



# Supply Base Report: Morehouse BioEnergy LLC

First Surveillance Audit

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## Completed in accordance with the Supply Base Report Template Version 1.4

*For further information on the SBP Framework and to view the full set of documentation see [www.sbp-cert.org](http://www.sbp-cert.org)*

### *Document history*

*Version 1.0: published 26 March 2015*

*Version 1.1 published 22 February 2016*

*Version 1.2 published 23 June 2016*

*Version 1.3 published 14 January 2019; re-published 3 April 2020*

*Version 1.4 published 22 October 2020*

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# 1 Overview

**Producer name:** Morehouse BioEnergy LLC

**Producer address:** 7070 Carl Rd, 71220 Bastrop, LA, United States

**SBP Certificate Code:** SBP-04-02

**Geographic position:** 32.958662, -91.864222

**Primary contact:** Bretta Palmer, N/A, Bretta.palmer@draxbiomass.com

**Company website:** www.draxbiomass.com

**Date report finalised:** 20 Sep 2021

**Close of last CB audit:** 21 Oct 2020

**Name of CB:** SCS Global Services

**SBP Standard(s) used:** SBP Standard 1: Feedstock Compliance Standard, SBP Standard 2: Verification of SBP-compliant Feedstock, SBP Standard 4: Chain of Custody, SBP Standard 5: Collection and Communication of Data Instruction, Instruction Document 5E: Collection and Communication of Energy and Carbon Data 1.3

**Weblink to Standard(s) used:** <https://sbp-cert.org/documents/standards-documents/standards>

**SBP Endorsed Regional Risk Assessment:** Not applicable

**Weblink to SBR on Company website:** <https://sbp-cert.org/certificate-holders/morehouse-bioenergy-llc-sbp-04-02/>

Indicate how the current evaluation fits within the cycle of Supply Base Evaluations					
Main (Initial) Evaluation	First Surveillance	Second Surveillance	Third Surveillance	Fourth Surveillance	Re-assessment
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 2 Description of the Supply Base

### 2.1 General description

**Feedstock types:** Primary, Secondary

**Includes Supply Base evaluation (SBE):** Yes

**Feedstock origin (countries):** United States

### 2.2 Description of countries included in the Supply Base

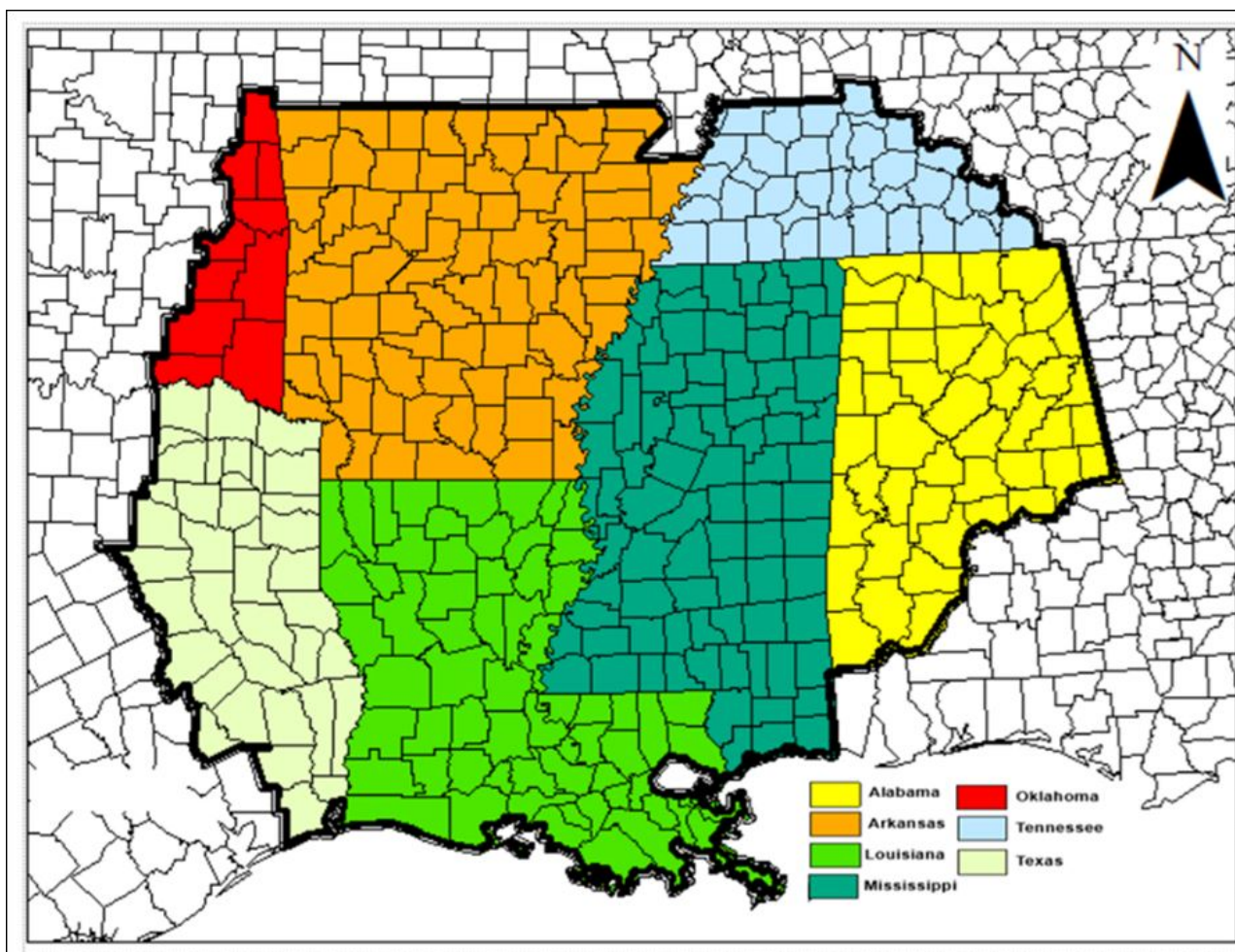
**Country:**United States

**Area/Region:** Morehouse Bioenergy typically, under most circumstances, procures fiber from southern Arkansas and northern Louisiana. All of Arkansas, Louisiana, and Mississippi in scope along with portions of Alabama. east Texas/Oklahoma and western Tennessee.

**Exclusions:** No

## General description

Drax Biomass Inc's ("DBI" or "Company") fiber procurement catchment spans Arkansas, Louisiana, Mississippi, and portions of Alabama (47 counties), Texas (37 counties), Oklahoma (10 counties), and Tennessee (37 counties) (see map of supply area below). DBI owns and operates three pellet plants: Amite BioEnergy, LLC ("Amite BioEnergy" or "ABE") in Gloster, MS; Morehouse BioEnergy, LLC ("Morehouse BioEnergy" or "MBE") near Beekman, LA; and LaSalle BioEnergy, LLC ("LaSalle BioEnergy" or "LBE") near Urania, LA. Fiber sourced directly from the forest is generally within a 60 mile radius of the plant. However, residuals produced by wood manufactures are usually procured from 150 miles or less radius. In response to market pressures and/or weather events, DBI reserves the ability to source fiber from any of the risk assessed counties shown on map below.



DBI purchases the majority of its in-woods fiber indirectly from private landowners via a fiber supplier network, with negligible amounts originating from public ownership. About half of the in-woods fiber originates from institutionally owned private forests while the other half is derived from family-owned private forests.

#### Morehouse BioEnergy

The Morehouse facility is designed to consume just over 1 million green metric tons of biomass material per annum. The sourced material is comprised of mainly southern yellow pine with a potential de minimis quantity of mixed southern hardwoods. The pellet and furnace feedstock arrive in the form of low grade roundwood, thinnings, tops, logging and mill residues. According to the USDA Forest Service Timber Products Output Reports, consumption by other forest industry participants within 150 miles of MBE's fiber catchment in 2009 was estimated to be in excess of 23 million metric tonnes per annum which puts into perspective the ability of the catchment to supply the forest products industry. Pulp and chip mills in the region also have an average capacity of around 1 million green short tons per facility per year, with some consuming well over 2 million green short tons per year. Morehouse BioEnergy, LLC consumes 4% of the roundwood in the market according to a 2019 Forisk report. Sawmills are slightly smaller, consuming on average around 300,000 green short tons per year.

In 2019/20, similar macroeconomic trends have followed previous years as sawmilling capacity shifts from the Canadian Pacific and US PNW to the US South as a result of resource availability. There have been continuing changes in the number and type of other wood using industries operating in LBE's catchment as

sawmill production expansion has been announced. The lumber market suffered in the onset of the COVID-19 worldwide pandemic, but has slightly recovered as a result of an increased home remodelling activity.

Regional markets for pulpwood have also contracted recently as Georgia Pacific-Crossett ceased pulp and paperboard production in Q4 2019, representing a 24% decrease in hardwood pulpwood demand. In May of 2020, Graphic Packaging International also announced the closure of Paper Machine #1 in its West Monroe manufacturing facility.

In-woods chipping in the supply base is being used to help improve management of forest stands (left to grow with minimal management due to suppressed or vacated markets), reduce site preparation costs, and improve regeneration.

Land Use and Ownership patterns:

Forestry followed by crop agriculture is the dominant land use in the MBE catchment. The majority of forests in these areas have been harvested and regenerated multiple times over the last two centuries.

Over 80% of the forests surrounding MBE are privately owned, with most held by non-institutional private family forest owners. There is also a significant amount of land owned and managed by large corporations (institutional investors). Corporate forest owners, who must produce shareholder returns, generally practice more intensive silviculture and land management than the smaller family forest landowners who typically manage to achieve more diverse objectives.

While forest coverage has stayed steady in these areas during the past 40-50 years, the forests have become increasingly productive in that time. Forest Inventory Analysis (FIA) data shows that growth per acre per year has doubled in the US South since the 1950's, and it continues to increase as healthy markets provide incentives for owners to invest in forest management. Put simply, landowners' access to markets helps to ensure that their forests remain as working forests.

Senescence of the US pulp and paper industry has resulted in the closure or curtailment of several large pulp mills in or adjacent to the catchment that collectively consumed over 3 million tonnes of feedstock each year. The emergence of a wood pellet market has benefited forest owners and contractors in the area by offsetting a portion of the lost demand from the closed pulp mills.

The overall market downturn, subsequent housing market crash of 2008, and the slow recovery in residential construction has resulted in suppressed levels of demand for sawtimber. This has produced an increase in stocks of larger-diameter trees, with a corresponding reduction in felling and replanting. These market dynamics have had long-term consequences for the structure of the forest.

A recent uptick in housing starts has meant increased demand for lumber. Sawmills have increased output, and in some areas new sawmilling capacity has emerged. Increase in resource use has been the story of US Forests. As described in the paragraphs above, the renewal process and the market response to increased demand has led to forests staying as forests, increased productivity and increased inventories (carbon stores). One outcome may be a decline in growth-drain ratios in some catchments. This is to be expected and allows the process of renewal of the forest to continue.

Looking to the future, further increases in pine forest productivity can be achieved through simple measures such as planting with improved seedlings and implementing diligent forest establishment practices. We will seek to engage with and support this process through the sharing of information and supporting sensible partnerships that promote forest certification through direct landowner contact. In areas with strong markets for forest products, we should expect forests to stay as working forests, whereas other areas may cycle out of forestry into row crops or husbandry and other agricultural areas may cycle back into forestry. Urban expansion remains the biggest threat to the forest area. Private ownership is expected to remain the main form of forest ownership, but there may be fragmentation as land is split into smaller parcels as it is passed down through generations, thereby creating challenges to implement good forest management practices.

MBE's catchment also experienced the change of ownership in several privately-owned lumber manufacturers to publicly traded companies along with the upgrading/expansion of curtailed mills in the region. The new sawmill ownerships employ SFI Fiber Sourcing certification more readily than legacy owners.

#### Forestry and Land Management Practices:

There is a mature and well-developed forest sector in this geography. Described as a "wood basket to the world", the US South has grown, harvested, and sold many hundreds of millions of cubic meters per year for many decades, while seeing both its forest inventories and productivity levels increase. In the US South as a whole, and in MBE's catchment, annual growth exceeds annual drain by a significant margin (USDA Forest Service, 2010) with a net gain in inventory of 23% since 2006.

The main reasons for this include a productive land base that benefits from long growing seasons, sufficient precipitation, and healthy soils, as well as the longstanding engagement of experts and professionals from across industry, academia, and public agencies which help advance sound forest management practices.

Species selection is another principal factor, as the majority of landowners grow trees that are indigenous to the area, which creates environmental and economic benefits, such as maintenance of habitats for local flora and fauna, as well as establishing a resilient native growing stock with improved pest and disease resistance. Federal and state governments also provide effective oversight to ensure that forest activities comply with relevant laws and regulations and minimize environmental harm. Moreover, each state employs long-established "Best Management Practices", with programs to promote logger training and audits that demonstrate high compliance rates.

Though the region also possesses a vigorous and productive hardwood sector, MBE primarily uses Southern Yellow Pine (SYP). SYP is a term used to describe an abundant and highly productive group of native pine species, of which loblolly pine (*Pinus taeda*) is the most prevalent in this region, and whose inventory has increased by 43% since 2006. Production and sale of sawlogs remains the main economic driver for landowners, with SYP rotation lengths typically ranging from 20-40 years. The shorter rotations are for the most productive trees on the best sites, while the longer rotations typically apply to trees grown on lower quality sites. There is a robust sawmilling market for faster growing chip-n-saw logs and larger sawlogs in the MBE catchment area.

Thinning is an important forest management strategy for growing sawlog-quality SYP. Stands are typically thinned at 12-15 years old and again at 18-20 years old to promote faster growth of the remaining trees. Thinning also allows more light, moisture and nutrients to reach the forest floor, which increases the vitality of the forest and improves wildlife habitat. Forest thinnings make up a significant proportion of the feedstock for MBE.

Rotation harvest of SYP is typically conducted through clearcutting. SYP is not tolerant of shade, so the next rotation of young trees requires abundant access to light to grow well. DBI accepts material from final rotation harvests, although the material received is limited to residuals and roundwood that are not sold into higher paying markets. The vast majority of material from rotation harvests are completed for and sold into sawlog markets.

Looking to the future, further increases in pine forest productivity can be achieved through simple measures such as planting with improved seedlings and implementing diligent forest establishment practices. We will seek to engage with and support this process through the sharing of information and supporting sensible partnerships that promote forest certification through direct landowner contact. In areas with strong markets for forest products, we should expect forests to stay as working forests, whereas other areas may cycle out of forestry into row crops or husbandry, and other agricultural areas may cycle back into forestry. Urban expansion remains the biggest threat to the forest area. Private ownership is expected to remain the main form of forest ownership, but there may be fragmentation as land is split into smaller parcels as it is passed down through generations, thereby creating challenges to implement good forest management practices.



Presence of CITES or IUCN species:

There are no Convention on International Trade in Endangered Species of Wild Flora and Fauna ("CITES") listed species in the catchment that are threatened or otherwise impacted by forest management activities.

There are six species on the IUCN Red List that occur within the states DBI sources from. *Quercus oglethorpensis* (oglethorpe oak), *Fraxinus profunda* (pumpkin ash), *Fraxinus caroliniana* (carolina ash), maple-leaved oak (*Quercus acerifolia*), *Quercus boyntonii*, and *Pinus palustris* (longleaf pine). Longleaf pine is the only species which may be materially impacted by DBI's sourcing, with the other species occurring in wetlands or extreme remote locations where southern yellow pine, DBI's primary feedstock, is not found. Longleaf pine is far less common than it once was, and efforts are underway to promote longleaf pine coverage in the region. The intent of listing species to the Red List is not to promote prohibition of its use but rather to heighten priority setting for conservation of the species (<http://www.iucnredlist.org/documents/RedListGuidelines.pdf>). Critical to the recovery of the species is continued access to markets for longleaf pine. If landowners do not expect to be able to sell this wood, then they will not plant the tree in the first place. This position is captured in a statement from a USDA researcher and supported by the conservation group the Longleaf Alliance:

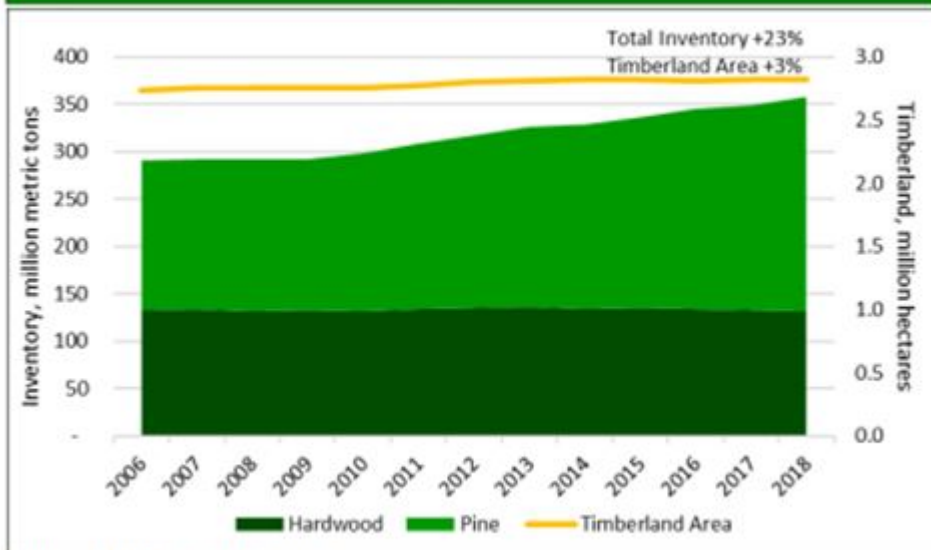
"Strong markets for forest products provide incentives for private landowners to keep their lands in forest cover (Wear 2013). This is particularly important across the longleaf range where recent forecasts of human population and income growth point toward increasing pressure in some locations to convert forest land to other uses (Wear 2013). Strong markets also enable landowners to invest in the management practices required to establish longleaf pine forests and implement practices such as prescribed fire and thinning which are crucial restoration activities."

### ***Forestland Descriptions***

MBE's catchment is located in a unique geographic area with different land cover and terrain characteristics.

MBE is located on the border of the Mississippi Delta agricultural area and the heavily forested uplands to the west. Despite the high percentage of floodplain land in the supply shed, 42% of the acreage within the shed is upland forest. SYP, generally the most productive forest type in the region, is estimated to make up approximately 25% of the land cover, and it represents 44% of forest species in the area. Since 2006, total timberland area in the MBE catchment has increased by 3%. The increase of forested hectares is in the form of planted pine by 45%, and a decrease in natural pine and hardwood hectares by 7% in the same area.

**Figure 2. Historic Inventory and Timberland Area**

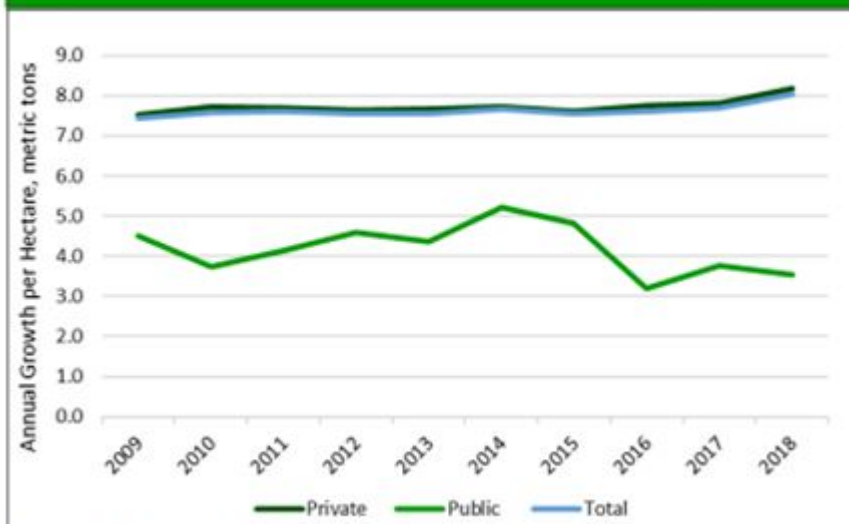


Source: US Forest Service

State forestry websites feature detailed descriptions of forests and include noteworthy facts about each state's forests. Forest Inventory Analyses data is also publicly available, and provides many important parameters, including changes over time, in the states that supply MBE. Summaries of forest coverage near

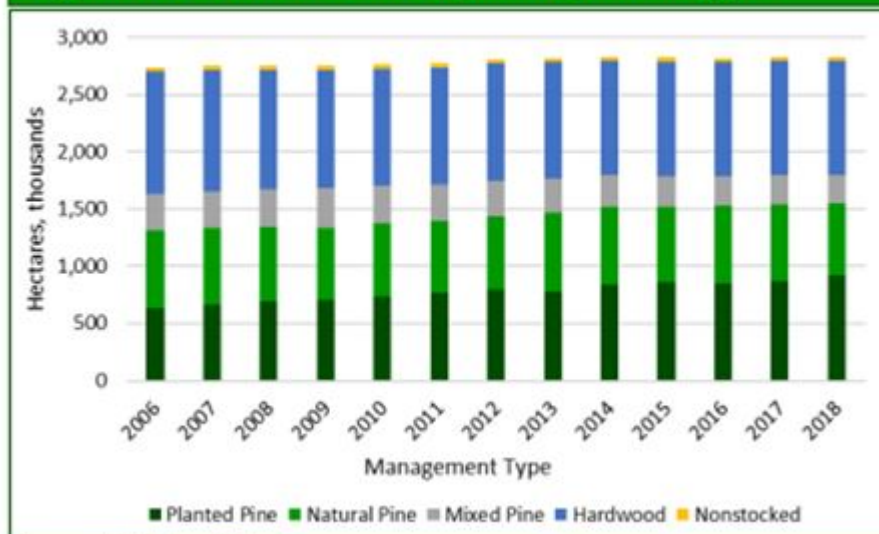
Morehouse are shown in the tables below.

