts comprehensive stakeholder consultation to ensure that key stakeholders' rights and opinions are considered and to allow stakeholders to contribute to the RBA process. All relevant stakeholder comments received by AFF were considered in the development of the RBA.

Stakeholder consultation will continue to be a key aspect of the ongoing monitoring and maintenance of the RBA. Stakeholder input will be solicited and considered in annual reviews and revision processes.

AFF has a formal procedure in place for the investigation and resolution of stakeholder complaints and appeals.

# RISK MITIGATION

## RISK MITIGATION AND MEASURES

Risk is evaluated for each criterion and its associated indicators at the scale of the RBA Region. For sourcing regions in which a “specified risk” has been identified for a given sustainability criterion, mitigation measures must be implemented to reduce the risk level to “low.” If the residual risk is not low, biomass cannot be considered compliant with sustainability requirements. As a comprehensive assurance solution, the RBA identifies explicit mitigation measures for each criterion designated with specified risk. A summary of risk designations and corresponding mitigation can be found in [Appendix I](#).

This RBA identifies mitigation measures specifically designed to respond to the nature of the sustainability variable and related risk presented for a given criterion or indicator, as it applies to family-owned forests (Category 2). This ensures targeted and consistent mitigation efforts across pellet producers. Similarly, this also enables aligned monitoring and the ability to evaluate effectiveness over time, supporting the system’s overall integrity in providing compliance with SDE+.

This approach draws on AFF’s experience with risk mitigation as well as guidelines, approaches, and experiences associated with other systems, including Forest Stewardship Council (FSC) Controlled Wood and the Sustainable Biomass Program (SBP).

## FAMILY WOODLAND SPECIFIC MITIGATION

Because this RBA is developed expressly for Category 2 lands, the identified mitigation measures reflect the following considerations:

- The unique nature of Category 2 lands, including the size, scale, and intensity of their operations
- Incorporation of research and documented best practice related to family landowners and their attitudes, preferences, and behavior to effectively lead to positive impact related to the identified risk
- Input received from stakeholders and experts with an identified interest and/or expertise in family ownerships

Identified mitigation measures include those implemented at different scales, including at the state level, wood sourcing county level, and site level. These different scales, working together, are essential to reducing the specified risk to low.

## CALIBRATING THRESHOLDS FOR MITIGATION

While risk is assessed at the scale of the RBA region, specific geographic areas designated with specified risk can be mapped in relation to mill procurement areas. Mitigation measures are based on the premise that specified risks identified at the landscape scale can be effectively addressed by implementing conservation actions (e.g., restoration, enhancement, protection) that directly support at-risk forest values within mill sourcing areas. Referred to as an “insetting” approach, these conservation actions are targeted within procurement

zones associated with pellet mills to concentrate mitigation benefits within the area of greatest potential impact. Mitigation activities are measured in the area (acres) affected by implementation, such as acres of High Conservation Value (HCV) forests restored, acres enrolled in the American Tree Farm System (ATFS), or acres adopting LMPs.

To appropriately reduce the risk level from “specified” to “low,” mitigation measures must be implemented at a scale that is commensurate with the volume of pellets to be verified for SDE+ compliance for each producer. Using the best available information, ratios have been developed to associate the volume of pellets produced with a corresponding area of wood sourcing on family forest lands. The proportionate area of specified risk associated with family forest lands is then applied to determine the extent of mitigation measures required. For example, setting aside any potential economies of scale, a pellet producer seeking SDE+ compliance verification for 100,000 tons of pellets is affecting roughly twice the land area that they would if they are only seeking SDE+ compliance verification for 50,000 tons of pellets. As such, the producer would need to implement twice the amount of on the ground or land-based mitigation under the 100,000-ton scenario than the 50,000-ton scenario.

Mitigation measures are not necessarily linked directly to forest tracts supplying biomass but rather are implemented inside areas of specified risk contained within a mill sourcing area. As such, the extent of mitigation measures to be applied by pellet producers in their supply basins must be specifically calibrated based on thorough and systematic documented analyses of the following factors for land-based specified risks:

- The volume of Category 2 pellets to be claimed for SDE+ compliance
- Conversion rates of raw wood volume to shippable pellet volumes
- Ratios of raw wood volume to a harvested forest area, using appropriate silviculture to produce biomass for pellets, corroborated by scientific sources and/or experts
- The extent (land area) of a pellet mill’s wood sourcing area
- The extent (land area) of family woodlands (Category 2) in the geography of sourcing and within the geographic areas of specified risk, where identified
- The extent (land area) of the specified risk within the geography of sourcing
- The estimated occurrence of at-risk resources within identified areas of risk

The analysis of the variables above enables for an estimation of the land area likely affected to yield specified volumes and, thus, serves as a basis for determining how much mitigation is needed to effectively reduce the specified risk level to low for each verified volume.

Calibration analyses must embrace a precautionary principle, deferring to more rather than less mitigation, where any dearth of information or data with regard to the extent of impacts associated with a pellet producer’s unique operations is known.

Pellet producers must provide evidence of their analyses, justifying the extent of mitigation activities, in conformance with the above guidelines to CABs.

## MITIGATION MEASURES FOR LAND-BASED SPECIFIED RISKS

The descriptions below provide a general overview of mitigation measures that were designed to respond to specified risks identified in the risk assessment. These measures are required, often in combination, to effectively reduce risk levels from specified to low, based on the SDE+ compliant Category 2 volume to be claimed. Additional descriptions of mitigation requirements are outlined for each specified risk with the Risk Assessment section.

1. **Criterion 7.1, High Conservation Values (HCVs):** Research suggests that family landowners undergo a journey from the time they become aware of their potential agency to taking management action on their land. This is especially true for complex conservation actions such as improving high conservation values or the restoration of habitat for threatened species. As such, outreach and education activities, such as printing and distributing informational materials or holding a landowner workshop, which may serve as critical first steps, are not sufficient to ensure appropriate action is being taken around a specified risk during the timeframe of the conformity year statement. Similarly, thus far, certification systems have had trouble evaluating the effectiveness of these techniques. As a result, this RBA requires the acres protected, restored, conserved, or treated by family landowners on their Category 2 lands within the supply basin as the units of mitigation for on-the-ground activities.

At the mill level, pellet producers must demonstrate that an appropriate land area is being silviculturally treated specifically for the noted high conservation value (HCV), habitat area, or other land feature associated with the specified risk. The extent of the land area must be commensurate with the production of the specified volume of Category 2 pellets, an assumed even distribution of harvesting activities across the supply basin, and analysis of the area of Category 2 lands within the area of specified risk (see Calibrating Thresholds for Mitigation above).

The specific activities implemented by Category 2 family landowners, their names, and the spatial location, including county, must be documented and reported to CABs performing verifications and to AFF to support overall RBA impact and effectiveness monitoring. Pellet producers may work with landowners directly to implement these measures or contract with third parties to support coordination of the implementation.

**Unit of mitigation:** Acre protected, restored, conserved, or treated by family landowners within the supply basin.

### **Evidence provided by pellet producer:**

- Documentation (using standardized format and platform) of specific activities implemented by individual family landowners on Category 2 acres based on the calibration of required land area to produce claimed SDE+ volume per year, per Calibrating Thresholds for Mitigation section. Documentation includes landowner name, location of the property, number of acres treated, and specific treatment activities.
- Documentation of annual monitoring conducted by AFF, along with documentation of financial support to AFF for monitoring services.

**Monitoring and effectiveness evaluation:** To ensure uniformity and consistent integration of feedback into the wider RBA, AFF is responsible for monitoring and evaluating the effectiveness of this mitigation measure. As such, RBA users must provide AFF with standardized documentation of mitigation activities within their roundwood sourcing regions and secure egress to implementing Category 2 landowners' properties for monitoring. RBA users must provide monetary support for this function and provide related evidence to CABs. AFF will provide proof of monitoring to pellet producers as required evidence for verification audits.

- Criteria 10.2 and 10.4, Landscape management plans (LMPs):** The SDE+ requirements include specifications for management plans, which can only be achieved using LMP's, given the costs and limitations of individual management plans, as well as their limited adoption by Category 2 family landowners in the United States. As such, all RBA users are reliant on the development, implementation, monitoring, maintenance, and improvement of LMPs. At the mill level, pellet producers must demonstrate that a Category 2 land area, commensurate with the production of the specified volume of pellets (see Calibrating Thresholds for Mitigation above), is newly enrolled in the American Tree Farm System (ATFS) and has formally adopted the LMP in the year the wood is harvested and/or during the related SDE+ conformity year statement timeframe. A pellet producer must maintain the previous year's ATFS and LMP enrolled land base while adding new acres under ATFS and LMP management in their current year for the duration of their use of the RBA and approved use of the VP under Dutch law. The pool of acres managed under ATFS and the LMP must be maintained and verified in monitoring (outlined below). In the case that, through annual monitoring by AFF, it is observed that acres enrolled in a past year are removed from either participation in the ATFS system or the LMP, the pellet producer must recruit additional, new acres into the ATFS system and LMP management to compensate for attrition.

LMPs that comply with the SDE+ requirements for management plans were established (in Georgia and South Carolina) or augmented (Florida) in each of the states within the scope of this RBA over the course of 2020. This is the first stage of the mitigation. RBA users must provide monetary support to AFF for LMP maintenance, including engagement and training amongst the broader community of foresters and technical service providers, necessary revisions, technological updates, and other critical activities.

**Unit of mitigation:** Acre recruited into full participation in the ATFS program and under management supported by LMP use within the sourcing region.

**Evidence provided by pellet producer:**

- Documentation of LMP establishment (2020)
- Documentation of financial support to AFF for implementation and maintenance of LMPs applying to their roundwood sourcing area
- Documentation (using standardized format and platform) of Category 2 acres recruited for full participation in the ATFS system and management under LMP based on the calibration of required land area to produce claimed SDE+ volume per year, per Calibrating Thresholds for Mitigation section. Documentation includes landowner name, location of the property, number of acres recruited, and date of subscription to management under the LMP.
- Documentation of aggregated, retained Category 2 acreage pool actively participating in the ATFS program and under LMP management, including newly recruited replacement acres, if there is attrition of

Category 2 acres from previously recruited acres.