**Figure 5. Annual Growth per Acre by Owner Type**



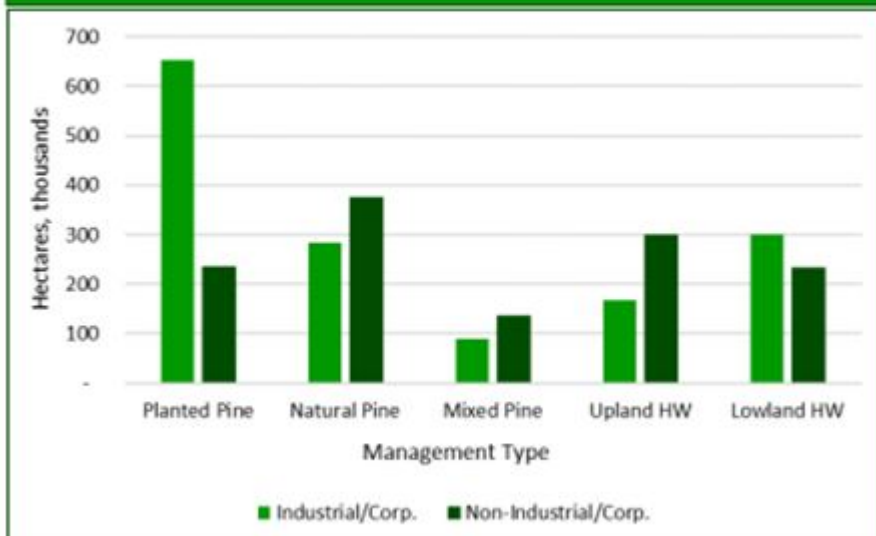
Source: US Forest Service

**Figure 8. Timberland Area by Management Type**



Source: US Forest Service

**Figure 10. Current Private Timberland Area by Ownership and Management Type**



Source: US Forest Service, SOFAC

### ***SBP Feedstock Product Groups & Supplier Make-Up***

All Primary and Secondary feedstock used by MBE is SBP Compliant.

MBE's supplier base is made up of timber dealers, logger-dealers, and managers of corporately owned timberland which provide primary feedstocks. In addition, residuals from sawmills and other wood manufacturing suppliers provide secondary feedstocks. Specific supplier lists and volumes by feedstock types are maintained and stringently reviewed by external auditors.

[1] F2M Report: Historic Perspective on the Relationship between Demand and Forest Productivity in the US South: At A Glance.

[2] Morehouse Family Forest Initiative

[3] USDA Forest Service Forest Inventory Analysis Program. 2010 data assessed and critiqued by consultancy for procurement region.

Accessed May, 2012. Database accessible at <http://www.fia.fs.fed.us/>.

[4] Wear, D. N. 2013. "Forecasts of Land Uses." Chapter 4 in Southern Forest Futures Project Technical Report.

<https://www.srs.fs.usda.gov/futures/technical-report/04.html>

[5] Longleaf Alliance and NCASI. 2014 "Longleaf Pine: Sustainable Forest Management and the Restoration of a Species" brochure.

[6] Commercial sensitivity: Specific numbers omitted. Divulging current or forecasted supplier types and numbers may be used by third

parties to gain a competitive advantage in the catchment. These figures are subject to change.

[7] SBP Compliant Primary, Secondary and Tertiary feedstocks are defined in the "SBP Glossary of Terms and Definition" and described

further in "SBP Standard 1, section 6, indicator 1.1.3."

## **2.3 Actions taken to promote certification amongst feedstock supplier**

DBI implements Sustainable Forest Management programs, many of which require participant companies to promote certified forest management amongst feedstock suppliers. This includes extensive reporting and contractually required training, as well as other components that are necessary for the certifications. DBI's sustainability and procurement staff are trained to assist suppliers and landowners in achieving these certifications through direct and/or collaborative efforts.

DBI continually monitors the amount of certified fiber that it purchases and will pursue opportunities to increase the area of certified forests within its catchments.

In 2018 DBI published a document which is shared with suppliers and landowners - "The Southern Working Forest – a Guide to Sustainable Management". Chapter 2 of this document outlines the benefits of certification, and contact details are provided for those who want to explore further.

In the Morehouse area Drax Biomass has partnered with the American Forest Foundation, state forestry and wildlife agencies, forestry associations, and conservation organizations to improve forest management and increase certification on the landscape. This partnership is referred to as the Morehouse Family Forest Initiative (MFFI).

## 2.4 Quantification of the Supply Base

### Supply Base

- a. **Total Supply Base area (million ha):** 3,90
- b. **Tenure by type (million ha):** 2.68 (Privately owned), 0.12 (Public)
- c. **Forest by type (million ha):** 2.80 (Temperate)
- d. **Forest by management type (million ha):** 0.93 (Plantation), 1.33 (Managed natural), 0.52 (Natural)
- e. **Certified forest by scheme (million ha):** 0.00 (Other)

**Describe the harvesting type which best describes how your material is sourced:** Mix of the above

**Explanation:** Low-grade roundwood is sourced from both thinnings and final regeneration harvests.

**Was the forest in the Supply Base managed for a purpose other than for energy markets?** Yes - Majority

**Explanation:** Forests in this region are managed to for sawtimber production as well as for recreation and wildlife management objectives.

**For the forests in the Supply Base, is there an intention to retain, restock or encourage natural regeneration within 5 years of felling?** Yes - Majority

**Explanation:** Forest management certified lands have a requirement to replant and/or achieve successful natural regeneration within a defined time span. For example SFI lands must be planted with in 2 years of felling. Private non-certified lands in this pine dominated region are also generally restocked by planting with seedlings but will naturally regenerate to pine or a mixed pine hardwood forest as long as they are not cleared for conversion purposes. DBI only sources from forest areas that are intended to remain actively growing forests. In addition, the risk of conversion to non-forest is low in this region (see SBE for details).

**Was the feedstock used in the biomass removed from a forest as part of a pest/disease control measure or a salvage operation?** Yes - Minority

**Explanation:** Much of the wood comes from thinning and regeneration harvest of healthy forests, however, removal of diseased and damaged trees is a good practice and Drax Biomass will source this type of material for feedstock. Even thinning of relatively healthy forests includes the targeted removal of diseased individuals and reduces density to help improve stand health.

### Feedstock

**Reporting period from:** 01 Jul 2020

**Reporting period to:** 30 Jun 2021

- a. **Total volume of Feedstock:** 800,000-1,000,000 tonnes
- b. **Volume of primary feedstock:** 400,000-600,000 tonnes
- c. **List percentage of primary feedstock, by the following categories.**
  - Certified to an SBP-approved Forest Management Scheme: 80% - 100%
  - Not certified to an SBP-approved Forest Management Scheme: 1% - 19%
- d. **List of all the species in primary feedstock, including scientific name:** Pinus taeda (loblolly pine - primary species utilized); Pinus elliottii (slash pine - small amounts may occur); Pinus glabra (spruce pine - small amounts may occur); Pinus palustris (longleaf pine - small amounts may occur); Quercus alba (white oak - ex minimal hdwd mix); Quercus nigra (water oak – ex minimal hdwd mix); Nyssa

sylvatica (black gum - ex minimal hdwd mix); Carya tomentosa (mockernut hickory - ex minimal hdwd mix);

- e. **Is any of the feedstock used likely to have come from protected or threatened species?** No
- Name of species: N/A
  - Biomass proportion, by weight, that is likely to be composed of that species (%): N/A
- f. **Hardwood (i.e. broadleaf trees): specify proportion of biomass from (%):** 10,00
- g. **Softwood (i.e. coniferous trees): specify proportion of biomass from (%):** 90,00
- h. **Proportion of biomass composed of or derived from saw logs (%):** 0,00
- i. **Specify the local regulations or industry standards that define saw logs:** Sawlogs specifications are unique to each sawmill facility, however, the general rule is that they are larger than 12" diameter, straight enough to cut a board from, and free from defects that would cause significant flaws in the lumber produced.
- j. **Roundwood from final fellings from forests with > 40 yr rotation times - Average % volume of fellings delivered to BP (%):** 0,00
- k. **Volume of primary feedstock from primary forest:** 0 N/A
- l. **List percentage of primary feedstock from primary forest, by the following categories. Subdivide by SBP-approved Forest Management Schemes:**
- Primary feedstock from primary forest certified to an SBP-approved Forest Management Scheme: N/A
  - Primary feedstock from primary forest not certified to an SBP-approved Forest Management Scheme: N/A
- m. **Volume of secondary feedstock:** 200,000-400,000 tonnes
- Physical form of the feedstock: Chips, Sawdust, Offcuts, Clean chips or dust, Other (specify)
- n. **Volume of tertiary feedstock:** 0 N/A
- Physical form of the feedstock: N/A

Proportion of feedstock sourced per type of claim during the reporting period				
Feedstock type	Sourced by using Supply Base Evaluation (SBE) %	FSC %	PEFC %	SFI %
Primary	10,00	0,00	0,00	90,00
Secondary	100,00	0,00	0,00	0,00
Tertiary	0,00	0,00	0,00	0,00
Other	0,00	0,00	0,00	0,00

### 3 Requirement for a Supply Base Evaluation

**Is Supply Base Evaluation (SBE) is completed?** Yes

A Supply Base Evaluation is required because a significant proportion of the forest surrounding the pellet mills is not certified. This evaluation will determine the legality and sustainability of fiber delivered to Morehouse Bioenergy.

## 4 Supply Base Evaluation

### 4.1 Scope

**Feedstock types included in SBE:** Primary, Secondary

**SBP-endorsed Regional Risk Assessments used:** Not applicable

**List of countries and regions included in the SBE:**

**Country:** United States

**Indicator with specified risk in the risk assessment used:**

2.1.2 The BP has implemented appropriate control systems and procedures to identify and address potential threats to forests and other areas with high conservation values from forest management activities.

**Specific risk description:**

The FSC US National Risk assessment has identified that there are five “specified risks” within DBI’s sourcing area. They include Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, the Dusky Gopher Frog, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Biodiversity Area. DBI recognizes this multi-stakeholder effort to identify “specified risks” related to forest sourcing and has therefore accepted these risks as such. Annex 1 of this report provides a detailed analysis of the risk finding associated with 2.1.2.

**Country:** United States

**Indicator with specified risk in the risk assessment used:**

2.2.3 The BP has implemented appropriate control systems and procedures to ensure that key ecosystems and habitats are conserved or set aside in their natural state (CPET S8b).

**Specific risk description:**

The FSC US Controlled Wood Risk Assessment has identified 4 ecosystems that appear within DBI’s supply area, Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Critical Biodiversity Area, that have been designated as “Specified Risk”. Annex 1 of this report provides a detailed analysis of the risk finding associated with 2.2.3.

**Country:** United States

**Indicator with specified risk in the risk assessment used:**

2.2.4 The BP has implemented appropriate control systems and procedures to ensure that biodiversity is protected (CPET S5b).

**Specific risk description:**

The FSC US National Risk assessment has identified that there are five “specified risks” related to biodiversity within DBI’s sourcing area. They include Late Successional Bottomland Hardwoods, Native



Longleaf Pine Systems, the Dusky Gopher Frog, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Biodiversity Area. DBI recognizes this multi-stakeholder effort to identify “specified risks” relevant to forest sourcing and has therefore accepted these risks as such. Annex 1 of this report provides a detailed analysis of the risk finding associated with 2.2.4.

**Country:** United States

**Indicator with specified risk in the risk assessment used:**

2.4.1 The BP has implemented appropriate control systems and procedures for verifying that the health, vitality and other services provided by forest ecosystems are maintained or improved (CPET S7a).

**Specific risk description:**

The FSC US Controlled Wood Risk Assessment has identified 4 ecosystems that appear within DBI's supply area, Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Critical Biodiversity Area, that have been designated as “Specified Risk”. Annex 1 of this report provides a detailed analysis of the risk finding associated with 2.4.1.

## 4.2 Justification

The majority of supply comes from private lands, and although there are some larger holdings which are certified, there are many smaller forests that are not. It was therefore deemed prudent to evaluate the entire area without exclusions. The supply area for all pellet mills is included in one assessment, as the applicable legal requirements across the supply base are sufficiently similar, and the forest practices are also sufficiently similar.

This review and analysis was completed by comparing the existence, effectiveness and applicability of statutes/regulations, established forestry best management practices and recognized research from reputable sources to determine compliance and risk rating in relation to Criteria 1 & 2 of the SBP Standard 1.

## 4.3 Results of risk assessment and Supplier Verification Programme

The Risk Assessment concluded that most aspects are “Low Risk” in the catchment area for the feedstock being used. This is predominantly due to sufficient and effective legal requirements in this geography, supported by a mature forest industry with well-established practices, including Best Management Practices promoted by states and the use of trained loggers support by industry.

This sound framework is supplemented by DBI's procurement procedures and third-party audits for FSC® Chain of Custody (CoC), PEFC™ CoC, and SFI® CoC and Certified Fiber Sourcing. The Fiber Sourcing Standard is held by a large number of operators in our catchment, meaning the vast majority of harvests will fall under the auspices of this procurement standard. In addition, the growth management and

harvesting of SYP is less complex than for other forest types, and typically has fewer environmental sensitivities.

For indicators 2.1.2, 2.2.3, 2.2.4 and 2.4.1, there is a determination of “Specified Risk”. This follows analysis of information included in the recently concluded US FSC® Controlled Wood National Risk Assessment. This identified specified risks listed above and described in detailed in Annex 1.

Mitigation measures discussed in detail in section 7 below, along with diligent procurement processes that have been developed, implemented, and monitored over the past 5 years reduce these specified risks to a "low risk" designation.

Risk assessment did not find any assignment of “unspecified risk” therefore no supplier verification program is required at this time.

## **4.4 Conclusion**

There is “low risk” for most indicators of the SBP Standard 1 based on the evidence provided of sound forestry practices, existing effective legislation and diligent procurement processes that guide industry and landowners on the sustainable management of forests. For the four indicators where “specified risk” has been concluded, mitigating actions derived from multi-stakeholder processes will be implemented and monitored for effectiveness.

Forest inventories are steadily increasing, and carbon stocks remain stable in Morehouse Bioenergy's catchment. Local communities benefit from the economic impact resulting from Morehouse Bioenergy's operations.

In conclusion, with diligent procurement processes and implementation of mitigation measures where required, the raw material supply and resulting production of pellets meets the requirements for “SBP-compliant” pellets.

DBI is constantly engaged with stakeholders to ensure any changes are evaluated.

## 5 Supply Base Evaluation process

DBI utilized both internal and external resources to complete the Supply Base Evaluation (SBE). The SBE was produced by DBI employees with experience in forest certification and sustainability. A highly qualified consultant with external auditing expertise helped collect and collate initial supporting evidence and stakeholder responses. Other DBI employees, particularly those on the procurement team and those associated with company systems, also contributed to the SBE.

Evidence collected as part of achieving and maintaining pre-existing certification programs was used in the SBE. Remaining shortfalls were completed by using reputable sources of information provided by public agencies, conservation and forestry organizations from within the region.

Contractual requirements with feedstock suppliers provided the baseline by which compliance with SBP indicators is achieved, supported by recognized good governance and the effective rule of law at State and Federal level.

DBI operates a supplier internal audit process in which suppliers are reviewed on a periodic basis depending on a risk level (i.e. certified vs non-certified). The external auditor has a view of the sampling rates and results of those reviews.

## 6 Stakeholder consultation

DBI conducted an initial stakeholder consultation for the ARBE facilities in 2021, this consultation also included an expansion in supply base for the Morehouse Bioenergy as well Amite and LaSalle Bioenergy, which share a consolidated supply base. DBI has done consultations previously for their primary plants in 2015, 2018 and 2019.

To properly identify interested stakeholders, DBI staff solicited a wide range of potential stakeholders for the initial consultation. Invitations were sent out to 249 contacts representing a cross-section of interests and expertise, including local, state and federal agencies, local forest industry participants, research institutions, forestry/landowner associations, NGOs, indigenous peoples and others.

Stakeholders were provided the full SBE to review in 2021. In the initial stakeholder survey DBI received 1 direct response from 1 participant that responded with letters approving of what was stated on the SBE.

The certifying body held a follow-up consultation immediately after conclusion of DBI's initial consultation. Results of consultations appear in the certifying body's public audit reports for each biomass producer.

### 6.1 Response to stakeholder comments

**Description:** NRCS-State Conservationist

**Comment:** Sent a letter of approval of the DBI SBE.

**Response:** Thank you

## 7 Mitigation measures

### 7.1 Mitigation measures

<b>Country:</b>	United States
<b>Specified risk indicator:</b>	2.1.2 The BP has implemented appropriate control systems and procedures to identify and address potential threats to forests and other areas with high conservation values from forest management activities.
<b>Specific risk description:</b>	The FSC US National Risk assessment has identified that there are five “specified risks” within DBI’s sourcing area. They include Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, the Dusky Gopher Frog, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Biodiversity Area. DBI recognizes this multi-stakeholder effort to identify “specified risks” related to forest sourcing and has therefore accepted these risks as such. Annex 1 of this report provides a detailed analysis of the risk finding associated with 2.1.2.
<b>Mitigation measure:</b>	FSC US has identified and developed mitigation measures for five specified risks which are relevant to residual fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), Native Longleaf Pine Systems (NLPS), Southern Appalachian Critical Biodiversity Area (SACBA), Central Appalachian Critical Biodiversity Area (CACBA), and the Dusky Gopher Frog (DGF). DBI utilizes the FSC approved mitigation measures for addressing these specified risks. The specified risks and mitigation measures are described below:

#### Dusky Gopher Frog (DGF)

For the Dusky Gopher Frog, FSC identifies two small areas at the extreme south of our residual sourcing area. FSC has identified education and outreach as a mitigation option for the DGF. DBI will provide educational materials to the suppliers which have the potential to source from the FSC identified risk areas. Educational materials will be informed by the best available science and adapted as new information and/or approaches become available. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of DGF populations.

#### Late Successional Bottomland Hardwoods (LSBH)

As DBI primarily sources Southern Yellow Pine, Late Successional Bottomland Hardwoods are mainly an issue for residual suppliers who process hardwoods and are proximate to LSBH areas. The areas that

potentially have LSBH have been mapped by FSC and integrated into DBI's GIS system. For residual suppliers, outreach and education will be the choice mitigation tool. Educational materials have been developed to engage landowners, foresters, and loggers in conservation of this forest system. DBI also actively supports workshops and learning exchanges focused on improving the management of bottomland hardwoods in the supply area.

#### Native Longleaf Pine Systems (NLPS)

For NLPS, the areas at risk have been identified by FSC at county/parish level. These areas have been included in DBI's GIS system. Education and outreach will be the primary mitigation for residual suppliers whose sourcing area intersects FSC identified risk areas. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of Native Longleaf Pine systems. DBI also actively supports workshops and learning exchanges focused on encouraging proactive management of longleaf pine in the supply area.

#### Southern and Central Appalachian Critical Biodiversity Area (CACBA and SACBA respectively)

Both the Central and Southern Appalachian Critical Biodiversity Areas will only affect DBI's residual sourcing due to the distance from existing pellet mills. Education and outreach will be the mitigation tool employed. As described for the risks above, these materials will be developed according to best available science and be adapted as new information and approaches come available (i.e. through FSC CW Regional meetings). This educational material will be aimed at increasing awareness of the sensitivities and unique nature of these CBAs in hopes of increasing conservation of these highly biodiverse areas.