- Documentation of annual monitoring conducted by AFF (i.e., ATFS Form 021 completed during annual inspections of a sample population of landowners recruited as a direct result of RBA mitigation), along with documentation of financial support to AFF for monitoring services.

**Monitoring and effectiveness evaluation:** To ensure uniformity and consistent integration of feedback into the wider RBA, AFF is responsible for monitoring and evaluating the effectiveness of this mitigation measure. As such, RBA users must provide AFF with standardized documentation of LMP use within their roundwood sourcing regions and secure egress to landowners' properties for monitoring. Monitoring will include confirmation that forest management, as supported by full participation in the ATFS system and adoption of the LMP, is continued. Monitoring of landowner participation in the ATFS system and adoption of LMPs will occur through the existing ATFS monitoring program for subpopulation sampling. RBA users must provide monetary support for this function to AFF and provide related evidence to CABs. AFF will provide proof of monitoring to pellet producers as required evidence for verification audits.

3. **Pellet producer procedures and programs:** Some of the non-land-based SDE+ criteria, such as those related to training or sourcing protocols, rely on the procuring pellet producer's programs and procedures. Any mitigation activities of this nature must be documented and reported to CABs performing verifications and AFF to support overall RBA impact and effectiveness monitoring.

**Unit of mitigation:** Varied.

**Evidence provided by pellet producer:**

- Documentation of company-specific policies or practices implemented.

**Monitoring and effectiveness evaluation:** CBs are responsible for evaluating the effectiveness of these mitigation measures, should they be required. Pellet producers are responsible for the reporting to AFF of evaluations of effectiveness conducted by their CABs in the form of complete audit reports.

## EMERGENT MITIGATION NEEDS

In the event pellet producers and/or CABs identify evidence suggesting elevated systemic risk presence that is inconsistent with findings of this RBA's risk assessment, CABs and pellet producers are required to take the following actions:

- Develop mitigation measures specific to Category 2 family woodlands in the roundwood supply area, reflecting the three elements identified above (see Family Woodland Specific Mitigation) and implement according to the calibration guidelines identified above (see Calibrating Thresholds for Mitigation).
- Provide a report to AFF detailing the evidence and rationale for the determination of specified risk, along with a detailed report of the related mitigation measures.

**Monitoring and effectiveness evaluation:** To ensure uniformity and consistent integration of feedback into the wider RBA, AFF is responsible for monitoring and evaluating any such mitigation measures' effectiveness. RBA users must provide monetary support for this function to AFF and provide related evidence to CABs. AFF will provide proof of monitoring to pellet producers as required evidence for verification audits.

# RISK MITIGATION MONITORING

## MONITORING OF RISK ASSESSMENT AND MITIGATION

Monitoring of the RBA and mitigation activities is essential for maintaining the system's integrity in providing assurance of compliance with SDE+ for Category 2 sourcing on family-owned woodlands in the geographic scope.

As the party responsible for the development and maintenance of the RBA, AFF is responsible for overall RBA monitoring and monitoring (validation) of mitigation as a key facet of the system.

## RBA MONITORING INCLUDES THE FOLLOWING MEASURES:

- Annual review of all risk designations in the RBA to determine if revised analyses are required, based on the availability of new data, availability of additional or alternative analytical methodologies, analysis of implemented mitigation (see below), and feedback from stakeholders experts, and RBA users.
- Annual review of all mitigation measures identified in the RBA to determine if revised measures are required, based on the availability of new data, effectiveness assessment of implemented mitigation (see below), feedback from stakeholders, experts, and RBA users.
- Twice annual interviews with RBA users to gauge effectiveness, generate insight into the RBA's improvement and identify guidance and interpretation needs.
- Ongoing monitoring of family landowner activities via the ATFS program. Because the landowners most likely to harvest timber are also more likely to participate in landowner support programs, and there is a higher likelihood of ATFS certification amongst the general landowner population within the geographic scope of the RBA. Monitoring via the ATFS program provides a viable method when used in concert with the other methods identified above. Additionally, annual inspections conducted within the ATFS system are used to monitor the implementation of mitigation measures associated with the adoption of management plans and associated monitoring requirements.
- Publication of a public monitoring summary and resulting revisions to the RBA.

In addition, AFF is responsible for monitoring and evaluating the effectiveness of mitigation. The monitoring of mitigation activities is central to the function of the RBA. The performance of mitigation activities is a key input into monitoring the RBA as a whole and must be consistently implemented and reported.

## Monitoring of mitigation includes:

- Verification of mitigation actions on a sample of mitigation sites to verify activities were appropriately implemented.
- On-site effectiveness evaluation on a sample of mitigation sites to verify activities are effective in subsequent years.

## Method of Monitoring

Remote sensing, paired with documentation review or other evidence, may suffice for some mitigation activities. In most cases, on-site monitoring to verify mitigation implementation and evaluate effectiveness is required for

measures including silvicultural practices, such as activities to protect, enhance or restore high conservation values (HCVs), under Criterion 7.1. On-site monitoring will also be required for verifying and evaluating the adoption and implementation of LMPs and participation in the ATFS system as stipulated in the mitigation measures associated with Criteria 10.2 and 10.4.