Mitigation for primary feedstock includes DBI's program to verify BMP usage and protection of species of concern when sourcing directly from the forest. DBI has integrated the FSC HCV maps into its GIS system and "Rapid Risk Assessment" process which also includes all known species and natural communities of concern (NatureServe data). FSC US has identified two specified risks which are relevant to primary fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), and Native Longleaf Pine Systems (NLPS). DBI actively screens all in-woods fiber tracts for species of concern and FSC Specified Risks prior to accepting any fiber. DBI also records the cover type and species of stand from which fiber is sourced. In this way receipt of longleaf pine and harvesting associated with hardwood systems is monitored to ensure that there is no conversion or degradation of high conservation forests on tracts from which we receive roundwood or in-woods chips. If it is determined that the risk of negative impact to the HCV cannot be effectively mitigated through information flow and internal controls DBI can choose not to accept material from a region or a supplier.

The mitigations described above are sufficient to bring the risk of non-compliance with this requirement to “low”.

**Country:** United States

**Specified risk indicator:** 2.2.3 The BP has implemented appropriate control systems and procedures to ensure that key ecosystems and habitats are conserved or set aside in their natural state (CPET S8b).

**Specific risk description:** The FSC US Controlled Wood Risk Assessment has identified 4 ecosystems that appear within DBI’s supply area, Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Critical Biodiversity Area, that have been designated as “Specified Risk”. Annex 1 of this report provides a detailed analysis of the risk finding associated with 2.2.3.

**Mitigation measure:** FSC US has identified and developed mitigation measures for four key ecosystems: Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, Southern Appalachian Critical Biodiversity Area, and the Central Appalachian Critical Biodiversity Areas. DBI has integrated the FSC HCV maps into its GIS system and screens all suppliers for their intersection with these Specified Risks identified by FSC. Mitigation for primary feedstock includes controls embedded in DBI’s internal processes which are subject to monitoring and internal audit. DBI does not have line of sight to individual tracts that provide fiber to secondary and tertiary feedstock suppliers, so other mitigations are appropriate. The following provides an overview of mitigations chosen for each FSC Specified risk:

#### Late Successional Bottomland Hardwoods (LSBH)

As DBI primarily sources Southern Yellow Pine, Late Successional Bottomland Hardwoods are mainly an issue for residual suppliers who process hardwoods and are proximate to LSBH areas. The areas that potentially have LSBH have been mapped by FSC and integrated into DBI’s GIS system. For residual suppliers, outreach and education will be the choice mitigation tool. Educational materials have been developed to engage landowners, foresters, and loggers in conservation of this forest system. DBI also actively supports workshops and learning exchanges focused on improving the management of bottomland hardwoods in the supply area.

#### Native Longleaf Pine Systems (NLPS)

For NLPS, the areas at risk have been identified by FSC at county/parish level. These areas have been included in DBI’s GIS system. Education and outreach will be the primary mitigation for residual suppliers who’s sourcing area intersects FSC identified risk areas. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of Native Longleaf Pine systems. DBI also actively supports

workshops and learning exchanges focused on encouraging proactive management of longleaf pine in the supply area.

Southern and Central Appalachian Critical Biodiversity Area (CACBA and SACBA respectively)

Both the Central and Southern Appalachian Critical Biodiversity Areas will only affect DBI's residual sourcing due to the distance from existing pellet mills. Education and outreach will be the mitigation tool employed. As described for the risks above, these materials will be developed according to best available science and be adapted as new information and approaches come available (i.e. through FSC CW Regional meetings). This educational material will be aimed at increasing awareness of the sensitivities and unique nature of these CBAs in hopes of increasing conservation of these highly biodiverse areas.

**Country:** United States

**Specified risk indicator:** 2.2.4 The BP has implemented appropriate control systems and procedures to ensure that biodiversity is protected (CPET S5b).

**Specific risk description:** The FSC US National Risk assessment has identified that there are five "specified risks" related to biodiversity within DBI's sourcing area. They include Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, the Dusky Gopher Frog, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Biodiversity Area. DBI recognizes this multi-stakeholder effort to identify "specified risks" relevant to forest sourcing and has therefore accepted these risks as such. Annex 1 of this report provides a detailed analysis of the risk finding associated with 2.2.4.

**Mitigation measure:** FSC US has identified, and developed mitigation measures, for five specified risks which are relevant to residual fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), Native Longleaf Pine Systems (NLPS), Southern Appalachian Critical Biodiversity Area (SACBA), Central Appalachian Critical Biodiversity Area (CACBA), and the Dusky Gopher Frog (DGF). DBI utilizes the FSC approved mitigation measures for addressing these specified risks. The specified risks and mitigation measures are described below:

#### Dusky Gopher Frog (DGF)

For the Dusky Gopher Frog, FSC identifies two small areas at the extreme south of our residual sourcing area. FSC has identified education and outreach as a mitigation option for the DGF. DBI will provide educational materials to the suppliers which have the potential to source from the FSC identified risk areas. Educational materials will be informed by the best available science and adapted as new information and/or approaches become available. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of DGF populations.



#### Late Successional Bottomland Hardwoods (LSBH)

As DBI primarily sources Southern Yellow Pine, Late Successional Bottomland Hardwoods are mainly an issue for residual suppliers who process hardwoods and are proximate to LSBH areas. The areas that potentially have LSBH have been mapped by FSC and integrated into DBI's GIS system. For residual suppliers, outreach and education will be the choice mitigation tool. Educational materials have been developed to engage landowners, foresters, and loggers in conservation of this forest system. DBI also actively supports workshops and learning exchanges focused on improving the management of bottomland hardwoods in the supply area.

#### Native Longleaf Pine Systems (NLPS)

For NLPS, the areas at risk have been identified by FSC at county/parish level. These areas have been included in DBI's GIS system. Education and outreach will be the primary mitigation for residual suppliers whose sourcing area intersects FSC identified risk areas. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of Native Longleaf Pine systems. DBI also actively supports workshops and learning exchanges focused on encouraging proactive management of longleaf pine in the supply area.

#### Southern and Central Appalachian Critical Biodiversity Area (CACBA and SACBA respectively)

Both the Central and Southern Appalachian Critical Biodiversity Areas will only affect DBI's residual sourcing due to the distance from existing pellet mills. Education and outreach will be the mitigation tool employed. As described for the risks above, these materials will be developed according to best available science and be adapted as new information and approaches come available (i.e. through FSC CW Regional meetings). This educational material will be aimed at increasing awareness of the sensitivities and unique nature of these CBAs in hopes of increasing conservation of these highly biodiverse areas.

Mitigation for primary feedstock includes DBI's program to verify BMP usage and protection of species of concern when sourcing directly from the forest. DBI has integrated the FSC HCV maps into its GIS system and "Rapid Risk Assessment" process which also includes all known species and natural communities of concern (NatureServe data). FSC US has identified two specified risks which are relevant to primary fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), and Native Longleaf Pine Systems (NLPS). DBI actively screens all in-woods fiber tracts for species of concern and FSC Specified Risks prior to accepting any fiber. DBI also records the cover type and species of stand from which fiber is sourced. In this way receipt of longleaf pine and harvesting associated with

hardwood systems is monitored to ensure that there is no conversion or degradation of high conservation forests on tracts from which we receive roundwood or in-woods chips. If it is determined that the risk of negative impact to the HCV cannot be effectively mitigated through information flow and internal controls DBI can choose not to accept material from a region or a supplier.

The mitigations described above are sufficient to bring the risk of non-compliance with this requirement to “low”.

**Country:** United States

**Specified risk indicator:** 2.4.1 The BP has implemented appropriate control systems and procedures for verifying that the health, vitality and other services provided by forest ecosystems are maintained or improved (CPET S7a).

**Specific risk description:** The FSC US Controlled Wood Risk Assessment has identified 4 ecosystems that appear within DBI’s supply area, Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Critical Biodiversity Area, that have been designated as “Specified Risk”. Annex 1 of this report provides a detailed analysis of the risk finding associated with 2.4.1.

**Mitigation measure:** FSC US has identified, and developed mitigation measures, for four specified risks which are relevant to residual fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), Native Longleaf Pine Systems (NLPS), Southern Appalachian Critical Biodiversity Area (SACBA), and the Central Appalachian Critical Biodiversity Area (CACBA). DBI utilizes the FSC approved mitigation measures for addressing these specified risks. The specified risks and mitigation measures are described below:

#### Dusky Gopher Frog (DGF)

For the Dusky Gopher Frog, FSC identifies two small areas at the extreme south of our residual sourcing area. FSC has identified education and outreach as a mitigation option for the DGF. DBI will provide educational materials to the suppliers which have the potential to source from the FSC identified risk areas. Educational materials will be informed by the best available science and adapted as new information and/or approaches become available. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of DGF populations.

#### Late Successional Bottomland Hardwoods (LSBH)

As DBI primarily sources Southern Yellow Pine, Late Successional Bottomland Hardwoods are mainly an issue for residual suppliers who

process hardwoods and are proximate to LSBH areas. The areas that potentially have LSBH have been mapped by FSC and integrated into DBI's GIS system. For residual suppliers, outreach and education will be the choice mitigation tool. Educational materials have been developed to engage landowners, foresters, and loggers in conservation of this forest system. DBI also actively supports workshops and learning exchanges focused on improving the management of bottomland hardwoods in the supply area.

#### Native Longleaf Pine Systems (NLPS)

For NLPS, the areas at risk have been identified by FSC at county/parish level. These areas have been included in DBI's GIS system. Education and outreach will be the primary mitigation for residual suppliers who's sourcing area intersects FSC identified risk areas. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of Native Longleaf Pine systems. DBI also actively supports workshops and learning exchanges focused on encouraging proactive management of longleaf pine in the supply area.

#### Southern and Central Appalachian Critical Biodiversity Area (CACBA and SACBA respectively)

Both the Central and Southern Appalachian Critical Biodiversity Areas will only affect DBI's residual sourcing due to the distance from existing pellet mills. Education and outreach will be the mitigation tool employed. As described for the risks above, these materials will be developed according to best available science and be adapted as new information and approaches come available (i.e. through FSC CW Regional meetings). This educational material will be aimed at increasing awareness of the sensitivities and unique nature of these CBAs in hopes of increasing conservation of these highly biodiverse areas.

Only two of these specified risks are relevant to DBI's primary sourcing, Late Successional Bottomland Hardwoods and the Native Longleaf Pine System. Mitigation for primary feedstock includes DBI's program to verify BMP usage and protection of species of concern when sourcing directly from the forest. DBI has integrated the FSC HCV maps into its GIS system and "Rapid Risk Assessment" process which also includes all known species and natural communities of concern (NatureServe data). FSC US has identified two specified risks which are relevant to primary fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), and Native Longleaf Pine Systems (NLPS). DBI actively screens all in-woods fiber tracts for species of concern and FSC Specified Risks prior to accepting any fiber. DBI also records the cover type and species of stand from which fiber is sourced. In this way receipt of longleaf pine and harvesting associated with hardwood systems is monitored to ensure that there is no conversion or degradation of high conservation forests on tracts from which we receive roundwood or in-woods chips. If it is determined that the risk of negative impact to the HCV cannot be effectively mitigated through

information flow and internal controls DBI can choose not to accept material from a region or a supplier.

## 7.2 Monitoring and outcomes

Monitoring includes continuing attendance at regional FSC® meetings which will inform attendees about the specified risks that have been identified as well as FSC's analysis of mitigation effectiveness. DBI will have annual meetings with secondary suppliers to assess their overall performance, including their understanding and use of DBI supplied outreach materials. DBI will programmatically monitor effectiveness of controls associated with primary fiber suppliers. Successful outreach and conservation efforts achieved by DBI's direct conservation partners are also considered in DBI's monitoring process.

Programmatic monitoring of in-woods fiber has been effective at mitigating the risk of harm to HCVs. Operational BMP checks serve as evidence. In addition, our dialogue with suppliers indicates that they do have a better understanding of the specified risks in their operational area and that they are aware of no issues pertaining to the protection of these ecosystems or critical biodiversity areas/species. Informational materials continue to serve as a valuable communication tool for continuous improvement in harvest implementation.

DBI has also partnered with the Longleaf Alliance and the Forest Stewards Guild to promote improved management of the longleaf and bottomland hardwood ecosystems. See a brief description of the initiatives and actions advanced by these organizations:

### Longleaf Alliance

Since 1995 the Longleaf Alliance reports that it has:

- Supported the addition of more than 1.5 million acres of planted longleaf pine;
- Conducted hundreds of workshops, seminars, and presentations to professionals, land managers, and landowners in all nine states in the

longleaf range;

- Developed publications, brochures, videos and web-based learning tools on all aspects of longleaf pine management;
- Hosted major biennial regional conferences, mountain longleaf conferences, nursery conferences, and understory restoration conferences that

served as gathering points and information exchanges for a full spectrum of longleaf interests;

- Initiated the Regional Longleaf Working Group that resulted in development of the Range-wide Conservation Plan for Longleaf Pine and

the America's Longleaf Initiative;

- Provided direct technical assistance to hundreds of forest landowners and managers across the region annually.

DBI has supported the Longleaf Alliance since 2017, steadily increasing funding contribution. Last year we planned to host an event near Alexandria LA aimed at attracting local landowners and increasing interest and understanding of the longleaf system. This event was ultimately cancelled due to Covid.

This year we were planning to support an event near Shreveport LA but it has also been called off. Due to the current difficulty in organizing these large events, we have decided to invest some additional funds to help support a new Western Technical Assistant position. This position will serve MS and LA. The Alliance is hoping to have someone on the ground and ready to assist by the end of Q4.

#### The Forest Stewards Guild

The Forest Stewards Guild has initiated an effort focused on improving bottomland hardwood in the lower Mississippi Alluvial Plain. This effort involves both the synthesis of technical information as well as the dissemination of this information to landowners in the region, with an ultimate goal of improving bottomland hardwood forests management and the value that they provide to wildlife. See quote from the Forest Guild below:

“Our project will manage and enhance natural stands of bottomland hardwoods in the LMAV for the benefit of wildlife and freshwater systems. We will partner with the Louisiana Department of Wildlife & Fisheries, the USDA Natural Resources Conservation Service, and The Nature Conservancy to exemplify wildlife forestry concepts. By supporting demonstration sites on Louisiana state lands, engaging landowners and resource professionals through education & outreach events, and connecting landowners to technical services, we will promote sustainable forest management in the LMAV that maintains or enhances the ecological integrity of bottomland hardwood forests.”

DBI helped sponsor, and participated in, a technical meeting in the Baton Rouge held November 2019 (second bottomland hardwood learning exchange). Our intent was to help support/encourage landowner workshops within our sourcing area in 2020 and gain this year, but all events have been cancelled due to Covid. In lieu of supporting in-person workshops we are contributing to a fund which supports the development of forest management plans for private landowners. We are planning to help sponsor at least one more learning exchange in our region in 2022, helping to extend the NFWF project funding.

# 8 Detailed findings for indicators

Detailed findings for each Indicator are given in Annex 1 in case the Regional Risk Assessment (RRA) is not used.

**Is RRA used?** No

## **9 Review of report**

### **9.1 Peer review**

2015/16 • Doug Patterson – Renewable Strategies • Barry Parish – Georgia Biomass 2016/17 • Via Annual Internal Audit: Mike Ferrucci – Interforest 2018/19 • No external review but completed to include learning from multi-stakeholder meetings concerning SBR's and the SBP Risk Assessment process. 2019/20 • Via Annual Internal Audit: Mike Ferrucci, R. S. Berg & Associates, Inc

### **9.2 Public or additional reviews**

SBE reviewed through public consultation process.

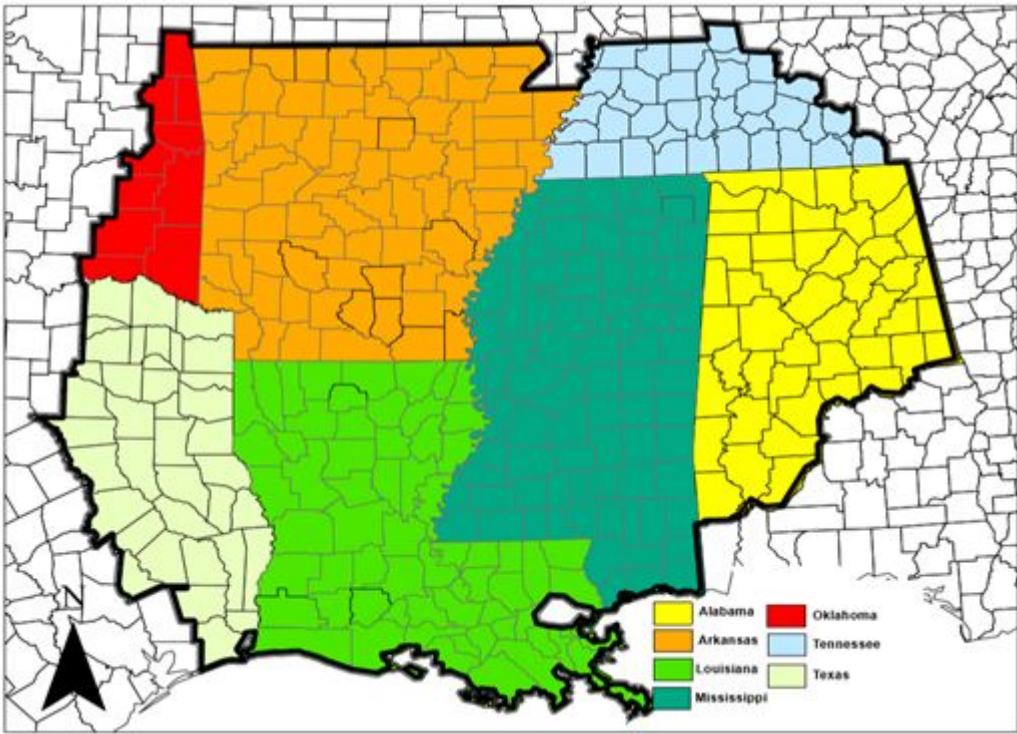
## 10 Approval of report

Approval of Supply Base Report by senior management			
Report Prepared by:	Kyla Cheynet	Director of Sustainability	17 Sep 2021
	Name	Title	Date
The undersigned persons confirm that I/we are members of the organisation's senior management and do hereby affirm that the contents of this evaluation report were duly acknowledged by senior management as being accurate prior to approval and finalisation of the report.			
Report approved by:	Matt White	SVP Drax Biomass	20 Sep 2021
	Name	Title	Date



## Annex 1: Detailed findings for Supply Base Evaluation indicators

	Indicator
1.1.1	The BP Supply Base is defined and mapped.
Finding	<p>Drax Biomass Inc's (DBI) fiber procurement catchment includes Arkansas, Louisiana, Mississippi, and portions of Alabama (47 counties), Texas (37 counties), Oklahoma (10 counties), and Tennessee (37 counties) See map of supply area below. The Company owns and operates three primary pellet plants: Amite BioEnergy (ABE) in Gloster, MS; Morehouse BioEnergy (MBE) near Beekman, LA and LaSalle BioEnergy (LBE) in Urania, LA. DBI also owns and operates two satellite plants: Arkansas Bioenergy (ARBE) – Leola, and ARBE– Russellville. Each primary plant typically draws feedstock from within a 70-mile radius but maintains the ability to procure out to a 100-mile radius to obtain primary feedstock in response to market pressures and weather events. However, secondary feedstocks produced by forest product manufactures could be procured from as far away as 200 miles. ABE, under most circumstances, procures fiber from Mississippi, Louisiana and west-central Alabama; LBE from southern Arkansas, Louisiana and potentially east Texas; and MBE from southern Arkansas, northwest Mississippi, and northern Louisiana, with the potential for lesser volumes from east Texas/Oklahoma and western Tennessee. Each satellite plant will obtain feedstock from the secondary material produced by the forest products manufacturer that is adjacent to the facility. Each forest products manufacturer typically procures feedstock from within a 70-mile radius but maintains the ability to procure out to a 100-mile radius to obtain primary feedstock in response to market pressures and weather events.</p> <p>A map of DBI's sourcing area forms part of DBI's contract with suppliers</p>

	
Means of Verification	Map is provided
Evidence Reviewed	All means of verification reviewed
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
1.1.2	Feedstock can be traced back to the defined Supply Base.
Finding	<p>A map of DBI's sourcing area forms part of DBI's contract with suppliers.</p> <ul style="list-style-type: none"> <li>• Binding contractual requirements stipulate that suppliers disclose the source's origination information (lat/long) to establish a gate pass before loads of roundwood or in-woods chips enter mill sites.</li> <li>• Robust transaction accounting system captures sustainability characteristics about the source upon establishment and assigns relational information to each load registered upon delivery.</li> </ul>

	<ul style="list-style-type: none"> <li>• Transaction accounting system captures location, type of cut and species groups and other information.</li> <li>• Control points are established, and training is completed to ensure only sources of known origin enter mill sites.</li> <li>• Monitoring by procurement and sustainability staff verify accuracy of records and locations of tracts.</li> </ul> <p>• DBI holds verified SFI®, PEFC™ and FSC® CoC Certificates substantiating that all feedstock is assessed for risk via a Due Diligence System (DDS).</p> <p>• Majority of feedstock inputs are from primary sources with a growing proportion from secondary sources.</p> <p>Suppliers of secondary and tertiary feedstocks have contractual requirements to confirm that their feedstock originates within DBI's defined catchment. This is checked through internal procedures at DBI, including logical haul radius regular communication with secondary and tertiary suppliers, and internal audit</p>
Means of Verification	<ul style="list-style-type: none"> <li>• Transactional accounting system hold details of volumes, species and locations.</li> <li>• Professional fiber procurement and sustainability personnel</li> <li>• Third party audits of sustainability program evidence the presence of a functioning supply chain management system that complies with the legal requirements to track and trace raw material.</li> <li>• Administrative processes and fiduciary responsibilities to tax law have been defined and implemented. These require business to identify and capture the district of origin of fiber that enable states to assign and collect severance taxes.</li> <li>• See Preamble citations, including Worldwide Governance Indicators</li> <li>• Forest Property Taxation Systems in the United States: Each jurisdiction has its own version of record retention and/or payment periods for timber purchases.</li> </ul>
Evidence Reviewed	All means of verification reviewed
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	<b>Indicator</b>
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1.1.3	The feedstock input profile is described and categorised by the mix of inputs.
Finding	<ul style="list-style-type: none"> <li>• DBI's Biomass Producers consume biomass feedstock comprised of low value roundwood, thinnings, tops, logging residues and mill residues from southern yellow pine (SYP) species, with minority components of mixed southern hardwoods.</li> <li>• Binding contractual requirements stipulate that suppliers disclose the source's origination information to establish a gate pass before loads enter mill sites. Compulsory requirements to follow all applicable laws and regulations along with upholding the intent of DBI's commitment to sustainable forestry, are included in contracts.</li> <li>• Robust transaction accounting system captures sustainability characteristics about the source upon establishment and assigns relational information to each load registered upon delivery. <ul style="list-style-type: none"> <li>• Transaction accounting system captures designation of the inputs and species groups.</li> <li>• Control points are established, and training is completed to ensure only sources of known origin enter mill sites.</li> </ul> </li> <li>• DBI holds verified SFI®, PEFC™ and FSC® CoC Certificates substantiating that all feedstock is assessed for risk via a Due Diligence System (DDS).</li> <li>• Majority of feedstock inputs at LBE, MBE, and ABE are from primary sources with a growing proportion from secondary sources.</li> <li>• The feedstock input for the three satellite sites will be entirely secondary from a forest product manufacturer that is adjacent to each respective plant.</li> <li>• Suppliers of secondary and tertiary feedstocks have contractual requirements to confirm that their feedstock originates within DBI's defined catchment. This is checked through internal procedures at DBI, including logical haul radius and regular communication with secondary and tertiary suppliers. Communication includes inspection where required.</li> <li>• Monitoring and internal audit is carried out to verify the accuracy and completeness of information gathered.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• Transactional accounting system records of feedstock inputs</li> <li>• Monitoring records</li> <li>• Administrative responsibilities. Third party audits of sustainability programs evidence the presence of a functioning supply chain management system that complies with the legal requirements to track and trace raw material. Third party audits provide assurance that accurate material inputs are defined and captured (i.e. species, fiber type, harvest method), and derived from sources within the boundaries of the defined risk assessed region.</li> </ul> <p>Additional Citations:</p>

- ***Preamble*** (see below) citations including Worldwide Governance Indicators

- Professional fiber procurement and sustainability personnel

***Preamble*** - *\*Note that this "Preamble" section was included at the beginning of the original SBE prior to SBPs conversion to this digital platform. Since there is no longer an open field that allows for its inclusion at the beginning of the SBE it is included here in 1.1.3 (first time referenced) but will apply to the entire SBE.*

*Leading means of verification applicable to most indicators:*

*The existence of, and effective application of, state and federal legislation is a key verifier. Suppliers and forest landowners located within the defined fiber catchments operate in a social system upheld by the "rule of law". The effectiveness of the rule of law in the US is verified by such indices as the Worldwide Governance Indicators, overseen by the World Bank. The US is in the 89<sup>th</sup> percentile for rule of law, giving confidence to the rule of law as a control.*

*Third party certifications are further evidence that Drax Biomass Inc. (DBI) complies with applicable legislation, regulations and/or accepted practices. In addition to the Sustainable Biomass Program (SBP), DBI participates in three other certification programs: FSC® Chain of Custody and Controlled Wood, SFI® Chain of Custody and Fiber Sourcing, and PEFC™ Chain of Custody. DBI's management system, internal processes and policies are reviewed as part of the external third-party audits associated with the certifications listed.*

*The Sustainability section of the Drax Biomass webpage contains additional resources: <https://www.draxbiomass.com/sustainability/>*

*Landscape Level Risk Assessments:*

- *FSC® US National Controlled Wood Risk Assessment (US NRA)*
- *Global Forest Registry (discontinued but valuable for initial evaluation process – reference retained)*
- *FSC® Controlled Wood Risk Assessments (CWRA) of other forest products users in DBI's fiber procurement catchments*
- *SBP Supply Base Reports of other forest products users in DBI's fiber procurement catchments*
- *DBI's Due Diligence System (DDS) for fiber procurement*

*Supporting Company Policies and Procedures:*

	<ul style="list-style-type: none"> <li>• <i>Drax Environmental Policy</i></li> <li>• <i>Drax Sustainability Policy</i></li> <li>• <i>Drax Health and Safety Policy</i></li> <li>• <i>DBI's Biomass Sustainability Programs (BSPs) Contracts, Procedures and Records</i></li> </ul> <p><i>The FSC US Controlled Wood Risk Assessment is incorporated in this Supply Base Evaluation. The US NRA has identified some "specified risks" in relation to high conservation value forests and conversion, and has mapped these. There are no regions of DBI's sourcing area identified by FSC to be at risk for conversion, however, specified risks related to other high conservation values have been identified. The specified risks identified pertain to SBP indicators 2.1.2, 2.2.3, 2.2.4 and 2.4.1. DBI implements suitable mitigations for these risks by utilizing FSC approved mitigations as well as internal controls.</i></p>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
1.2.1	The BP has implemented appropriate control systems and procedures to ensure that legality of ownership and land use can be demonstrated for the Supply Base.
Finding	<ul style="list-style-type: none"> <li>• FSC US National Risk Assessment has determined there is a "low risk" of illegally harvested wood through examination of 21 indicators including ownership and land use.</li> <li>• The World Bank has awarded the US a Global Governance Index rating that is in the 89th percentile for rule of law.</li> <li>• Annual review of the DDS is completed to substantiate and reverify the "low risk" determination.</li> <li>• Per the preamble, the Worldwide Governance Indicators provides assurance that the rule of law is effective in this geography. This further assures performance of suppliers of secondary and tertiary feedstocks.</li> </ul>

Means of Verification	<ul style="list-style-type: none"> <li>• Property law is well established and policed through effective courts (see Global Governance index). DBI has implemented DDS presenting the laws utilized in the US and each state sourced from to showcase the rule of law and public agency governance.</li> <li>• Risk assessments listed in preamble, which range from company to landscape level, have captured the existence and effectiveness of statutory, contractual, property, and civil law in the defined supply base.</li> <li>• Land use challenges are absent and legal processes are present to establish and challenge land ownership in the wood procurement region.</li> <li>• Preamble citations including Worldwide Governance Indicators</li> <li>• DBI has implemented a procedure to ensure a defined response of preferred actions to handle identified non-compliant material in relation to compliance with the Timber Standard and EUTR.</li> <li>• DBI has written contracts for all suppliers.</li> <li>• Suppliers are required to abide by all laws and regulations in a Fiber Purchase Agreement.</li> <li>• Monitoring, as well as internal and external audit, act as checks for completeness and accuracy of records.</li> <li>• Stakeholder Consultation</li> <li>• Transactional accounting system records</li> <li>• DBI conducted a comprehensive stakeholder consultation to capture feedback regarding legality issues in the procurement regions. <ul style="list-style-type: none"> <li>• One stakeholder voiced their concern about the level of law enforcement and effectiveness of existing legal controls as they relate to logging. However, DBI continues to support FSC assessment of “low-risk,” and through continued monitoring of their catchment finds that the level of enforcement is effective, and that timber trespass is not systemic in procurement region.</li> </ul> </li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator																																
1.3.1	The BP has implemented appropriate control systems and procedures to ensure that feedstock is legally harvested and supplied and is in compliance with EUTR legality requirements.																																
Finding	<ul style="list-style-type: none"><li>• EUTR requires that timber is harvested in accordance with applicable legislation in the country of harvest. Information in 1.2.1 above and bullet points below are indicators of low risk of non-compliance for all categories of feedstock.</li><li>• The FSC US National Risk Assessment has determined there is a “Low Risk” of “illegally harvested wood”.</li><li>• Each state DBI sources from has timber trespass and theft legislation governing public agencies and enforcement bodies.</li><li>• Each state sourced from has established rule of law and public agency governance.</li><li>• Level of enforcement and effectiveness is evident in news reports and timber trespass is not systemic in procurement catchments. (See evidence table presented in Means of Verification).</li></ul>																																
Means of Verification	<ul style="list-style-type: none"><li>• FSC US National Risk Assessment has determined there is a “low risk” of illegally harvested wood through examination of 21 indicators including payment of taxes, royalties and duty (indicators 1.2, 1.4-1.7, 1.17, 1.19).</li><li>• Timber trespass and theft legislation, governing public agencies and enforcement bodies are existent and effective.</li></ul> <table><tr><td>Texas</td><td>Tennessee</td><td>Mississippi</td><td>Louisiana</td><td>Arkansas</td><td>Alabama</td><td>Oklahoma</td><td>Federal</td></tr><tr><td>State Timber Theft Law</td><td>State Timber Theft Law</td><td>State Timber Theft Law</td><td>State Timber Theft Law</td><td>Arkansas Timber Theft</td><td>AL Timber Theft Law</td><td>OK Forest ry Code</td><td>US: Lacey Act</td></tr><tr><td>Publication explaining timber theft law.</td><td>UT Extension Fact sheet</td><td>MS Agricultural and Livestock Theft Bureau</td><td>Timber theft cases and litigation disclosure via search engine.</td><td>Timber Theft Fact Sheet</td><td>AL Change in Enforcement Agency</td><td>No reports return ed by web crawler</td><td>Enforcement Action: Article summarizing recent cases.</td></tr><tr><td>Enforcement action example.</td><td>Enforcement Action Example</td><td>Article presenting enforcement</td><td>LA Timber Theft Brochure</td><td>Arkansas AG Law Enforcement News</td><td>AL Enforcement Example</td><td>Article that includes OK Timber</td><td>Third party review of effectiveness of</td></tr></table>	Texas	Tennessee	Mississippi	Louisiana	Arkansas	Alabama	Oklahoma	Federal	State Timber Theft Law	State Timber Theft Law	State Timber Theft Law	State Timber Theft Law	Arkansas Timber Theft	AL Timber Theft Law	OK Forest ry Code	US: Lacey Act	Publication explaining timber theft law.	UT Extension Fact sheet	MS Agricultural and Livestock Theft Bureau	Timber theft cases and litigation disclosure via search engine.	Timber Theft Fact Sheet	AL Change in Enforcement Agency	No reports return ed by web crawler	Enforcement Action: Article summarizing recent cases.	Enforcement action example.	Enforcement Action Example	Article presenting enforcement	LA Timber Theft Brochure	Arkansas AG Law Enforcement News	AL Enforcement Example	Article that includes OK Timber	Third party review of effectiveness of
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- EIA website only cites the United States with regards to US based companies operating in other countries concerning the Lacey Act.
- Thesis by Timothy Hicks and compendium by Defenders of Wildlife provides a list of forestry laws regarding illegal trespass. This publication provides a listing of applicable State laws for forestry within each State.
- See list of state forestry laws at:  
[https://defenders.org/sites/default/files/publications/state\\_forestry\\_laws.pdf](https://defenders.org/sites/default/files/publications/state_forestry_laws.pdf)

*Table 5.1: US Forest Service Law Enforcement and Investigations, Incidents and Case Statistics, 2009–2013*

	2009	2010	2011	2012	2013
Cases	2,730	2,668	2,712	2,489	1,657
Incidents	202,200	177,189	138,971	124,571	103,333

Source: US Forest Service presentation to Interpol. Available at:  
file:///C:/Users/Test%20Account/Downloads/David%20Ferrell,%20USDA%20Forest%20Service%20-%20Law%20Enforcement%20Investigations%20(2).pdf

- Preamble citations including Worldwide Governance Indicators

- Timber theft resources by state, Forest 2 Market
- “Illegal Logging and Global Wood Markets”, Seneca Creek Assoc and World Resources Institute
- The American Hardwood Export Council (AHEC) examined legality and found that while timber theft is a significant and consequential problem for affected landowners, the volume of US hardwood production that may be illegally obtained is very low relative to production. See Assessment of Lawful Harvesting and Sustainability of US Hardwood Exports, American Hardwood Export Council
- See Chatham House Illegal logging portal for analysis and review of forest governance and legality.
- A Nationwide Survey of Timber Trespass Legislation.by Hicks (MS Thesis) presents a comprehensive list of timber trespass legislation (Timothy Hicks, 2005 PSU School of Forest Resources).
- State Forestry Laws. Defenders of Wildlife, October 2000.
- According to the UCR, property crime offenses declined by 2.6 percent in 2015 compared with 2014, and by 20.2 percent when compared with the 2006 data
- Since 2008, several other states have also acted to strengthen timber theft laws by expanding enforcement and/or increasing penalties (for example, Missouri, Louisiana, and Arkansas). In Louisiana, the rate of occurrence of timber theft is reportedly less than in past years due to changes in the law that imposed higher penalties.
- [http://cofe.org/files/2018\\_Proceedings/Grove%20and%20Conrad.pdf](http://cofe.org/files/2018_Proceedings/Grove%20and%20Conrad.pdf);  
[http://www.mdac.ms.gov/wp-content/uploads/mdac\\_annualrpt2019.pdf](http://www.mdac.ms.gov/wp-content/uploads/mdac_annualrpt2019.pdf)
- <http://www.ldaf.state.la.us/forestry/enforcement/>
- <https://tfsweb.tamu.edu/lawenforcement/reporttimbertheft/w> of timber security news feeds
- DBI conducted a comprehensive stakeholder consultation to capture feedback about legality issues in the procurement regions.
  - One stakeholder voiced their concern about the level of law enforcement and effectiveness of existing legal controls as they relate to logging. However, DBI continues to support FSC assessment of “low-risk” and through continued monitoring of their catchment, finds that the level of enforcement is effective, and that timber trespass is not systemic in procurement region
- DBI collects information is collected through the transactional system of record regarding, species, volumes, region of origin, and supplier, all required within EUTR.
- DBI has implemented a procedure to ensure a defined response of preferred actions to handle identified non-compliant material in relation to compliance with the Timber Standard and EUTR.
- DBI has due diligence system that including checks for illegal activities prior to contract commencing. System is referred to internally as “Know Your Vendor” or KYV process.

	<ul style="list-style-type: none"> <li>• DBI's chain-of-custody and FSC CW Due Diligence System houses a comprehensive list of relevant US laws for reference.</li> <li>• Right to sell material is clearly established as part of legal contract. Management systems, internal processes and company policies reviewed as part of third-party certifications</li> <li>• Suppliers are obligated to abide by all laws and regulations by signatory of the Fiber Purchase Agreement.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator														
1.4.1	The BP has implemented appropriate control systems and procedures to verify that payments for harvest rights and timber, including duties, relevant royalties and taxes related to timber harvesting, are complete and up to date.														
Finding	<ul style="list-style-type: none"><li>• FSC US National Risk Assessment has determined there is a “low risk” of illegally harvested wood through examination of 21 indicators including payment of taxes, royalties and duty (indicators 1.2, 1.4-1.7, 1.17, 1.19).</li><li>• Each jurisdiction has its own version of record provisions and/or payment periods for timber purchases. DBI is compliant with the most stringent record retention policies.</li><li>• Severance tax records</li><li>• No export taxes or duties are required for sale of pellets.</li></ul>														
Means of Verification	<ul style="list-style-type: none"><li>• Effective application of State and Federal legislation in respect of customs and duties, especially dealing with assessments and collections. Strong contractual law drives compliance. Management systems, internal processes, and company policies are reviewed as part of third party certifications.</li><li>• See Preamble citations including Worldwide Governance Indicators.</li></ul> <table><tr><td>Mississippi:</td><td>Louisiana</td><td>Arkansas</td><td>Alabama</td><td>Oklahoma</td><td>Tennessee</td><td>Texas</td></tr><tr><td>Payment window and</td><td>Provide load tickets</td><td>Payment window</td><td>Forestry Records Law</td><td>Oklahoma Forestry Code</td><td>TN Timber Tax Information</td><td>Texas Taxation Information</td></tr></table>	Mississippi:	Louisiana	Arkansas	Alabama	Oklahoma	Tennessee	Texas	Payment window and	Provide load tickets	Payment window	Forestry Records Law	Oklahoma Forestry Code	TN Timber Tax Information	Texas Taxation Information
Mississippi:	Louisiana	Arkansas	Alabama	Oklahoma	Tennessee	Texas									
Payment window and	Provide load tickets	Payment window	Forestry Records Law	Oklahoma Forestry Code	TN Timber Tax Information	Texas Taxation Information									

	<p>access and to load loader tickets logs</p> <ul style="list-style-type: none"> <li>• All states DBI purchases fiber from have severance tax requirements: Timber severance tax by state.</li> <li>• Severance taxes are paid on behalf of the supplier by DBI allowing the landowner to produce the filing/return with the proper tax authority.</li> <li>• Sec of State Certificate of good standing and no tax liens exists for Amite BioEnergy LLC, Morehouse BioEnergy LLC, LaSalle BioEnergy LLC, Arkansas BioEnergy, LLC or Baton Rouge Transit LLC .Operational Control Procedures for Wood Procurement states "establishment of account includes the payment of severance taxes to the appropriate authority."</li> <li>• Load receipts and vendor statements are issued to suppliers for reconciliation with landowners</li> <li>• DBI's Certificates of Good Standing (Ex: Louisiana Sec of State, Mississippi Sec of State, Arkansas Sec of State)</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>1.5.1</b>	The BP has implemented appropriate control systems and procedures to verify that feedstock is supplied in compliance with the requirements of CITES.
Finding	<ul style="list-style-type: none"> <li>• FSC US National Controlled Wood Risk Assessment has determined there is "Low Risk" of illegally harvested wood through examination of 21 indicators including compliance with CITES requirements (indicator 1.20).</li> <li>• The US ratified CITES in 1974 and no trade suspensions with the US exists.</li> <li>• No production pine or hardwood species are listed by CITES.</li> </ul>
Means of Verification	<p>CITES is administered enforced by public agencies with robust governance.</p> <ul style="list-style-type: none"> <li>• In the US CITES enforcement is a Federal responsibility and is shared between US Customs and Border Protection (Customs), the Animal and Plant Health Inspection</li> </ul>

	<p>Service (APHIS) and the US Fish and Wildlife Service (USFWS). USFWS is the official US CITES management authority.</p> <ul style="list-style-type: none"> <li>• Preamble citations including Worldwide Governance Indicators</li> <li>• CITES list is available and reviewed periodically <a href="https://www.speciesplus.net/">https://www.speciesplus.net/</a>.</li> <li>• DBI does not procure any species that are currently listed in CITES. Reviewed CITES website to determine.</li> <li>• Fiber Purchase Agreement obligates suppliers to abide by all laws and regulations as a signatory.</li> <li>• Supply chain management system that assures accurate material inputs are defined and captured (i.e. species and fiber type), transactional system records this information.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>1.6.1</b>	The BP has implemented appropriate control systems and procedures to ensure that feedstock is not sourced from areas where there are violations of traditional or civil rights.
Finding	<ul style="list-style-type: none"> <li>• The recent FSC Controlled Wood National Risk Assessment for the US has determined that there is a “Low Risk” of “wood harvested in violation of traditional and human rights” in the conterminous US (Category 2).</li> <li>• Recognized and equitable processes are in place to resolve conflicts of substantial magnitude pertaining to traditional rights.</li> <li>• Though not ratified, the United States is in overall compliance with the ILO Convention 169, which addresses customs and beliefs, education and training, health services, land rights, social security, protection of language and culture, and pay and working conditions.</li> <li>• The legal system in the United States is generally considered fair and efficient in resolving conflicts pertaining to traditional rights including use rights, cultural interests or traditional cultural identity. There are different mechanisms or processes that allow Native American tribes, as well as any private citizen, to deal with disagreement and conflict related to decisions affecting natural resources, and forests that are considered to be equitable. Note the list of Federal Acts Below</li> </ul>