### **Site Selection**

Sites will be selected for monitoring using a stratified random sample. Stratifications will be informed by topography, size classes of sites, the density of sites, and other factors. For example, the monitoring sample may be generated from the square root of a total number of sites within various stratifications. Coefficients may be applied to stratification subpopulation samples, where appropriate, in recognition of their presence within the overall sample and ensure an appropriate and cost-effective monitoring system. Monitoring to verify participation in the ATFS program and adoption of LMPs as required for mitigation associated with Criteria 10.2 and 10.4 will be conducted within existing ATFS procedures, e.g., scheduled Tree Farm inspections. Landowners recruited into the ATFS program and who have adopted LMPs as a direct result of RBA mitigation measures will be aggregated into a discrete sub-population within the ATFS system. Sampling ratios will be applied specifically to that set of landowners to ensure a statistically viable sample size each year.

### **Application of Monitoring Results**

All observations and themes of monitoring serve as inputs to enhance the overall effectiveness of the RBA. Results of monitoring and effectiveness evaluations will serve as inputs into annual revision and update of the RBA, including adjusted risk analyses and specified mitigation measures.

### **Public Disclosure: Reporting Monitoring and Effectiveness Evaluation**

AFF will publish a public summary report of its monitoring of the RBA overall as well as mitigation measures implemented. Summaries of adjustments to mitigation measures and risk analyses will also be published in conjunction with annual updates to the RBA.

**NOTE:** AFF's implementation of monitoring is contingent on monetary support for these functions. Without this support, AFF cannot implement these functions, jeopardizing the credibility of the RBA. Pellet producers must provide CABs with evidence of monetary support for monitoring the RBA.



# ANNEX I: RBA TEAM BIOGRAPHIES AND CONTRIBUTING ORGANIZATION DESCRIPTIONS

## American Forest Foundation Team

The American Forest Foundation (AFF) is a national conservation non-profit that focuses on private and family-owned US forests. Through its partnerships and landowner outreach, it helps protect and improve watersheds, wildlife habitats, carbon storage, and sustainable wood supplies that come from these lands. AFF partners with organizations who use, or place a high value on forests for their business, to deliver measurable positive conservation impact and multiple sustainability assurance solutions. AFF leverages its expertise of family forest owner needs, its vast network of conservation partners, and its ability to develop innovative approaches to help companies meet their environmental and sustainability goals while at the same time providing support to family forest owners in caring for their land.

### **Sarah Crow, Senior Director, Sustainability Assurance, PROJECT LEAD**

Sarah Crow is the Senior Director, Sustainability Assurance at the American Forest Foundation (AFF). She has a demonstrated track record in the sustainability, forestry, and conservation communities. With extensive experience at the state, national and international levels, Sarah has more than ten years of experience in technical strategy development and program management with an extensive network and proven ability to build successful partnerships with smallholders, NGOs, brands, forest product companies, government, trade organizations, and others. She works to build partnerships across sectors and geographies and has served on several committees related to market verification and smallholder engagement. Sarah was a Fulbright Scholar to Ukraine and holds a BS in Forestry from the University of Montana and an MS in Natural Resources from the University of Vermont

### **Samantha (Sam) Delfing, Sustainability Assurance Manager**

Sam is a forestry and natural resources professional with experience working in consulting forestry, large-scale industrial forestry, and conservation forestry-based in watershed restoration. She joined the American Forest Foundation in 2019 as the Southern Region Manager and now serves as Sustainability Assurance Manager. Prior to her move to AFF, Sam worked as a Conservation Forester for the Jefferson Conservation District, an affiliate of the USDA Natural Resources Conservation Service in Lakewood, CO. She worked with landowners to implement forest conservation and restoration projects on their land. Sam holds a BS in Environment and Natural Resources from Ohio State University and an MS in Forest Resources Management from State University of New York College of Environmental Science and Forestry. She lives in New Orleans, LA.

### **Maria Swindells, GIS Lead**

Maria Swindells joined the staff at AFF in the Fall of 2018 as the GIS Manager. Maria has a BSc and Postgrad Geomatics diploma specializing in Remote Sensing and GIS, with a background in mapping technology development. She is the GIS lead for Woodscamp technologies and development. She serves as the GIS expert at AFF, developing GIS Strategies, managing GIS consultants, supporting GIS-enabled staff as new challenges arise, improving overall GIS process and access, and directly conducting GIS analyses.

### **Dave Bubser, Consultant**

Dave Bubser has nearly two decades of experience in the sustainability assurance sector, including forest certification, supply chains, timber legality, biomass, climate and carbon offsets, environmental assessment, risk assessment, standard development, stakeholder consultation, and crisis management. Dave is currently a Principal at Cambium Consulting. Previously he served as Vice President, Natural Resources Division at SCS Global Services, where he was responsible for international business for the forestry, chain of custody, carbon, fisheries, and seafood programs. Prior to joining SCS, Dave spent 17 years with the Rainforest Alliance, where he held several leadership positions, ultimately responsible for all certification and assurance activities in the US and Canada and global carbon verification services. Before entering the forest certification sector, Dave spent over 15 years in various forest management positions in the Lake States and Inland Northwest regions of the United States, primarily in timber sales and forest development.

### **Greg Pate, Consultant**

Greg Pate is the owner of Four W Forestry Group based out of Wetumpka, Alabama. A graduate of Auburn University with a BS. In Forest Management, Mr. Pate has a distinguished career in forestry spanning 36 years. Following graduation, Mr. Pate contracted with private sector entities prior to operating Owl Creek Forestry, a consulting forestry firm, for two years before beginning a long career with the North Carolina Forest Service (NCFS). Mr. Pate was appointed as the 9th State Forester for North Carolina in 2012. Mr. Pate retired from the NCFS in 2014 and was appointed by Governor Robert Bentley as the 10th State Forester of Alabama. Mr. Pate left the Alabama Forestry Commission to begin his consulting group in 2016. He currently works for non-government organizations (NGOs), philanthropic trusts, and government agencies.

### **Elizabeth Woodworth, Consultant**

Elizabeth Woodworth founded Wood & Co in 2016 after more than 20 years working in marketing and communications. During her career, Elizabeth has held positions in both for-profit and non-profit organizations. Her roles have included executive roles in marketing, communications, and sustainability. Elizabeth served on the European Biomass Association (AEBIOM) Board from 2012-2014 and currently serves on the Board of Trustees for the Institute for American Universities (IAU), a non-profit educational institution based in France. She received the 2014 Argus Biomass Award for Sustainability. Elizabeth received a BA in international studies and French from the University of Richmond, an MBA from The Wharton School, and an MA in international studies from the University of Pennsylvania. She lives in the Washington DC metropolitan area with her family.

## External Reviewers

To complement the expertise and skillset of AFF's team in support of the RBA development and to further promote the integrity of the RBA, AFF contracted with several external organizations with specific subject matter expertise to provide both specific section and full scope reviews of the RBA. In addition to public and expert consultation, this process was designed to identify any areas for improvement, potential vulnerabilities to address, and to serve as a pre-test of the RBA's technical content. The following firms and individuals provided review.

### SCS Global Services

SCS Global Services (SCS) provides services worldwide, working in the natural resources, built environment, consumer products, and climate sectors. Partnering with companies, government agencies, NGOs, and stakeholders, SCS strives to advance sustainable development goals through independent assessment, the application of sound science, and innovative solutions. Through these services, SCS Global is enabling decision-makers and purchasers to make informed decisions, giving innovators a competitive edge, and driving the development of leadership standards to create a framework for continuous improvement.

SCS Global provided a full scope external review of the RBA.

### Ciara McCarthy

Ciara McCarthy holds a BSc (Hons) Agroforestry from the University of Wales, UK, and Oregon State University. She has accumulated over 17 years of experience working in operational forestry in the UK, Ireland, Australia, and the United States. Ciara is a Senior Lead auditor for FSC Chain of Custody, a lead auditor for FSC Forest Management Certification and the Sustainable Biomass Program. She has completed audits in Oregon, Washington, California, Georgia, North Carolina, Virginia, Arkansas, British Columbia and New Brunswick, Canada, Latvia, North-Eastern Europe, Malaysia, and Japan. Ciara is a staff member of SCS Global Services as a Senior Lead Auditor, Technical Specialist, and FSC Controlled Wood Program Manager.

### Sebastian Häfele

Sebastian Häfele has a master's degree in Environmental sciences and previous experience in life-cycle assessment of bioenergy and biomaterials. He has been working and auditing for SCS since 2016 and is a Senior Lead Auditor for FSC, PEFC, and SFI Chain-of-Custody and SBP and has conducted audits in California, the Southeastern US, Germany, and Latvia. Sebastian is a Technical Specialist at SCS and SBP Program Specialist and representing SCS at SBP CAB meetings and stakeholder advisory groups.

### NatureServe

NatureServe is a non-profit organization made up of passionate biodiversity scientists who want to apply the best information to decision-making. Change is made one decision at a time. And every good decision starts with good information. We want to make it possible—and easy—for people to use accurate, current scientific information as the basis for their conservation decisions and subsequent actions. The NatureServe Network empowers people to sustain biodiversity by ensuring everyone has access to the knowledge they need to be better stewards of our shared lands and waters. We serve as an authoritative source of comprehensive, decision-quality biodiversity data. NatureServe provides scientific knowledge that supports informed decisions. Together, with our network of

over 100 programs, we collect decision-quality data about imperiled species and entire ecosystems, transform that data into knowledge products and visualizations, and provide meaning through expert analyses and support to guide decision-making, implement action, and enhance conservation outcomes.

NatureServe provided a technical expert review of risk analyses related to species and ecosystems.