	<ul style="list-style-type: none"> <li>• Intra-tribal councils and the Bureau of Indian Affairs resources provide information concerning consultations, actions and resolutions.</li> </ul> <p><a href="https://www.bia.gov/sites/bia.gov/files/assets/public/webteam/pdf/idc1-028635.pdf">https://www.bia.gov/sites/bia.gov/files/assets/public/webteam/pdf/idc1-028635.pdf</a></p> <p><a href="https://biamaps.doi.gov/">https://biamaps.doi.gov/</a></p> <p><a href="https://www.choctaw.org/government/development/forestry.html">https://www.choctaw.org/government/development/forestry.html</a></p> <p><a href="http://www.koasatiheritage.org/pages/tribal-history/">http://www.koasatiheritage.org/pages/tribal-history/</a></p> <p><a href="http://www.jenachoctaw.org/content/epa">http://www.jenachoctaw.org/content/epa</a></p> <p><a href="https://www.tunicabiloxi.org/tribal-info/departments/land-office/">https://www.tunicabiloxi.org/tribal-info/departments/land-office/</a></p> <p><a href="https://itec.cherokee.org/">https://itec.cherokee.org/</a></p> <p><a href="http://www.shawnee-tribe.com/Environmental.html">http://www.shawnee-tribe.com/Environmental.html</a></p>
Means of Verification	<ul style="list-style-type: none"> <li>• Existence and effective application of federal and state legislation and conventions. These aspects provide protection and recourse if breached. Programs available to contribute to improved circumstances for indigenous tribes. Management systems, internal processes and company policies are reviewed as part of third party certifications.</li> <li>• USFS Tribal Relations</li> <li>• Preamble citations including Worldwide Governance Indicators</li> <li>• Regional and National controls and evidence (e.g. FSC determination of “Low Risk”) apply to all suppliers. DBI undertakes regular assessment of supplier performance.</li> <li>• There are a number of laws which ensure protection of traditional and civil rights: <ul style="list-style-type: none"> <li>• American Indian Religious Freedom Act of 1978 (amended 1994)</li> <li>• Indian Child Welfare Act of 1978</li> <li>• Indian Citizenship Act of 1924</li> <li>• Indian Self-Determination and Education Assistance Act of 1975</li> <li>• Native American Languages Act of 1990</li> <li>• Tribal Law and Order Act of 2010</li> <li>• ILO Convention 169</li> </ul> </li> <li>• US Dept of Interior-Indian Affairs</li> <li>• Inter-Tribal Councils of +the region <ul style="list-style-type: none"> <li>• Inter-Tribal Council – Houma, LA</li> <li>• Inter-Tribal Council - Baton Rouge, LA</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Inter-Tribal Council – Philadelphia, MS</li> <li>• Inter-Tribal Council of AL, Inc</li> <li>• Inter-Tribal Community Council of Texas</li> <li>• Inter-Tribal Council of NE OK</li> </ul> <p>• FSC Chain of Custody requires acknowledgements relating to health, safety and labour issues that are based on ILO Declaration on Fundamental Principles and Rights at Work, 1998</p> <p>• Through the Stakeholder Consultation process DBI has attempted to communicate with tribes located in procurement region. There has been no return communication</p>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.1.1</b>	The BP has implemented appropriate control systems and procedures for verifying that forests and other areas with high conservation value in the Supply Base are identified and mapped.
Finding	<p>• DBI has access to maps identifying forests and other areas of high conservation value These include:</p> <ul style="list-style-type: none"> <li>• FSC US Controlled Wood National Risk Assessment</li> <li>• NatureServe – via license agreement which allows access to species occurrence data for G1-G2 and federally threatened and endangered species</li> <li>• USGS Protected Area Database (PAD)</li> <li>• Other publicly available maps/sources detailed in Means of Verification below.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• DBI has a procedure to utilize internal GIS mapping resources to geographically reference risks relative to sourcing and assure adequate protection.</li> <li>• The FSC NRA was used as a primary reference for HCV review. Maps of Specified</li> </ul>

Risks were incorporated into DBI's GIS system and Rapid Risk Assessment procedure.

Mitigation measures have been developed to address sourcing from the following Specified Risks

1. Native Longleaf Pine Systems
2. Late Successional Bottomland Hardwoods
3. Dusky Gopher Frog
4. Southern Appalachian Critical Biodiversity Area
5. Central Appalachian Biodiversity Area

<https://us.fsc.org/en-us/certification/controlled-wood/fsc-us-controlled-wood-national-risk-assessment-us-nra>

- Federally threatened and endangered species and species/natural communities ranked G1 and G2 do occur within the sourcing area and known locations within DBI's primary sourcing area are mapped using NatureServe and Natural Heritage data.

- RAMSAR sites: there are three named sites within DBI's sourcing area, all are protected by state, federal, and NGO ownership and involvement. Any harvesting within these areas would be under direct supervision of the state and federal agencies. These areas include: Catahoula Lake, LA, Caddo Lake, TX/LA, and Cache-Lower White Rivers, AR. <https://www.ramsar.org/>

- There is one Conservation International Biodiversity hotspot within the sourcing area, the "North American Coastal Plain". This is a broad region, reaching from northern Mexico along the Gulf of Mexico and up the East Coast to south-eastern Massachusetts. The concerns in this Global 200 region have been reviewed and crosschecked with the specified risks identified in the FSC NRA and are appropriately identified and addressed. <https://www.cepf.net/our-work/biodiversity-hotspots>

- There are two WWF Global 200 ecoregions in the sourcing area, the temperate coniferous and broadleaf forest (#75) and the Appalachian and mixed mesophytic forests (#69). These Global 200 regions represent aggregations of WWF continental ecoregions (described below) to a scale which is assistive to global prioritization. In theory, conservation within these global ecoregions would help conserve the most outstanding and representative habitats for biodiversity in the world.

- There are ten WWF terrestrial ecoregions identified in the supply area, nine are considered "critical/endangered" by WWF and one is considered "vulnerable". WWF ecoregions are only one ecoregion classification method. The WWF ecoregions focus narrowly on regional concerns which WWF has identified to help direct their conservation efforts. To inform management and conservation initiatives DBI has chosen EPA ecoregion III and IV classifications, which provide more detailed ecological information relevant to forest management than the WWF ecoregions. The issues identified in these WWF ecoregions have been considered by FSC National Risk Assessment, a multi-stakeholder review, and have been incorporated, as appropriate, into their specified HCV risks. DBI has reviewed the WWF ecoregions and crosschecked them with the identified risks in the FSC NRA as well and the proprietary HCV mapping tools developed in partnership with Nature Serve, to assure they have been adequately identified and addressed. WWF ecoregions reviewed include:

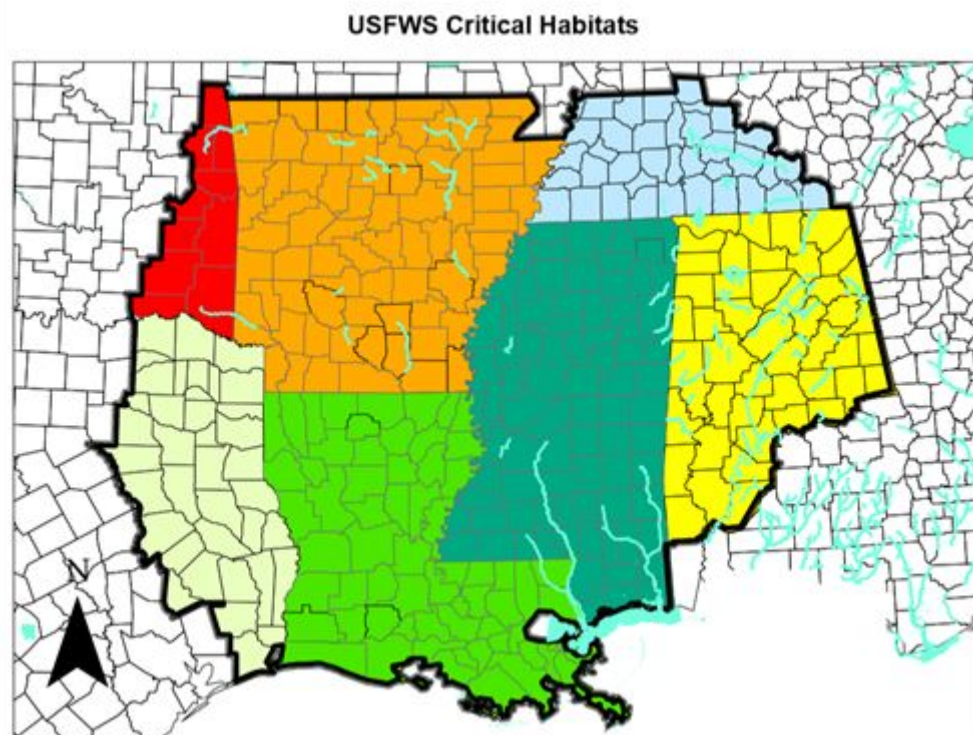


	<ol style="list-style-type: none"> <li>1. NA0404 Central US Hardwood Forests - Critical/Endangered</li> <li>2. NA0409 Mississippi Lowland Forests - Critical/Endangered</li> <li>3. NA0412 Ozark Mountain Forests - Critical/Endangered</li> <li>4. NA0413 Southeastern Mixed Forests - Critical/Endangered</li> <li>5. NA0523 Piney Woods forests, - Critical/Endangered</li> <li>6. NA0529 Southeastern Conifer Forests - Critical/Endangered</li> <li>7. NA0701 Western Gulf Coastal Grasslands – Critical/Endangered</li> <li>8. NA0804 Central forest-grasslands transition – Critical/Endangered</li> <li>9. NA0402 Appalachian mixed mesophytic forests – Critical/ Endangered</li> <li>10. NA0403 Appalachian-Blue Ridge Forests – Vulnerable</li> </ol> <p>•There is one WWF aquatic region concern that falls within DBI's sourcing area, the Southeastern Rivers and Streams ecosystem. Streams and rivers associated with known HCVs have been flagged by Nature Serve and are incorporated into DBI's mapping systems.</p> <p>•There are several Key Biodiversity Areas (KBA) and Alliance for Zero Extinction areas (AZE) within the sourcing area. These areas are under federal/state/and NGO protection and no sourcing from them can occur without appropriate oversight of these entities. <a href="http://www.keybiodiversityareas.org/site/mapsearch">http://www.keybiodiversityareas.org/site/mapsearch</a></p> <p>•<a href="https://zeroextinction.org/site-identification/2018-global-aze-map/">https://zeroextinction.org/site-identification/2018-global-aze-map/</a></p> <ul style="list-style-type: none"> <li>• Homochitto (MS)</li> <li>• Mississippi Sandhill Crane National Wildlife Refuge (MS)</li> <li>• Mid-south DeSoto - also AZE site (MS)</li> <li>• Warren Prairie - MS</li> <li>• Cache-Lower White Rivers – also a Ramsar site (MS)</li> <li>• Talladega (AL)</li> <li>• Lacon Eit Cave and association hydrobasin – and AZE site(AL)</li> <li>• Wheeler National Wildlife Refuge</li> <li>• Fort Chaffee (AR)</li> <li>• Ozark National Forest (AR)</li> <li>• Cypress Creek and associated hydrobasin – also AZE site (TN)</li> <li>• Sand Creek and associated hydrobasin – AZE site only</li> <li>• Walter B. Jacobs Memorial Nature Park – AZE only</li> </ul>
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- Kisatchie (LA)
- Chenier Plain (LA)
- Coastal Prairie (LA)
- Catahoula-Dewy Wills-three Rivers (LA)
- The USFWS has designated 41 federally threatened and endangered species in their critical habitat areas within DBI's Supply Base.

See link to critical habitat map:

<https://www.arcgis.com/home/item.html?id=9d8de5e265ad4fe09893cf75b8dbfb77>



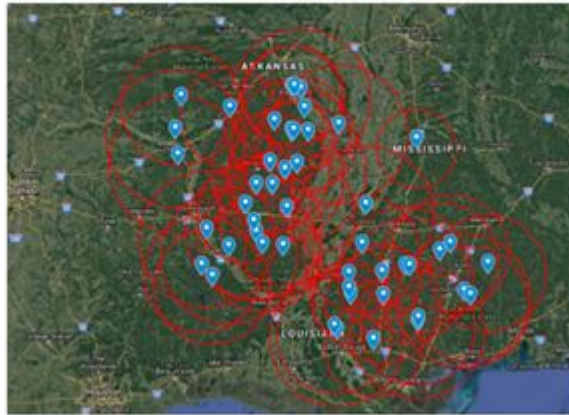
- DBI recognizes the Atchafalaya Basin as a high conservation area.
- There are no "Intact Forest Landscapes" (collaborative effort including among others Greenpeace, WRI, WWF) <http://www.intactforests.org/world.webmap.html>
- There are no High Biodiversity Wilderness Areas per Conservation International <https://www.worldheritagesite.org/connection/High-Biodiversity+Wilderness+Area>
- There are 6 species on the IUCN Red List that occur within the states DBI sources from. *Quercus oglethorpensis* (oglethorpe oak), *Fraxinus profunda* (pumpkin ash), *Fraxinus caroliniana* (carolina ash), *Quercus acerifolia* (maple-leaved oak), and *Quercus boyntonii*, *Pinus palustris* (longleaf pine). Longleaf pine is the only species which may be materially impacted by DBI's sourcing, with the other species occurring in wetlands or extreme remote locations where southern yellow pine, DBI's primary feedstock, is not found.
- There are no regions identified by the World Resources Institute as a Frontier Forest <https://databasin.org/datasets/303c7eaabda34c5881553d29cfb01015>

Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	Based on the evidence presented above, the risk specifically related to DBI's ability to identify and "map" known areas of high conservation value is low. There are excellent tools and resources available and DBI has invested in GIS programs and customized NatureServe datasets to improve efficiency of use.

	Indicator
<b>2.1.2</b>	The BP has implemented appropriate control systems and procedures to identify and address potential threats to forests and other areas with high conservation values from forest management activities.
Finding	<p>The FSC US National Risk assessment has identified that there are five "specified risks" within DBI's sourcing area. They include Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, the Dusky Gopher Frog, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Biodiversity Area. DBI recognizes this multi-stakeholder effort to identify "specified risks" related to forest sourcing and has therefore accepted these risks as such.</p> <ul style="list-style-type: none"> <li>•DBI also recognizes that there are additional species and natural community types which FSC did not elevate to the level of "Specified Risks" but which still warrant protection. DBI has thoroughly assessed and reviewed these species and community types (see Indicator 2.1.1 for a detail review of sources checked and HCVs identified).</li> <li>•The existing mechanisms in place to protect these additional species and natural community was reviewed by DBI and is detailed in Means of Verification below. Following this review DBI concurs with the FSC US NRA and has selected no additional "specified risks", other than those listed above which would require additional mitigations outside of standard operating procedures.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•State agencies have a number of controls in place to identify and protect species and natural communities. These state agencies work in concert with the Natural Heritage Programs in their respective states (a part of the NatureServe network) to continuously monitor and inventory natural diversity in the states. State Wildlife Actions Plans as well as state Forest Action Plans are required for states to receive federal funding. These plans, drafted through multi-stakeholder participation, identify key wildlife and forestry concerns within the state and provide detailed plans on how to achieve conservation of these resources. Links to State Wildlife Action Plan and state Natural Heritage programs are provided below:</li> </ul>

	<ul style="list-style-type: none"><li>•Link to all State Wildlife Action Plans: <a href="https://www.fishwildlife.org/afwa-informs/state-wildlife-action-plans">https://www.fishwildlife.org/afwa-informs/state-wildlife-action-plans</a></li><li>•Links to all Forest Action Plans: <a href="https://www.stateforesters.org/forest-action-plans/">https://www.stateforesters.org/forest-action-plans/</a></li><li>•Links to State Natural Heritage information in the states DBI sources:<ul style="list-style-type: none"><li>oLouisiana <a href="http://www.wlf.louisiana.gov/species-by-parish?tid=All&amp;dtype_1=All">http://www.wlf.louisiana.gov/species-by-parish?tid=All&amp;dtype_1=All</a></li><li>oMississippi <a href="http://www.mdwfp.com/seek-study/heritage-program.aspx">http://www.mdwfp.com/seek-study/heritage-program.aspx</a></li><li>oAlabama <a href="http://www.alnhp.org/">http://www.alnhp.org/</a></li></ul></li></ul> <p>Forestry considerations: <a href="http://www.aces.edu/natural-resources/wildlife/endangeredspecies.php">http://www.aces.edu/natural-resources/wildlife/endangeredspecies.php</a></p> <ul style="list-style-type: none"><li>oArkansas <a href="http://www.naturalheritage.com/research-data/rare-species-search.aspx">http://www.naturalheritage.com/research-data/rare-species-search.aspx</a></li><li>oTexas <a href="http://www.tpwd.state.tx.us/huntwild/wild/wildlife_diversity/nongame/">http://www.tpwd.state.tx.us/huntwild/wild/wildlife_diversity/nongame/</a></li><li>oOklahoma <a href="https://www.wildlifedepartment.com/wildlife/wildlife-diversity/threatened-and-endangered">https://www.wildlifedepartment.com/wildlife/wildlife-diversity/threatened-and-endangered</a> <a href="https://efotg.sc.egov.usda.gov/references/public/OK/ThreatenedEndangeredSpeciesbyCounty.pdf">https://efotg.sc.egov.usda.gov/references/public/OK/ThreatenedEndangeredSpeciesbyCounty.pdf</a></li><li>oTennessee <a href="http://www.tnswap.com/">http://www.tnswap.com/</a></li></ul> <p>•The forest products industry participates directly in the development of the State Wildlife Action Plans as well as efforts to protect and identify species and communities of concern. For example, DBI purchases a data license from NatureServe annually. NatureServe then provides DBI with shapefiles for all known species and communities of concern. This data is integrated into DBI's mapping system which is used to screen all harvests where DBI is receiving fiber directly from the woods. The use of NatureServe data, and the protection of species and communities deemed globally critically imperilled (G1) or globally imperilled (G2), is required by all participants of the Sustainable Forestry Initiative (SFI). DBI sources from landowners certified to the SFI Forest Management Standard and from sawmills that are certified to the SFI Fiber Sourcing Standard, both of which require consideration of G1, G2, and T&amp;E species. DBI is also certified to the SFI FS Standard.</p>
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Map depicting coverage of SFI FS mill sourcing areas within DBI supply area:



- In addition to State Wildlife Action Plans and Natural Heritage Data, the federal Endangered Species Act (ESA) and federal Clean Water Act are very strong regulatory mechanisms which are in place to reduce the risk of further biodiversity loss. These regulations bring with them significant civil and criminal penalties (i.e. up to 1 year imprisonment for ESA violation and \$54,000/day for CWA violation). The ESA prohibits not only direct “take” but can also deem habitat alteration as a “taking”. The ESA can restrict forest management on both private and public lands. Habitat Conservation Agreements (HCPs), Safe Harbor Agreements, and Candidate Conservation Agreements are among the tools provided to a landowner who wishes to actively manage their forest in areas where threatened or endangered species, highly sensitive to forest alteration, exist. The red-cockaded woodpecker, and the Louisiana pine snake are two species currently being managed with these mechanisms in DBI’s sourcing area. For some species Critical Habitat has been designated, a further assurance that federally listed species are protected (i.e. gopher frog in DBI sourcing area).

- Clean Water Act protections are extremely relevant to the protection of biodiversity. States have been granted the authority to develop programs to address nonpoint source pollution from forestry operations. These state “Best Management Programs” have been recognized by the USFWS in recent listing rules as a means of ensuring species protection. For example, the Pearl darter listing rule described positive effects of BMPs as follows: “Nonpoint source pollution is a localized threat to the pearl darter within the drainage and is more prevalent in areas where certified best management practices (BMPs) are not utilized. The use of certified BMPs during land-altering activities can greatly reduce impacts to water quality. Certified BMPs, currently implemented by the forestry industry (e.g., Sustainable Forestry Initiative, Forest Stewardship Council, and American Tree Farm System), are helping to minimize or eliminate non-point source pollution during the course of forestry activities. The Mississippi Forestry Commission (2016, entire) reports certified BMP implementation rates to be high in Mississippi for forestry activities, primarily due to the efforts of State forestry agencies and forest certification programs (Schilling and Wigley 2015, pp 3–7)” (82 Fed Reg 43889).