### **Patrick Comer, Chief Ecologist**

Patrick Comer directs the Ecology Department at NatureServe from the Boulder, Colorado office. For over 30 years, his applied research has focused on ecosystem classification, spatial modeling, ecological assessment, and systematic planning support for conserving biodiversity and sustainable development. Pat was trained at the University of Michigan, Ann Arbor, in Forest and Landscape Ecology. He served in the Peace Corps in Costa Rica, working in agroforestry with rural cooperatives. In 1990, after returning to the United States, he worked as Ecologist in the Michigan Natural Features Inventory – formerly a part of The Nature Conservancy (TNC). In 1998, Pat moved west and served as Senior Regional Ecologist for TNC. By 2002, Pat moved from TNC to NatureServe and was appointed Chief Terrestrial Ecologist in 2003. He continues his work to advance ecosystem assessment methods with the public agencies and the private sector in projects across the Americas and beyond. Pat is currently advancing methods to assess ecosystems and landscapes' climate change vulnerability to identify effective, ecosystem-based adaptation strategies.

### **Peterson**

Peterson is a Netherlands-based consulting firm. Their in-depth knowledge and experience cover all aspects of the supply chain in many industries, including agriculture, energy, forestry, sustainability, and textiles. Peterson provided a full scope external review of the RBA but did not provide pre-verification or verification third-party auditing services.

### **Southern Forestry Consultants (SFC)**

As a leading forestry and land management company in the Southeast United States, Southern Forestry Consultants is uniquely qualified to assist clients in implementing sustainable forestry and land management strategies across an array of landscapes. Major areas of emphasis include forest inventory, appraisal, auditing, quantitative and qualitative species monitoring and inventory, reforestation and regeneration, harvest planning and oversight, ecological enhancement and restoration, forest management planning and implementation, environmental resource issues management, environmental auditing, BMP compliance, prescribed burning, recreation management, native warm-season grass establishment, and management, natural resource management plan development focused on biodiversity and conservation objectives, and invasive species inventory and management.

SFC provided review RBA elements related to the development of landscape management plans (LMPs) and led revision and development of LMPs, a core mitigation strategy in the RBA.

# APPENDIX I: RISK ASSESSMENT SUMMARY TABLE

The below table is a comprehensive summary of the risk assessment results. Included in the summary are the Criterion, Criterion Risk Rating, Indicator, Risk Topic, Indicator Risk Rating, and AFF's Recommended Mitigation.

Criterion	Criterion Risk Rating	Indicator	Risk Topic	Indicator Risk Rating	AFF Recommended Mitigation
3.1	Low	3.1.1	Peatland	Low	N/A
		3.1.2	Peatland	Low	N/A
3.2	Low	3.2.1	Wetland	Low	N/A
3.3	Low	3.3.1	Plantations	Low	N/A
		3.3.2	Plantations/ Conversion	Low	N/A
4.1	Low	4.1.1	Carbon stocks	Low	N/A
4.2	Low	4.2.1	Stumps	Low	N/A
		4.2.2	Stumps	Low	N/A
		4.2.3	Stumps	Low	N/A
4.3	Low	4.3.1	Roundwood	Low	N/A
		4.3.2	Roundwood	Low	N/A
6.1	Low	6.1.1	Legal right	Low	N/A
6.2	Low	6.2.1	Taxes	Low	N/A
6.3	Low	6.3.1	Anti-corruption	Low	N/A
7.1	Specified	7.1.1	HCVs	Specified locally	Mitigation is required for pellet producers where areas of specified risk for Critical Biodiversity Areas and Primary Forest Types, as identified by the FSC US Controlled Wood National Risk Assessment (NRA), fall within their primary roundwood sourcing area. AFF has developed an algorithm for determining the appropriate area of HCVs to be protected or enhanced based on a number of variables including volume of category 2 material procured.
		7.1.2	HCVs	Specified locally	
		7.1.3	HCVs	Specified locally	
7.2	Low	7.2.1	T&E species	Low	N/A
		7.2.2	T&E species	Low	N/A

Criterion	Criterion Risk Rating	Indicator	Risk Topic	Indicator Risk Rating	AFF Recommended Mitigation
7.3	Specified	7.3.1	Conversion	Low	N/A
		7.3.2	Conversion	Specified locally	To address specified risks for conversion, pellet producers must implement a 2-part mitigation measure combining: (1)use of LMPs and (2) the engagement of family landowners owning currently forested properties and continued management resulting in the retention of forest. The intent of the mitigation is to increase the number of acres under management by an LMP, thereby resulting in the maintenance of forests and mitigating the risk of sourcing materials from sites where the forest is being converted within the biomass sourcing area. AFF has developed an algorithm for determining the appropriate area of forest to be retained as forest based on a number of variables, including the volume of category 2 material procured.
		7.3.3	Conversion	Specified locally	
7.4	Low	7.4.1	Natives	Low	N/A
		7.4.2	Natives	Low	N/A
		7.4.3	Representative stands	Low	N/A
7.5	Low	7.5.1	Non-timber uses	Low	N/A
8.1	Low	8.1.1	Soils/BMPs	Low	N/A
		8.1.2	Soils/BMPs	Low	N/A
8.2	Low	8.2.1	Water/BMPs	Low	N/A
		8.2.2	Water/BMPs	Low	N/A
8.3	Low	8.3.1	BMPs	Low	N/A
		8.3.2	BMPs	Low	N/A
8.4	Low	8.4.1	Reduced Impact Logging	Low	N/A
		8.4.2	RIL/BMPs	Low	N/A
8.5	Low	8.5.1	Fire	Low	N/A
8.6	Low	8.6.1	Pests & Diseases	Low	N/A
		8.6.2	Pests & Diseases	Low	N/A
8.7	Low	8.7.1	Chemicals	Low	N/A
		8.7.2	Chemicals	Low	N/A
		8.7.3	Chemicals	Low	N/A
		8.7.4	Chemicals	Low	N/A
8.8	Low	8.8.1	Waste disposal	Low	N/A
		8.8.2	Waste disposal	Low	N/A
		8.8.3	Waste disposal	Low	N/A