In the southeastern US, the Southern Group of State Foresters has introduced a framework to standardize BMP monitoring efforts among the 13 southern states. According to a 2018 report summarizing rates of BMP implementation, all states in the region were in conformance with the framework. Furthermore, 67 state-wide monitoring surveys had been conducted since its initial development in 1997 and 23 surveys were conducted in the last six years. Combining all BMP categories in all states and using only the most recent state survey data reported, average overall BMP implementation for the region was 93.6%, up from 92% in 2012.

	<p>(<a href="https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view">https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view</a>).</p> <p>BMP implementation rates in the states that DBI sources from are as follows:</p> <p>MS- Overall 95%</p> <p>Mississippi 2019 BMP Implementation Survey</p> <p>LA- Overall 89% (according to 2015 survey data reported in SGSF report, 2009 is most recent state-level report publicly available.)</p> <p>Louisiana 2009 BMP Implementation Survey</p> <p>AR- Overall 93 %</p> <p>Arkansas 2017-2018 BMP Implementation Survey</p> <p>AL- Overall 98.2%</p> <p>Alabama 2019 BMP Implementation Survey</p> <p>TN- Overall 88.5%</p> <p>Tennessee 2017 BMP Implementation Survey</p> <p>OK- Overall 92.1%</p> <p>Oklahoma 2010 BMP Implementation Survey</p> <p>TX- Overall 91.6%</p> <p>Texas 2018 BMP Implementation Survey</p> <p>•As described above, a structured BMP program has been in place in the southern US for over two decades. In this same time period the forest industry has embraced SFI (est. 1994) which has championed BMP implementation through its trained logger requirements as well as the protection of biodiversity. See research by Dwivedi et al. on increased BMP implementation within the supply area of SFI FS mills - <a href="http://sficonference.org/wp-content/uploads/2018/12/Puneet-Dwivedi.pdf">http://sficonference.org/wp-content/uploads/2018/12/Puneet-Dwivedi.pdf</a>).</p> <p>Furthermore, the State Wildlife Action Planning Process is now in its 15th year and Forest Action Plans have been in place since 2010. These industry-wide initiatives in place for protection of biological diversity can be considered standard practice as well as an industry expectation. DBI, as a responsible member of the industry, has developed a program to verify the implementation of BMPs and the protection of known species of concern for its own in-woods sourcing. DBI's individual actions to verify BMP usage and protection of species of concern when sourcing directly from the forest simultaneously meet the industry expectations for environmental protection and may also be considered a mitigation, by SBP definition, to control the risk of sourcing material not in compliance with this indicator.</p>
Evidence Reviewed	All means of verification reviewed.
Risk Rating	Specified Risk

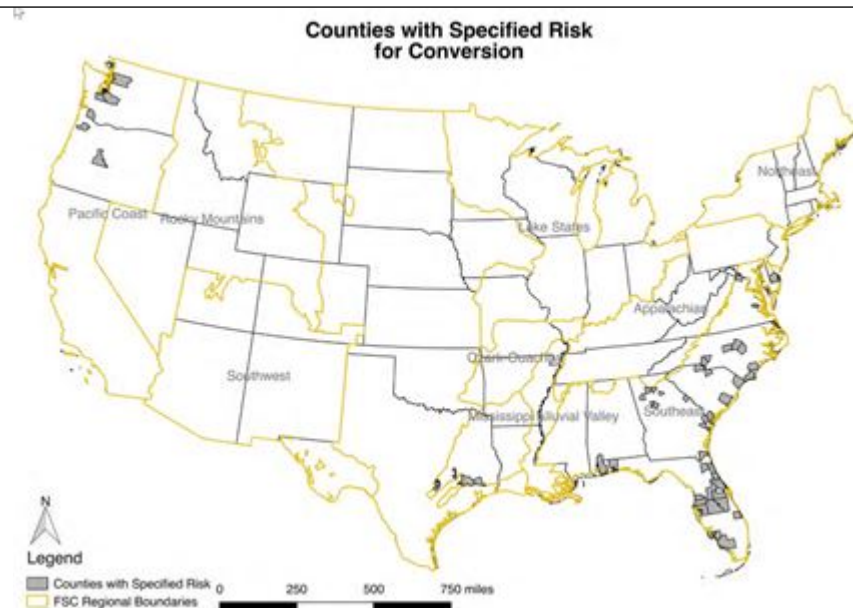


<p>Comment or Mitigation Measure</p>	<p>FSC US has identified and developed mitigation measures for five specified risks which are relevant to residual fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), Native Longleaf Pine Systems (NLPS), Southern Appalachian Critical Biodiversity Area (SACBA), Central Appalachian Critical Biodiversity Area (CACBA), and the Dusky Gopher Frog (DGF). DBI utilizes the FSC approved mitigation measures for addressing these specified risks. The specified risks and mitigation measures are described below:</p> <p><u>Dusky Gopher Frog (DGF)</u></p> <p>For the Dusky Gopher Frog, FSC identifies two small areas at the extreme south of our residual sourcing area. FSC has identified education and outreach as a mitigation option for the DGF. DBI will provide educational materials to the suppliers which have the potential to source from the FSC identified risk areas. Educational materials will be informed by the best available science and adapted as new information and/or approaches become available. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of DGF populations.</p> <p><u>Late Successional Bottomland Hardwoods (LSBH)</u></p> <p>As DBI primarily sources Southern Yellow Pine, Late Successional Bottomland Hardwoods are mainly an issue for residual suppliers who process hardwoods and are proximate to LSBH areas. The areas that potentially have LSBH have been mapped by FSC and integrated into DBI's GIS system. For residual suppliers, outreach and education will be the choice mitigation tool. Educational materials have been developed to engage landowners, foresters, and loggers in conservation of this forest system. DBI also actively supports workshops and learning exchanges focused on improving the management of bottomland hardwoods in the supply area.</p> <p><u>Native Longleaf Pine Systems (NLPS)</u></p> <p>For NLPS, the areas at risk have been identified by FSC at county/parish level. These areas have been included in DBI's GIS system. Education and outreach will be the primary mitigation for residual suppliers whose sourcing area intersects FSC identified risk areas. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of Native Longleaf Pine systems. DBI also actively supports workshops and learning exchanges focused on encouraging proactive management of longleaf pine in the supply area.</p> <p><u>Southern and Central Appalachian Critical Biodiversity Area (CACBA and SACBA respectively)</u></p> <p>Both the Central and Southern Appalachian Critical Biodiversity Areas will only affect DBI's residual sourcing due to the distance from existing pellet mills. Education and outreach will be the mitigation tool employed. As described for the risks above, these materials will be developed according to best available science and be adapted as new information and approaches come available (i.e. through FSC CW Regional meetings). This educational material will be aimed at increasing awareness of the sensitivities and unique nature of these CBAs in hopes of increasing conservation of these highly biodiverse areas.</p>
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	<p>Mitigation for primary feedstock includes DBI's program to verify BMP usage and protection of species of concern when sourcing directly from the forest. DBI has integrated the FSC HCV maps into its GIS system and "Rapid Risk Assessment" process which also includes all known species and natural communities of concern (NatureServe data). FSC US has identified two specified risks which are relevant to primary fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), and Native Longleaf Pine Systems (NLPS). DBI actively screens all in-woods fiber tracts for species of concern and FSC Specified Risks prior to accepting any fiber. DBI also records the cover type and species of stand from which fiber is sourced. In this way receipt of longleaf pine and harvesting associated with hardwood systems is monitored to ensure that there is no conversion or degradation of high conservation forests on tracts from which we receive roundwood or in-woods chips. If it is determined that the risk of negative impact to the HCV cannot be effectively mitigated through information flow and internal controls DBI can choose not to accept material from a region or a supplier.</p> <p><i>The mitigations described above are sufficient to bring the risk of non-compliance with this requirement to "low".</i></p>
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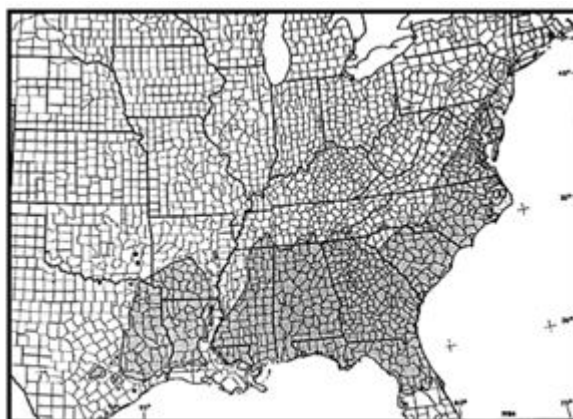
	Indicator
<b>2.1.3</b>	The BP has implemented appropriate control systems and procedures for verifying that feedstock is not sourced from forests converted to production plantation forest or non-forest lands after January 2008.
Finding	<ul style="list-style-type: none"> <li>• FSC Controlled Wood National Risk Assessment does not identify conversion to non-forest as a specified risk in DBI's sourcing area.</li> <li>• FIA data indicates stable and/or increasing forest inventory and forest area in DBI's sourcing area.</li> <li>• Absence of SBP defined "production plantation forests" in wood procurement region.</li> <li>• Historical evidence that healthy markets keep forests as forests.</li> <li>• Review of WWF Ecoregions, and associated concerns about conversion, indicate that these are not significant.</li> <li>• Recent analysis of DBI catchment area analysis (2019 and 2020) using FIA data, market data, and remote sensing tools has not revealed conversion to be a risk.</li> <li>• CWA provides protections against conversion of wetland forests</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• FSC Risk assessment conducted a thorough multi-stakeholder analysis and found that there was no risk of conversion for DBI sourcing area (see map below). In their review FSC considered the WWF ecoregions, along with the concerns cited for conversion, but ultimately focused their conversion concern on areas that are under threat for conversion to urban areas.</li> </ul>





• SBP defines "production plantation forests" as "Forests of exotic species that have been planted or seeded by human intervention and that are under intensive stand management, are fast growing, and subject to short rotations (e.g. Poplar, Acacia or Eucalyptus plantations)". The threat of conversion to production plantation in DBI's sourcing area is low for two primary reasons:

- The planted pine forests in the area where DBI sources from is composed primarily of loblolly pine which is a species native to this region (see figure below).



The native range of loblolly pine. (From Little, 1971.)

- The forests are not intensively managed on short rotations but rather managed for sawtimber. Under good growing conditions, pine forests planted with improved genetics (through standard breeding), and whose density is managed through thinning and early competition control, can achieve sawtimber size in as little as 25 years. Forisk Consulting conducted a survey of southern silviculture in 2016 and 2018 which included assessment of practices on 6.9 and 9.7 million acres, respectively. This survey found that the average clearcut age for pine in the Gulf South was 36 years old (see table below), indicating that the region is neither managed to a high intensity nor is it managed for short fiber rotations.

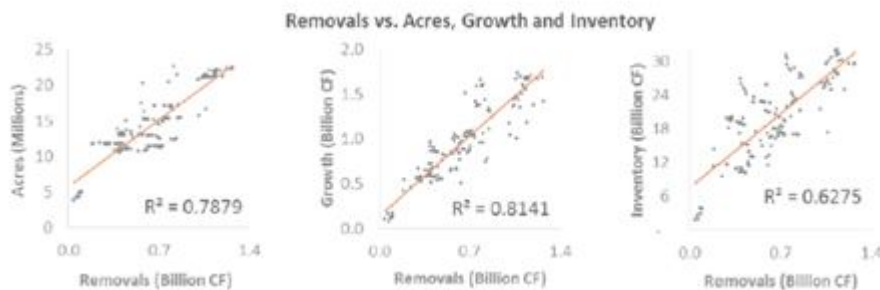
**Figure 8. Silviculture Practices by Region**

	Gulf Region	South (2016)	Upper Coastal Plain	South (2018)
Advanced Genetic Stock (% hectares)	46%	65%	49%	56%
Seedling Survival	85%	90%	89%	89%
Woody Competition Control*	5.3%	3.5%	58%	45%
Fertilization (% respondents)	57%	55%	58%	60%
Clearcut age	36	32	30	28
Avg. Clearcut Revenue (hectare)	\$3,744	\$3,988	\$3,776	\$3,862

\*Question changed from 2016 to 2018 from total % hectares treated in a given year to total % receiving treatment in a rotation.

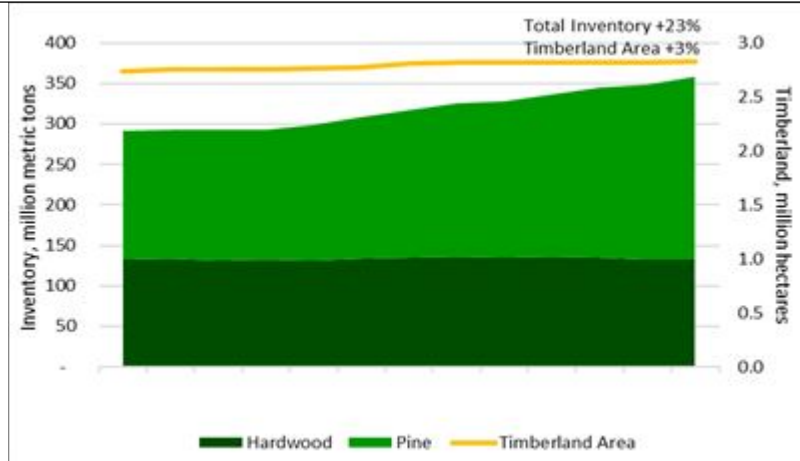
Source: Forisk Consulting

- A 2017 analysis by Forest2Market concurs with this outcome stating, “The biggest threat to forests is urbanization, not the forest products industry”. In fact, they found that markets for timber products encourage landowners to keep forest as forests and not convert them to other, more lucrative, landuses. In their retrospective examination they found that increases in demand encouraged landowners to invest in forests, with forest acres increasing as removals increased (see figure below). [https://www.forest2market.com/hubfs/2016\\_Website/Documents/20170726\\_Forest2Market\\_Historical\\_Perspective\\_US\\_South.pdf](https://www.forest2market.com/hubfs/2016_Website/Documents/20170726_Forest2Market_Historical_Perspective_US_South.pdf)



- The American Forest Foundation states that “Markets encourage landowners to invest in forests, helping keep forests as forests. Strong markets signal that buying forestland, retaining forestland, or investing in forest management, is a good use of an individual or family’s hard earned income. <https://www.forestfoundation.org/markets-for-family-forest-wood-products>
- Forest Inventory and Analysis (FIA) data show a stable forest inventory indicating that conversion of forestland to non-forestland is a low risk in our catchment area. See figures below which were generated through recent analysis of FIA data (2019/2020).

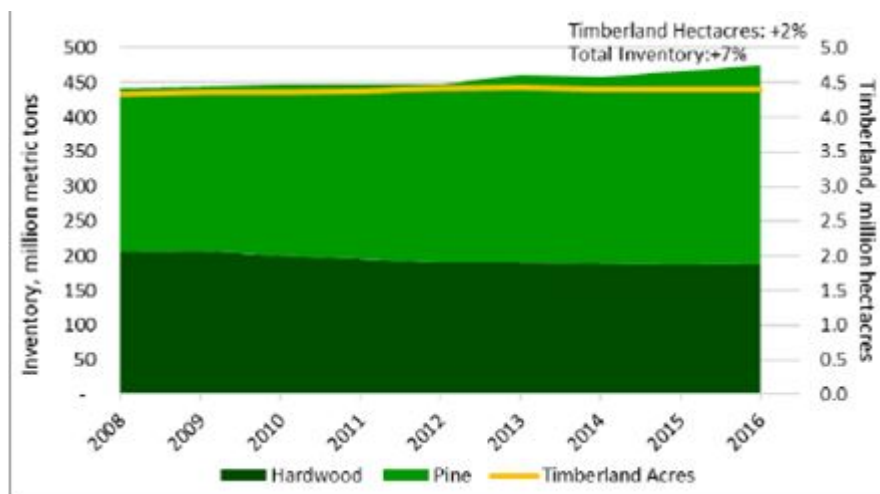
Morehouse bioenergy primary catchment area:



Amite Bioenergy primary catchment area:



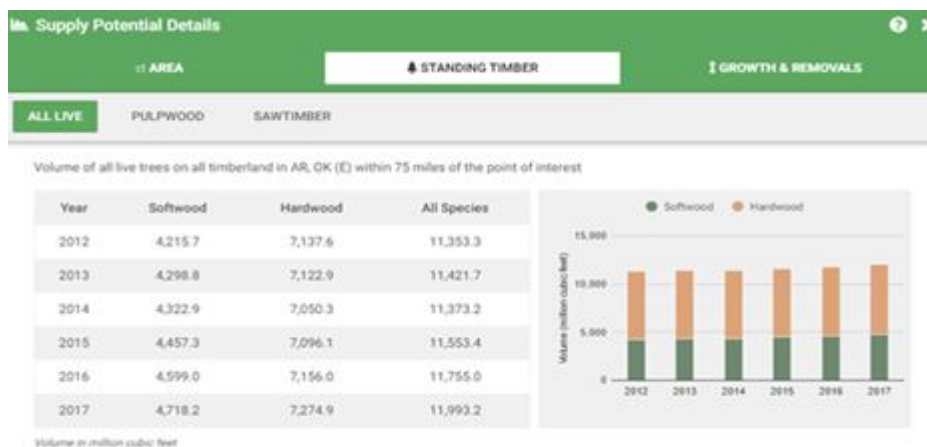
LaSalle Bioenergy primary catchment area:



Arkansas Bioenergy – Leola



## Arkansas Bioenergy – Russellville



- FSC Risk assessment conducted a thorough multi-stakeholder analysis and found that there was no risk of conversion for DBI sourcing area (see map below). In their review FSC considered the WWF ecoregions, along with the concerns cited for conversion, but ultimately focused their conversion concern on areas that are under threat for conversion to urban areas.

- SBP defines "production plantation forests" as "Forests of exotic species that have been planted or seeded by human intervention and that are under intensive stand management, are fast growing, and subject to short rotations (e.g. Poplar, Acacia or Eucalyptus plantations)". The threat of conversion to production plantation in DBI's sourcing area is low for two primary reasons:

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- o The forests are not intensively managed on short rotations but rather managed for sawtimber. Under good growing conditions, pine forests planted with improved genetics (through standard breeding), and whose density is managed through thinning and early competition control, can achieve sawtimber size in as little as 25 years. Forisk Consulting conducted a survey of southern silviculture in 2016 and 2018 which included assessment of practices on 6.9 and 9.7 million acres, respectively. This survey found that the average clearcut age for pine in the Gulf South was 36 years old (see table below), indicating that the region is neither managed to a high intensity nor is it managed for short fiber rotations.

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more lucrative, landuses. In their retrospective examination they found that increases in demand encouraged landowners to invest in forests, with forest acres increasing as removals increased (see figure below).

[https://www.forest2market.com/hubfs/2016\\_Website/Documents/20170726\\_Forest2Market\\_Historical\\_Perspective\\_US\\_South.pdf](https://www.forest2market.com/hubfs/2016_Website/Documents/20170726_Forest2Market_Historical_Perspective_US_South.pdf)

- The American Forest Foundation states that “Markets encourage landowners to invest in forests, helping keep forests as forests. Strong markets signal that buying forestland, retaining forestland, or investing in forest management, is a good use of an individual or family’s hard earned income. <https://www.forestfoundation.org/markets-for-family-forest-wood-products>
  - Forest Inventory and Analysis (FIA) data show a stable forest inventory indicating that conversion of forestland to non-forestland is a low risk in our catchment area. See figures below which were generated through recent analysis of FIA data (2019/2020).
  - Field audit two years post-harvest has identified no concerns with regeneration on sites from which primary fiber was sourced.
  - Drax is exploring remote sensing tools to evaluate regeneration and forest loss/gain at regional level. Global Forest Change <https://earthenginepartners.appspot.com/science-2013-global-forest> was reviewed and DBI catchment areas all appear as actively growing forests with harvests losses offset by gains and maintenance of forest extent. The same Hanson data was used in a catchment area analysis conducted by Interfor. Drax is also exploring the use of satellite imagery (i.e. Landsat 5) and Lidar to test the ability of remote sensing tools to identify forest loss as well as regeneration.
  - Section 404 of the CWA addresses the discharge of dredge and fill into waterways. There is an exemption for on-going silviculture practices, however, the Recapture Provision does not allow conversion of wetland forest to upland. See exemption to the CWA section 404 (f), Recapture Provision “Recapture Provision. Section 404(f) exemptions DO NOT APPLY where any discharge of dredged and/or fill material into “waters of the US”, including wetlands, IF 1] the activity would convert an area of waters of the into a new use (e.g. wetland to upland, wetland to open water, etc.).
- According to a report commissioned by the American Hardwood Council in 2017 titled Assessment of Lawful Harvesting and Sustainability of US Hardwood Exports, “Available data suggest that CWA404 violations are aggressively prosecuted by the regulatory agencies. According to the Corps of Engineers, about 6,000 alleged violations of the Clean Water Act that falls under the Corps’ jurisdiction are processed in district offices each year. Of these, over 60 percent relate to Section 404 permitting (although only a very small number involve silvicultural activities in wetlands). See overview at: <http://www.usace.army.mil/cw/cecwo/reg/oceover.htm>.” Link to report: <https://www.americanhardwood.org/index.php/en/latest/news/seneca-creek-study>
- Regarding WWF’s ecoregions, many of which have been labelled “critical/endangered” citing conversion as a concern, it is important to remember that these ecoregions were created by WWF for the purpose of prioritizing conservation initiatives. Upon closer examination it was determined that landscape level forest conversion was not the specific driver for conservation need. Instead, very specific issues are identified. For example:
    - o The primary concern in the NA0523-Piney Woods forests ecoregion is maintenance of the sandhill pine forest communities, where long-leaf pine (*Pinus palustris*) shares dominance with shortleaf pine (*Pinus echinata*) and loblolly pine (*Pinus taeda*) and pine densities are low. This community type can be likened to the “open forest” type that is a high priority in State Wildlife Action Plans (see Criteria 2.1.2) and as a Specified Risk in FSC’s HCV 3 designation, i.e. Native Longleaf Pine Systems (NLPS), which DBI recognizes as a Specified Risk for indicators 2.1.2,

	<p>2.2.3, 2.2.4, and 2.4.1.</p> <ul style="list-style-type: none"> <li>Another WWF ecosystem in the region is NA0409-Mississippi Lowland Forests. The protection focus in this ecosystem is bottomland hardwood forests. Past conversion, mainly into cultivation, degraded these forests and reduced them to a point where “there is very little to conserve”. Again, FSC has recognized the primary threat to the system, but categorized it as a more specific HCV3 risk, “Late Successional Bottomland Hardwoods”, which DBI also recognizes as a Specified Risk in the supply area for indicators 2.1.2, 2.2.3, 2.2.4, and 2.4.1.</li> <li>The NA0412-Ozark Mountains Forests, with its well-developed-oak hickory forests, are recognized for the distinctness of their freshwater communities. The remaining blocks of habitat are the Boston Mountains and the Ouachita Mountains themselves, with no significant intact habitats existing in the lowlands. The biggest threat is development of the mountains to support second homes and resorts but conversion to pine and fire suppression is also mentioned as risk. FSC initially considered the Ozark Mountain region as a specified risk, citing the threat to aquatic species as a key driver. However, based on review of forestry BMP implementation data, this area was removed from the list of Specified Risks. DBI also considers its fiber sourcing practices to have a low risk of endangering the recognized biological distinctness of this ecoregion and sources less than 5% of fiber from this area. AR BMP implementation data is available here: <a href="https://www.aad.arkansas.gov/Websites/aad/files/Content/5944993/Bioassessment_of_Silviculture_Best_Management_Practices_in_Arkansas_.pdf">https://www.aad.arkansas.gov/Websites/aad/files/Content/5944993/Bioassessment_of_Silviculture_Best_Management_Practices_in_Arkansas_.pdf</a></li> <li>The East Central Texas Forests ecoregion is one of WWF's smallest ecoregions within the Temperate Broadleaf and Mixed Forests biome. The ecoregion is characterized by open forests of oak and hickory with an herbaceous component dominated by bluestem. Common oaks species are post oak, scarlet, and blackjack oak, all species that are generally undesirable timber species due to their growth forms. The primary threat is from conversion of forests for ranching and farming. Based on the species mix (naturally stunted oaks and hickories), the characteristic sparse tree cover, and the identified threat being conversion to agriculture, DBI does not consider there to be a specified risk related to this criterion.</li> <li>Less than 1% of DBI's fiber is received from eastern Texas.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None



	Indicator
<b>2.10.1</b>	Genetically modified trees are not used.
Finding	<ul style="list-style-type: none"> <li>• The FSC US Controlled Wood Risk Assessment has found there is a “low risk” of wood from forests in which genetically modified trees are planted (Section 5.1).</li> <li>• At the same time, it should be noted that the United States is the most advanced country in laboratory experiments and field trials of GMO species and thus the possibility that GMO species will be commercially used in the US is realistic. If updated data becomes available about commercial usage of GMO species in the US, the US FSC Controlled Wood Risk Assessment for this category will be updated and reviewed.</li> <li>• No adverse commentary during stakeholder consultation process.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• Forestry Department of FAO (Food and Agriculture Organization) working paper "Preliminary review of biotechnology in forestry, including genetic modification", 2004: <a href="http://www.fao.org/docrep/008/ae574e/ae574e00.htm">www.fao.org/docrep/008/ae574e/ae574e00.htm</a></li> <li>• Forestry Department of FAO (Food and Agriculture Organization) working paper "Preliminary review of biotechnology in forestry, including genetic modification", 2004</li> <li>Assessment of Lawful Harvesting and Sustainability of US Hardwood Exports, AHEC</li> <li>• DBI's commitment to sustainable forestry states to “avoid trading and sourcing wood from... e) Wood from forests in which genetically modified trees are planted.”</li> <li>• External audit, internal audit and monitoring processes.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.2.1</b>	The BP has implemented appropriate control systems and procedures to verify that feedstock is sourced from forests where there is appropriate assessment of impacts, and planning, implementation and monitoring to minimise them.

Finding	<ul style="list-style-type: none"> <li>• BMPs are in place for all States that Drax sources wood. In addition, SFI committees operate in all these states who partner with state forestry agencies and associations to deliver logger training.</li> <li>• Federal cost-share assistance programs require detailed management plans. Federal cost-share programs for forestry and wildlife projects include the Forestry Incentive Program, the Conservation Reserve Program, the Wetlands Reserve Program, the Stewardship Incentives Program, the Environmental Quality Incentives Program, and others administered by the NRCS.</li> <li>• Tax incentive programs in place which encourage forest management planning. Cost-share programs are designed to help NIPF landowners by reducing their initial costs for reforestation and improving rates of return.</li> <li>• Arkansas, Louisiana, Mississippi, Alabama, Texas, Oklahoma, and Tennessee all have some variant of current use laws in place for forestry activities.</li> <li>• Federal Endangered Species Act results in critical habitat designations, cost share programs for private landowners, and other structured management planning processes designed to help recover species and/or prevent them from being listed.</li> <li>• State Wildlife Action Plans (SWAPS) are in place for all states from which DBI sources.</li> <li>• States have developed Pesticide General Permits to meet the CWA requirements which require appropriate planning and documentation of forest herbicide use.</li> <li>• Supply base includes a significant portion of land certified to the SFI and ATFS standards which require the presence of a forest management plan.</li> <li>• Supply base includes a significant number of facilities certified to the SFI FS Standard. SFI FS requires the use of trained loggers, BMP adherence, distribution of materials pertinent to harvest planning, general awareness and protection of species and ecosystems of concern, and field verification of compliance.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• State BMP Manuals provide detailed advice on the proper installation of BMPs to maintain water quality. See links to state BMP manuals below: <ul style="list-style-type: none"> <li>• AL - <a href="http://www.forestry.alabama.gov/Pages/Management/Forms/2007_BMP_Manual.pdf">http://www.forestry.alabama.gov/Pages/Management/Forms/2007_BMP_Manual.pdf</a></li> <li>• AR - <a href="https://www.aad.arkansas.gov/Websites/aad/files/Content/5944986/BMPs.pdf">https://www.aad.arkansas.gov/Websites/aad/files/Content/5944986/BMPs.pdf</a></li> <li>• LA - <a href="http://www.ldaf.state.la.us/wp-content/uploads/2014/04/BMP.pdf">http://www.ldaf.state.la.us/wp-content/uploads/2014/04/BMP.pdf</a></li> <li>• MS - <a href="https://www.mfc.ms.gov/sites/default/files/Entire_bmp_2008-7-24_2.pdf">https://www.mfc.ms.gov/sites/default/files/Entire_bmp_2008-7-24_2.pdf</a></li> <li>• TX - <a href="https://tfsweb.tamu.edu/BestManagementPractices/">https://tfsweb.tamu.edu/BestManagementPractices/</a></li> <li>• OK - <a href="http://www.forestry.ok.gov/Websites/forestry/images/documents/WaterQuality/Forestry%20BMP-3-16.pdf">http://www.forestry.ok.gov/Websites/forestry/images/documents/WaterQuality/Forestry%20BMP-3-16.pdf</a></li> </ul> </li> </ul>



- TN - <https://www.tn.gov/content/dam/tn/agriculture/documents/forestry/AgForBMPs.pdf>

In the southeastern US, the Southern Group of State Foresters has introduced a framework to standardize BMP monitoring efforts among the 13 states. According to a 2018 report summarizing rates of BMP implementation, all states in the region were in conformance with the framework. Furthermore, 67 state-wide monitoring surveys had been conducted since its initial development in 1997 and 23 surveys were conducted in the last six years. Combining all BMP categories in all states and using only the most recent state survey data reported, average overall BMP implementation for the region was 93.6%, up from 92% in 2012.

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BMP implementation rates in the states that DBI sources from are as follows:

MS- Overall 95%

Mississippi 2019 BMP Implementation Survey

LA- Overall 89% (according to 2015 survey data reported in SGSF report, 2009 is most recent state-level report publicly available.)

Louisiana 2009 BMP Implementation Survey

AR- Overall 93 %

Arkansas 2017-2018 BMP Implementation Survey

AL- Overall 98.2%

Alabama 2019 BMP Implementation Survey

TN- Overall 88.5%

Tennessee 2017 BMP Implementation Survey

OK- Overall 92.1%

Oklahoma 2010 BMP Implementation Survey

TX- Overall 91.6%

Texas 2018 BMP Implementation Survey

The USFWS recently recognized the use of BMPs and the role certification systems (and associated training requirements) play in them in the Pearl darter listing rule “Certified BMPs, currently implemented by the forestry industry (e.g., Sustainable Forestry Initiative, Forest Stewardship Council, and American Tree Farm System), are helping to minimize or eliminate non-point source pollution during the course of forestry activities. The Mississippi Forestry Commission (2016, entire) reports certified BMP implementation rates to be high in Mississippi for forestry activities, primarily due to the efforts of State forestry agencies and forest certification programs (Schilling and Wigley 2015, pp 3–7)” (82 Fed Reg 43889).

Implementation of Forestry Best Management Practices: 2018 Southern Region Report: <https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view>.

DBI, and other wood using facilities certified to the SFI Fiber Sourcing Standard, ensure a significant proportion of the forest landscape is implementing BMPs and properly planning harvests through a structured on-the-ground verification program which is third-party audited. A study conducted by Dwivedi et al. in 2018 found that BMP implementation rate was 2% higher in sites located within 65 miles of mills certified to the SFI Fiber Sourcing standard (<https://www.sciencedirect.com/science/article/abs/pii/S1389934118300807>).

- Logger Training programs, providing training for loggers in cooperation with state forestry associations and forestry commissions. Training includes direction on harvest planning, implementation of forestry BMPs, and protection of sensitive species and ecosystems.

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- Ark Pro Logger
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- MS Professional Logging Manager Program
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- Oklahoma Pro Logger
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- SFI Fiber Sourcing participants are required to share forest management information with the landowners. This information is often developed by State SFI Committees. Link to the landowner information brochure provided by TN is provided as an example, [http://www.tnforestry.com/PROGRAMS/Sustainable\\_Forestry\\_Initiative\\_Publications/](http://www.tnforestry.com/PROGRAMS/Sustainable_Forestry_Initiative_Publications/)

- Landowners that choose to certify their lands to the SFI and American Tree Farm system (ATFS) are required to have detailed plans in place that address an array of sustainability objectives. Forty percent of DBI's fiber is delivered through these certifications. Details on these standards can be found at:

- SFI - <https://www.sfiprogram.org/>
- ATFS - <https://www.treefarmssystem.org/>

- The 2008 Farm Bill includes several forestry cost-share and assistance programs for landowners to help them improve soil and water quality on their land through enhancing forest health, sustainability, and by providing multiple environmental benefits through the long-term growth of their forests. These Farm Bill programs are available through cooperative partnerships of state forestry agencies, the USDA Natural Resources Conservation Service (NRCS), and the USDA Farm Services Agency.

Cooperative Conservation Partnership Initiative (CCPI)

- <http://www.nrcs.usda.gov/PROGRAMS/ccpi/>

Healthy Forests Reserve Program

- (HFRP)<http://www.nrcs.usda.gov/programs/HFRP/ProgInfo/Index.html>

Conservation Stewardship Program (CSP)

- [http://www.nrcs.usda.gov/new\\_csp/](http://www.nrcs.usda.gov/new_csp/)

Environmental Quality Incentives Program (EQUIP)

- <http://www.nrcs.usda.gov/programs/eqip/index.html#intro>

Wildlife Habitat Incentives Program (WHIP)

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• Louisiana, Mississippi, Alabama, Texas, Ok, and Tennessee all have established state level forestry cost-share programs. Arkansas does not currently have a tax program in place. However, Arkansas does have a Wetland and Riparian Zone Tax Credit as well as other incentives for forestry and agriculture.

• All states in DBI's sourcing area utilize a current use valuation on forestland that is much lower than fair market value. As described on the Taxfoundation.org website, if owners of forested land had to pay a percentage of the land's fair market value, their payments would be much higher because potential buyers considering other uses for the

land would drive up the fair market value. This fair market value system would then increase pressure on landowners to make profitable use of their land or sell it to someone who would. Details on the taxes imposed on timberland for all 50 states can be found at: <https://taxfoundation.org/states-use-gentle-hand-taxing-timberland/>

- Federal lands are managed through the National Environmental Policy Act (NEPA) process assures that proper management occurs on federal lands. The NEPA process requires federal agencies to assess the environmental effects of their proposed actions prior to making decisions.

- Habitat Conservation Agreements (HCPs), Safe Harbor Agreements, and Candidate Conservation Agreements are among the tools provided to a landowner who wishes to actively manage their forest in areas where threatened or endangered species, highly sensitive to forest alteration, exist. The red-cockaded woodpecker, and the Louisiana pine snake are two species currently being managed with these mechanisms in DBI's sourcing area. For some species Critical Habitat has been designated, a further assurance that federally listed species are protected (i.e. gopher frog in DBI sourcing area).

- Many lands are also placed under conservation easements which require structured management plans. See link to the National Conservation Easement Database: <http://conservationeasement.us/>

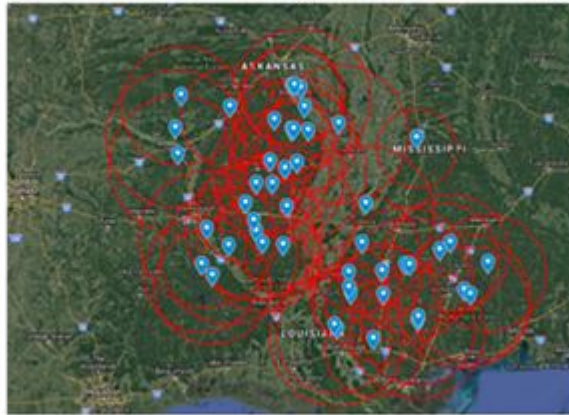
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- States have developed Pesticide General Permits (PGP) to meet the CWA requirements. A Pesticide Discharge Management Plan is a requirement of the PGP when applications meet certain criteria. In all cases proper documentation and recordkeeping of herbicide applications is a requirement and herbicides must be applied by certified applicators. This permit applies to private entities applying forest pesticides (i.e. herbicides) and provides an additional level of assurance that chemical use is carefully planned to minimize harm to the environment.

- Available information on known location of HCVs is reviewed for all fiber received directly from in-woods operations per company sustainability policy. This provides additional assurance that impact to species or habitats of concern are avoided during sourcing.

- External audit, internal audit, and programmatic monitoring all provide checks on the effectiveness of internal and external planning processes.

Map depicting coverage of SFI FS mill sourcing areas within DBI supply area:



• State BMP Manuals provide detailed advice on the proper installation of BMPs to maintain water quality. See links to state BMP manuals below:

- AL - [http://www.forestry.alabama.gov/Pages/Management/Forms/2007\\_BMP\\_Manual.pdf](http://www.forestry.alabama.gov/Pages/Management/Forms/2007_BMP_Manual.pdf)
- AR - <https://www.aad.arkansas.gov/Websites/aad/files/Content/5944986/BMPs.pdf>
- LA - <http://www.ldaf.state.la.us/wp-content/uploads/2014/04/BMP.pdf>
- MS - [https://www.mfc.ms.gov/sites/default/files/Entire\\_bmp\\_2008-7-24\\_2.pdf](https://www.mfc.ms.gov/sites/default/files/Entire_bmp_2008-7-24_2.pdf)
- TX - <https://tfsweb.tamu.edu/BestManagementPractices/>
- OK - <http://www.forestry.ok.gov/Websites/forestry/images/documents/WaterQuality/Forestry%20BMP-3-16.pdf>
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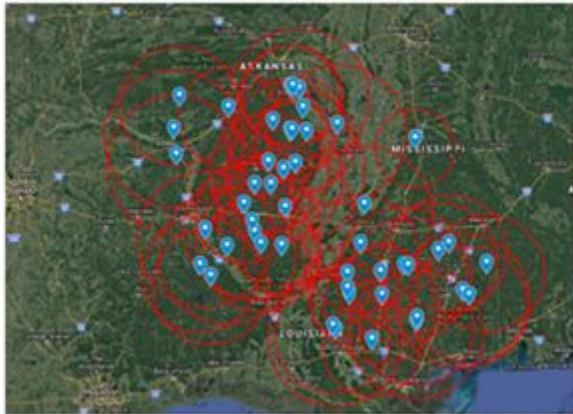
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Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.2.2</b>	The BP has implemented appropriate control systems and procedures for verifying that feedstock is sourced from forests where management maintains or improves soil quality (CPET S5b)
Findings	<ul style="list-style-type: none"> <li>• A literature review of the effects of forestry operations on soil quality indicates that heavy equipment and harvesting practices do have the ability to impact soils in both negative and positive ways. The exact cause of these effects is often difficult to parse out due to the number of variables at play (i.e. soil characteristics and climate). However, research has been informative to the development of best practices to control negative effects related to forest management and harvesting.</li> <li>• All five States that Drax sources wood from have BMP guidelines. These BMPs are in place for water quality and include recommendations for protecting site productivity by limiting soil disturbance. MS has developed BMPs for biomass harvesting that attempt to anticipate the issues</li> </ul>

	<p>that may arise with the greater use of forest residuals.</p> <ul style="list-style-type: none"> <li>• It is an industry norm to implement and evaluate the use of BMPs in programs which source fiber directly from the forest. SFI certification requires verification of BMPs and associated logger training.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• Best Management Practices for forestry are established in each jurisdiction and monitored to achieve compliance to the Clean Water Act. Company sustainability programs include internal BMP audit protocol verified by external 3rd party certification audits. DBI, and other wood using facilities certified to the SFI Fiber Sourcing Standard, ensure a significant proportion of the forest landscape is implementing BMPs and properly planning harvests through a structured on-the-ground verification program which is third-party audited. According to a 2018 report, overall BMP implementation for the region was 93.6%, up from 92% in 2012. (<a href="https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view">https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view</a>). For BMP implementation rates in the states that DBI sources from as see Means of Verification for Indicator 2.1.2 and 2.2.1.</li> <li>• DBI, along with other SFI Fiber Sourcing participants have programs to implement BMPs and verify trained loggers. This network of trained loggers and SFI companies requiring the use of BMPs and conducting verification (i.e. DBI's inclusion of BMPs in fiber contracts and internal BMP audit program) provides assurances the regional soil protection is in place.</li> </ul> <p>Map depicting coverage of SFI FS mill sourcing areas within DBI supply area:</p>  <ul style="list-style-type: none"> <li>• Best Management Practices for forestry are established in each jurisdiction and monitored to achieve compliance to the Clean Water Act. Company sustainability programs include internal BMP audit protocol verified by external 3rd party certification audits. DBI, and other wood using facilities certified to the SFI Fiber Sourcing Standard, ensure a significant proportion of the forest landscape is implementing BMPs and properly planning harvests through a structured on-the-ground verification program which is third-party audited. According to a 2018 report, overall BMP implementation for the region was 93.6%, up from 92% in 2012. (<a href="https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view">https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view</a>). For BMP implementation rates in the states that DBI sources from as see Means of Verification for Indicator 2.1.2 and 2.2.1.</li> <li>• DBI, along with other SFI Fiber Sourcing participants have programs to implement BMPs and verify trained loggers. This network of trained loggers and SFI companies requiring the use of BMPs and conducting verification (i.e. DBI's inclusion of BMPs in fiber contracts and internal BMP audit program) provides assurances the regional soil protection is in place.</li> <li>• A Long-Term Soil Productivity (LTSP) study was installed in the 1980s to evaluate the effects of harvest related compaction and various levels of biomass removal on forest soils and productivity.</li> </ul>

Study sites in Mississippi, Louisiana, and Texas provide interesting data on the Gulf coastal plains of the southern United States. Results thus far have found that compaction from forestry equipment has not caused long-term negative effects on productivity. In fact, growth on coarse, sandy soils showed positive gains after trafficking. This may be due to the increase in water holding capacity of the soil. They also found that on productive sites even extreme experimental levels of biomass removal did not affect future productivity, however, removal of additional organic matter from low-fertility sites may have an impact. They have suggested that response to harvesting and biomass removal is very site-specific and cautioned against blanket specifications imposed to protect productivity

<https://www.fs.usda.gov/treesearch/pubs/50269>

- A literature review conducted by NCASI in 2014 provides a comprehensive review of the impact forest harvesting has on soil properties and subsequent tree growth. This review highlights the complexities involved "Heavy machinery for yarding felled trees or logs can create visible patterns of soil disturbance. Within harvested areas, trees planted on skid trails and landings are subjected to the most disturbed soil in the mosaic of soil conditions. Altered soil properties, however, do not always result in poorer tree growth (Greacen and Sands 1980; Miller, Scott, and Hazard 1996; Miller et al. 1989; Powers and Fiddler 1997). At some locations, the favorable influence of disturbance on other growth-determining factors can counter the generalization that soil compaction reduces subsequent tree and stand growth.