Criterion	Criterion Risk Rating	Indicator	Risk Topic	Indicator Risk Rating	AFF Recommended Mitigation
9.1	Low	9.1.1	AAC	Low	N/A
		9.1.2	AAC	Low	N/A
		9.1.3	AAC	Low	N/A
9.2	Low	9.2.1	Illegal use	Low	N/A
		9.2.2	Illegal use	Low	N/A
		9.2.3	Illegal use	Low	N/A
10.1	Low	10.1.1	Forest management	Low	N/A
		10.1.2	Forest management	Low	N/A
10.2	Specified	10.2.1	FMP	Specified	To address specified risks for the presence and quality of management plans, pellet producers must implement specific mitigation utilizing and expanding LMP use, combined with monitoring over the duration of RBA use, proportionate to their Category 2 sourcing. Pellet producers must demonstrate that a Category 2 land area, commensurate with the production of the specified volume of pellets, is newly enrolled for management under an LMP in the year the wood is harvested. A pellet producer must maintain the previous year's LMP enrolled land base while adding new acres under LMP management in each successive year for the duration of their use of the RBA. AFF has developed an algorithm for determining the appropriate area of forest to be enrolled under an LMP based on a number of variables, including the volume of category 2 material procured.
10.3	Low	10.3.1	Maps	Low	N/A
		10.3.2	Maps	Low	N/A
10.4	Specified	10.4.1	Monitoring	Specified	To address specified risks associated with the lack of management plans and associated monitoring, pellet producers must implement specific mitigation utilizing and expanding LMP use, combined with monitoring over the duration of RBA use, proportionate to their Category 2 sourcing. LMPs include measures for site-level monitoring with reference to a range of attributes and activities and changes in conditions that could impact the achievement of management objectives. Additionally, the LMPs themselves will be monitored and adapted as necessary to account for changing conditions. LMPs are entirely inclusive of all SDE+ requirements, including monitoring. AFF has developed an algorithm for determining the appropriate area of forest to be enrolled under an LMP based on a number of variables, including the volume of category 2 material procured.
		10.4.2	Monitoring	Specified	

<b>Criterion</b>	<b>Criterion Risk Rating</b>	<b>Indicator</b>	<b>Risk Topic</b>	<b>Indicator Risk Rating</b>	<b>AFF Recommended Mitigation</b>
10.5	Low	10.5.1	Training	Low	N/A
		10.5.2	Training	Low	N/A
		10.5.3	Training	Low	N/A
11.1	Low	11.1.1	Group association	Low	N/A
		11.1.2	Group association	Low	N/A
		11.1.3	Group association	Low	N/A
11.2	Low	11.2.1	Group association	Low	N/A
		11.2.2	Group association	Low	N/A



## APPENDIX II: LIST OF COUNTIES DESIGNATED SPECIFIC RISK FOR HIGH CONSERVATION VALUE

County	State	Central Appalachians CBA	Central Florida CBA	Florida Panhandle CBA	Southern Appalachians CBA	Late Successional Bottomland Hardwoods	Mesophytic Cove Sites	Native Longleaf Pine Systems
Alachua	Florida		X			X		
Baker	Florida					X		X
Bay	Florida			X		X		
Bradford	Florida					X		
Calhoun	Florida			X		X		
Clay	Florida					X		X
Columbia	Florida					X		X
Dixie	Florida					X		
Duval	Florida					X		X
Escambia	Florida					X		X
Flagler	Florida		X					
Franklin	Florida			X		X		
Gadsden	Florida			X		X		
Gilchrist	Florida					X		X
Gulf	Florida			X		X		
Hamilton	Florida					X		
Holmes	Florida			X		X		X
Jackson	Florida			X		X		X
Jefferson	Florida					X		
Lafayette	Florida					X		
Leon	Florida			X		X		X
Levy	Florida					X		X
Liberty	Florida			X		X		X

County	State	Central Appalachians CBA	Central Florida CBA	Florida Panhandle CBA	Southern Appalachians CBA	Late Successional Bottomland Hardwoods	Mesophytic Cove Sites	Native Longleaf Pine Systems
Madison	Florida					X		
Marion	Florida		X			X		
Nassau	Florida					X		
Okaloosa	Florida			X		X		X
Putnam	Florida		X			X		X
Santa Rosa	Florida			X		X		X
St. Johns	Florida					X		
Suwannee	Florida					X		
Taylor	Florida					X		
Union	Florida					X		
Volusia	Florida		X			X		
Wakulla	Florida			X		X		X
Walton	Florida			X		X		X
Washington	Florida			X		X		X
Appling	Georgia					X		X
Atkinson	Georgia					X		X
Baker	Georgia					X		X
Ben Hill	Georgia					X		
Berrien	Georgia					X		
Bleckley	Georgia					X		
Brantley	Georgia					X		X
Brooks	Georgia					X		
Bryan	Georgia					X		X
Bulloch	Georgia					X		X
Burke	Georgia					X		

County	State	Central Appalachians CBA	Central Florida CBA	Florida Panhandle CBA	Southern Appalachians CBA	Late Successional Bottomland Hardwoods	Mesophytic Cove Sites	Native Longleaf Pine Systems
Calhoun	Georgia					X		
Camden	Georgia					X		X
Catoosa	Georgia				X			
Charlton	Georgia					X		
Chatham	Georgia					X		
Chattahoochee	Georgia							X
Chattooga	Georgia				X			
Clay	Georgia					X		
Clinch	Georgia					X		
Coffee	Georgia					X		X
Columbia	Georgia					X		
Cook	Georgia					X		
Crawford	Georgia					X		
Crisp	Georgia					X		
Dade	Georgia				X			
Dawson	Georgia						X	
Decatur	Georgia			X		X		X
Dodge	Georgia					X		
Dooly	Georgia					X		
Dougherty	Georgia					X		
Early	Georgia					X		X
Echols	Georgia					X		
Effingham	Georgia					X		
Emanuel	Georgia					X		X
Fannin	Georgia	X					X	
Floyd	Georgia				X			

County	State	Central Appalachians CBA	Central Florida CBA	Florida Panhandle CBA	Southern Appalachians CBA	Late Successional Bottomland Hardwoods	Mesophytic Cove Sites	Native Longleaf Pine Systems
Gilmer	Georgia	X					X	
Glynn	Georgia					X		
Gordon	Georgia				X			
Grady	Georgia					X		
Houston	Georgia					X		
Irwin	Georgia					X		X
Jeff Davis	Georgia					X		
Jenkins	Georgia					X		
Johnson	Georgia					X		
Lanier	Georgia					X		
Laurens	Georgia					X		X
Lee	Georgia					X		
Liberty	Georgia					X		X
Long	Georgia					X		
Lowndes	Georgia					X		X
Lumpkin	Georgia						X	
Macon	Georgia					X		
McIntosh	Georgia					X		
Miller	Georgia					X		
Mitchell	Georgia					X		X
Montgomery	Georgia					X		
Murray	Georgia	X					X	
Pickens	Georgia	X					X	
Pierce	Georgia					X		
Pulaski	Georgia					X		
Quitman	Georgia					X		

County	State	Central Appalachians CBA	Central Florida CBA	Florida Panhandle CBA	Southern Appalachians CBA	Late Successional Bottomland Hardwoods	Mesophytic Cove Sites	Native Longleaf Pine Systems
Rabun	Georgia	X					X	
Randolph	Georgia					X		
Richmond	Georgia					X		
Screven	Georgia					X		
Seminole	Georgia			X		X		
Stewart	Georgia					X		
Sumter	Georgia					X		
Taylor	Georgia					X		X
Telfair	Georgia					X		
Terrell	Georgia					X		
Thomas	Georgia					X		X
Toombs	Georgia							X
Towns	Georgia	X					X	
Treutlen	Georgia					X		
Twiggs	Georgia					X		
Union	Georgia	X					X	
Walker	Georgia				X			
Ware	Georgia					X		
Washington	Georgia					X		
Wayne	Georgia					X		
Wheeler	Georgia					X		
White	Georgia						X	
Whitfield	Georgia				X			
Wilcox	Georgia					X		X
Wilkinson	Georgia					X		
Worth	Georgia					X		X

County	State	Central Appalachians CBA	Central Florida CBA	Florida Panhandle CBA	Southern Appalachians CBA	Late Successional Bottomland Hardwoods	Mesophytic Cove Sites	Native Longleaf Pine Systems
Aiken	South Carolina					X		X
Allendale	South Carolina					X		
Bamberg	South Carolina					X		
Barnwell	South Carolina					X		X
Beaufort	South Carolina					X		X
Berkeley	South Carolina					X		
Calhoun	South Carolina					X		X
Charleston	South Carolina					X		X
Chesterfield	South Carolina							X
Clarendon	South Carolina					X		
Colleton	South Carolina					X		
Darlington	South Carolina					X		
Dillon	South Carolina					X		
Dorchester	South Carolina					X		
Edgefield	South Carolina					X		X
Florence	South Carolina					X		
Georgetown	South Carolina					X		X
Hampton	South Carolina					X		
Horry	South Carolina					X		X
Jasper	South Carolina					X		X
Kershaw	South Carolina					X		X
Lee	South Carolina					X		
Lexington	South Carolina					X		X
Marion	South Carolina					X		
Marlboro	South Carolina					X		
Orangeburg	South Carolina					X		
Richland	South Carolina					X		X
Sumter	South Carolina					X		X
Williamsburg	South Carolina					X		