Effects of Heavy Equipment on Physical Properties of Soils and on Long-term Productivity: A Review of Literature and Current Research. Technical Bulletin No. 887 October 2004

<https://www.ncasi.org/wp-content/uploads/2019/02/tb887.pdf>

- A Study by Eisenbies et al. discusses the limited effects of soil disturbance and residue removal on a 5 year old pine plantation in South Carolina.

Eisenbies, Mark and Burger, J. and Aust, W. and Patterson, Steve. (2005). Soil Physical Disturbance and Logging Residue Effects on Changes in Soil Productivity in Five-Year-Old Pine Plantations. Soil Science Society of America Journal - SSSAJ. 69. 10.2136/sssaj2004.0334.

[https://www.researchgate.net/publication/242244803\\_Soil\\_Physical\\_Disturbance\\_and\\_Logging\\_Residue\\_Effects\\_on\\_Changes\\_in\\_Soil\\_Productivity\\_in\\_Five-Year-Old\\_Pine\\_Plantations](https://www.researchgate.net/publication/242244803_Soil_Physical_Disturbance_and_Logging_Residue_Effects_on_Changes_in_Soil_Productivity_in_Five-Year-Old_Pine_Plantations)

- A study by Richter et al. found that forests increased the carbon in the top mineral soils of previously cropped land demonstrating that forests are important to rebuilding soils on previously cropped lands. Much of the southeastern US has been cleared for agriculture at some point and most of the managed pine forests are found on previously cropped soils. The choice to maintain land in forest or convert from agriculture to forestry is influenced by the availability of markets for forest products. In this sense, the biomass market, which utilizes low-value fiber, can be considered to help incentivise landowners to manage forests important to building and maintaining soil which will help rebuild soil carbon and, potentially, help reduce the chances of conversion into cropland which causes significant soil C losses.

Richter, D., Markewitz, D., Trumbore, S. et al. Rapid accumulation and turnover of soil carbon in a re-establishing forest. Nature 400, 56–58 (1999).

<https://www.sciencedirect.com/science/article/abs/pii/S0378112700002826>

- Several studies have investigated the response of soil carbon to harvesting and biomass removal. In most instances there is little, if any, change in mineral soil carbon. Changes in surface carbon are variable, with harvest often increasing carbon in the top organic layer initially, likewise, different (experimental) residual biomass removal levels being reflecting in the carbon content of surface soil layers. These findings point out that there are several variables at play, including climate and

decomposition rates.

- Jang, Woongsoon; Page-Dumroese, Deborah S.; Keyes, Christopher R. 2016. Long-term soil changes from forest harvesting and residue management in the northern Rocky Mountains. *Soil Science Society of America Journal*. 80: 727-741. <https://www.fs.usda.gov/treearch/pubs/51073>
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Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.2.3</b>	The BP has implemented appropriate control systems and procedures to ensure that key ecosystems and habitats are conserved or set aside in their natural state (CPET S8b).
Finding	<ul style="list-style-type: none"> <li>• The FSC US Controlled Wood Risk Assessment has identified 4 ecosystems that appear within DBI's supply area, Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Critical Biodiversity Area, that have been designated as "Specified Risk". This designation gives rise to mitigations as stated in 2.1.2 and in the Mitigation/Comments section of this indicator. DBI has integrated the shapefiles from the FSC NRA into its GIS mapping system and the data sits behind the Rapid Risk Assessment tool.</li> <li>• Federal and state agencies along with non-governmental conservation organizations have identified key ecosystems and habitats which should be protected from development and damaging resource extraction. The Protected Area Database (PAD-US) is America's official national inventory of US terrestrial and marine protected areas (List of National Geospatial Data Assets) that are dedicated to the preservation of biological diversity and other natural, recreation and cultural areas. Identification of these areas ensures their consideration in forest management activities on state and federal lands as well as private lands (through conservation easement plans). DBI has integrated the shapefiles from PAD-US into its GIS mapping system and the data sits behind the Rapid Risk Assessment tool.</li> </ul>

	<ul style="list-style-type: none"> <li>Comprehensive wildlife action plans have been established for each state, further identifying key ecosystems which occur on both public and private land. Arkansas has provided shapefiles for key biodiversity management areas outlined in their State Wildlife Action Plan. DBI has integrated the shapefiles into its GIS mapping system.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>Protected Area Database(PAD-US) details all the federal, state, municipal, and private conservation areas on record (National Conservation Easement Database). Management of these lands is governed by comprehensive planning processes intended to protect key biological resources. Forest harvesting may be utilized as a tool to manage these areas, but oversight from the public agencies and conservation groups have oversight.</li> <li>States programs to protect key ecosystems. For example, in Mississippi these include the Mississippi Scenic Streams Stewardship Program (SSSP), the State Wildlife Grants Program (SWG), The Mississippi Natural Heritage Program (MNHP),Mississippi Forest Legacy Program, the Mississippi Wildlife Heritage Fund, and the Mississippi Partners for Fish and Wildlife Program (MPFW).</li> <li>An extensive search of conservation organization resources and databases was conducted, findings of which are described in Indicator 2.1.1 of this document. All key ecosystems and biodiversity areas identified have been reviewed to assess relevance to DBI's sourcing. Most of these areas are under federal and state management (and identified in PAD-US). FSC and WWF have identified larger "critical biodiversity areas" and "critical/endangered" ecoregions which have been considered relevant to DBI sourcing. The WWF ecoregions risks relevant to DBI are addressed by the FSC Specified Risk areas which DBI has accepted. Therefore, discussion will focus on FSC NRA's treatment of these risks (see Indicator 2.1.3 for review of WWF ecoregion risks).</li> <li>FSC NRA: The following resources were reviewed to determine the relevance of Specified Risks identified in the FSC NRA: <ul style="list-style-type: none"> <li>FSC US Controlled Wood Risk Assessment</li> <li>Static maps of areas with specified risks</li> <li>Static map of all HCV1 Critical Biodiversity Areas</li> </ul> </li> </ul> <p>FSC Risks that DBI have identified in the supply base are four key ecosystems: Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, Southern Appalachian Critical Biodiversity Area, and the Central Appalachian Critical Biodiversity Areas. Mitigation for these Specified Risks include monitoring, internal audit, education and outreach. Further details of the Specified Risk and the Mitigations developed for them are listed below. Note that DBI, as a responsible member of the industry, has developed a program to verify the implementation of BMPs and the protection of known species of concern, for its own in-woods sourcing. DBI's individual actions to verify BMP usage and protection of species of concern when sourcing</p>



	directly from the forest simultaneously meets the industry expectations for environmental protection and, according to the SBP definitions, may be considered a mitigation to control the risk of non-compliance with this indicator.
Evidence Reviewed	•All means of verification reviewed
Risk Rating	Specified Risk
Comment or Mitigation Measure	<p>FSC US has identified and developed mitigation measures for four key ecosystems: Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, Southern Appalachian Critical Biodiversity Area, and the Central Appalachian Critical Biodiversity Areas. DBI has integrated the FSC HCV maps into its GIS system and screens all suppliers for their intersection with these Specified Risks identified by FSC. Mitigation for primary feedstock includes controls embedded in DBI's internal processes which are subject to monitoring and internal audit. DBI does not have line of sight to individual tracts that provide fiber to secondary and tertiary feedstock suppliers, so other mitigations are appropriate. The following provides an overview of mitigations chosen for each FSC Specified risk:</p> <p><u>Late Successional Bottomland Hardwoods (LSBH)</u></p> <p>As DBI primarily sources Southern Yellow Pine, Late Successional Bottomland Hardwoods are mainly an issue for residual suppliers who process hardwoods and are proximate to LSBH areas. The areas that potentially have LSBH have been mapped by FSC and integrated into DBI's GIS system. For residual suppliers, outreach and education will be the choice mitigation tool. Educational materials have been developed to engage landowners, foresters, and loggers in conservation of this forest system. DBI also actively supports workshops and learning exchanges focused on improving the management of bottomland hardwoods in the supply area.</p> <p><u>Native Longleaf Pine Systems (NLPS)</u></p> <p>For NLPS, the areas at risk have been identified by FSC at county/parish level. These areas have been included in DBI's GIS system. Education and outreach will be the primary mitigation for residual suppliers who's sourcing area intersects FSC identified risk areas. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of Native Longleaf Pine systems. DBI also actively supports workshops and learning exchanges focused on encouraging proactive management of longleaf pine in the supply area.</p> <p><u>Southern and Central Appalachian Critical Biodiversity Area (CACBA and SACBA respectively)</u></p> <p>Both the Central and Southern Appalachian Critical Biodiversity Areas will only affect DBI's residual sourcing due to the distance from existing pellet mills. Education and outreach will be the mitigation tool employed. As described for the risks above, these materials will be developed according to best available science and be adapted as new information and approaches come available (i.e. through FSC CW Regional meetings). This educational material will be aimed at increasing awareness of the sensitivities and unique nature of these CBAs in hopes of increasing conservation of these highly biodiverse areas.</p>

	<p>Mitigation for primary feedstock includes DBI's program to verify BMP usage and protection of species of concern when sourcing directly from the forest. DBI has integrated the FSC HCV maps into its GIS system and "Rapid Risk Assessment" process which also includes all known species and natural communities of concern (NatureServe data). FSC US has identified two specified risks which are relevant to primary fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), and Native Longleaf Pine Systems (NLPS). DBI actively screens all in-woods fiber tracts for species of concern and FSC Specified Risks prior to accepting any fiber. DBI also records the cover type and species of stand from which fiber is sourced. In this way receipt of longleaf pine and harvesting associated with hardwood systems is monitored to ensure that there is no conversion or degradation of high conservation forests on tracts from which we receive roundwood or in-woods chips.</p> <p>If it is determined that the risk of negative impact to the HCV cannot be effectively mitigated through information flow and internal controls DBI can choose not to accept material from a region or a supplier.</p> <p><i>DBI's existing programmatic procedures combined with the mitigations described above are sufficient to bring the risk of non-compliance with this requirement to "low".</i></p>
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	Indicator
2.2.4	The BP has implemented appropriate control systems and procedures to ensure that biodiversity is protected (CPET S5b).
Finding	<ul style="list-style-type: none"> <li>The FSC US National Risk assessment has identified that there are five "specified risks" related to biodiversity within DBI's sourcing area. They include Late Successional Bottomland Hardwoods, Native Longleaf Pine Systems, the Dusky Gopher Frog, Southern Appalachian Critical Biodiversity Area, and Central Appalachian Biodiversity Area. DBI recognizes this multi-stakeholder effort to identify "specified risks" relevant to forest sourcing and has therefore accepted these risks as such.</li> <li>DBI recognizes that there are additional species and natural communities, not elevated to FSC "specified risk" classification, which must be considered when reviewing the robustness of regional biodiversity protections. A review of the existing mechanisms in place to protect these additional species and natural community was conducted by DBI and is detailed in Means of Verification section below.</li> <li>State wildlife and forestry agencies have state level action plans in place to guide conservation of biodiversity.</li> </ul>



	<ul style="list-style-type: none"> <li>• Every state DBI sources from has an established Natural Heritage program responsible for collecting data on species occurrence within the state. These species records feed up into the NatureServe system. Natural Heritage and Nature Serve data is used by the forest industry to guide protection of species and natural communities of concern.</li> <li>• There are established “best practices” which are utilized to maintain and improve wildlife habitat in the southern US. These techniques are promoted by state wildlife and forestry agencies, forestry and wildlife extension programs, federal cost share programs, and forest certification standards (I.e. SFI and ATFS).</li> </ul>
Means of Verification	<p>•State agencies have a number of controls in place to identify and protect species and natural communities. These state agencies work in concert with the Natural Heritage Programs in their respective states (a part of the NatureServe network) to continuously monitor and inventory natural diversity in the states. Both State Wildlife Actions Plans as well as state Forest Action Plans are required for states to receive Federal Funding. These plans, drafted through multi-stakeholder participation, identify key wildlife and forestry concerns within the state and provide detailed plans on how to approach them. Natural Heritage data, as well as State Wildlife Action Plans, are available for private use.</p> <p>Links to State Wildlife Action Plan and state Natural Heritage programs are provided below:</p> <p>Link to all State Wildlife Action Plans: <a href="https://www.fishwildlife.org/afwa-informs/state-wildlife-action-plans">https://www.fishwildlife.org/afwa-informs/state-wildlife-action-plans</a></p> <p>Links to all Forest Action Plans: <a href="https://www.stateforesters.org/forest-action-plans/">https://www.stateforesters.org/forest-action-plans/</a></p> <p>Links to State Natural Heritage information in the states DBI sources:</p> <p>Louisiana</p> <p><a href="http://www.wlf.louisiana.gov/species-by-parish?tid=All&amp;dtype_1=All">http://www.wlf.louisiana.gov/species-by-parish?tid=All&amp;dtype_1=All</a></p> <p>Mississippi</p> <p><a href="http://www.mdwfp.com/seek-study/heritage-program.aspx">http://www.mdwfp.com/seek-study/heritage-program.aspx</a></p> <p>Alabama</p> <p><a href="http://www.alnhp.org/">http://www.alnhp.org/</a></p> <p>Forestry considerations: <a href="http://www.aces.edu/natural-resources/wildlife/endangeredspecies.php">http://www.aces.edu/natural-resources/wildlife/endangeredspecies.php</a></p> <p>Arkansas</p> <p><a href="http://www.naturalheritage.com/research-data/rare-species-search.aspx">http://www.naturalheritage.com/research-data/rare-species-search.aspx</a></p> <p>Texas</p>

[http://www.tpwd.state.tx.us/huntwild/wild/wildlife\\_diversity/nongame/](http://www.tpwd.state.tx.us/huntwild/wild/wildlife_diversity/nongame/)

#### Oklahoma

<https://www.wildlifedepartment.com/wildlife/wildlife-diversity/threatened-and-endangered>

<https://efotg.sc.egov.usda.gov/references/public/OK/ThreatenedEndangeredSpeciesbyCounty.pdf>

#### Tennessee

<http://www.tnswap.com/>

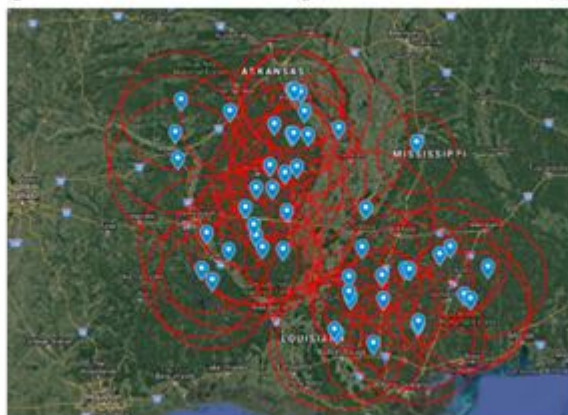
- Established best practices are promoted by state agencies, forest certification standards, and in forest plans required for federal cost share. Some examples of best practices include, but are not limited to, protection of:

- Stand level diversity through retention of Streamside Management Zones (SMZs), snags, coarse and fine woody debris/brush piles, irregular stand boundaries, development and enhancement of forest “edges”, protection of nesting trees, protection of isolated wetlands and springs etc.

- Landscape level diversity by promoting a mosaic of stand ages and types, considering the timing and juxtaposition of harvests for hardwood management

- The forest products industry participates directly in the development of the State Wildlife Action Plans, and state efforts to protect and identify species and communities of concern. For example, DBI purchases a data license from NatureServe annually. NatureServe then provides DBI with shapefiles for all known species and communities of concern. This data is integrated into DBI's mapping system which is used to screen all harvests where DBI is receiving fiber directly from the woods. The use of NatureServe data, and the protection of species and communities deemed globally critically imperilled (G1) or globally imperiled (G2), is required by all participants of the Sustainable Forestry Initiative (SFI). DBI sources from landowners certified to the SFI Forest Management Standard and from sawmills that are certified to the SFI Fiber Sourcing Standard (note DBI is certified to this Standard as well). The map below illustrates the influence of the SFI Fiber Sourcing Program on the protection of biological diversity during sourcing.

Map depicting coverage of SFI FS mill sourcing areas within DBI supply area:



- In addition to State Wildlife Action Plans and Natural Heritage Data, the federal Endangered Species Act (ESA) and Federal Clean Water Act are very strong regulatory mechanisms which are in place to reduce the risk of further biodiversity loss. These

regulations bring with them significant civil and criminal penalties (i.e. up to 1 year imprisonment for ESA violation and \$54,000/day for CWA violation).

oThe ESA prohibits not only direct “take” but can also deem habitat alteration as a “taking”. The ESA can restrict forest management on both private and public lands. Habitat Conservation Agreements (HCPs), Safe Harbor Agreements, and Candidate Conservation Agreements are among the tools provided to a landowner who wishes to actively manage their forest in areas where threatened or endangered species, highly sensitive to forest alteration, exist. The red-cockaded woodpecker, and the Louisiana pine snake are two species currently being managed with these mechanisms in DBI’s sourcing area. For some species Critical Habitat has been designated, a further assurance that federally listed species are protected (i.e. gopher frog in DBI sourcing area).

oClean Water Act protections are extremely relevant to the protection of biodiversity. States have been granted the authority to develop programs to address nonpoint source pollution from forestry operations. These state “Best Management Programs” have been recognized by the USFWS in recent listing rules as a means of ensuring species protection. For example, the Pearl darter listing rule described positive effects of BMPs as follows: “Nonpoint source pollution is a localized threat to the pearl darter within the drainage and is more prevalent in areas where certified best management practices (BMPs) are not utilized. The use of certified BMPs during land-altering activities can greatly reduce impacts to water quality. Certified BMPs, currently implemented by the forestry industry (e.g., Sustainable Forestry Initiative, Forest Stewardship Council, and American Tree Farm System), are helping to minimize or eliminate non-point source pollution during forestry activities. The Mississippi Forestry Commission (2016, entire) reports certified BMP implementation rates to be high in Mississippi for forestry activities, primarily due to the efforts of State forestry agencies and forest certification programs (Schilling and Wigley 2015, pp 3–7)” (82 Fed Reg 43889).

- In the southeastern US, the Southern Group of State Foresters has introduced a framework to standardize BMP monitoring efforts among the 13 states. According to a 2018 report summarizing rates of BMP implementation, all states in the region were in conformance with the framework. Furthermore, 67 state-wide monitoring surveys have been conducted since its initial development in 1997 and 23 surveys were conducted in the last six years. Combining all BMP categories in all states and using only the most recent state survey data reported, average overall BMP implementation for the region was 93.6%, up from 92% in 2012.

(<https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view>)

-BMP implementation rates in the states that DBI sources from are as follows:

-MS- Overall 95%

Link to : Mississippi 2019 BMP Implementation Survey

-LA- Overall 89% (according to 2015 survey data reported in SGSF report, 2009 public report available.)

Link to: Louisiana 2009 BMP Implementation Survey

-AR- Overall 93 %

	<p>Link to: Arkansas 2017-2018 BMP Implementation Survey</p> <p>-AL- Overall 98.2%</p> <p>Link to : Alabama 2019 BMP Implementation Survey</p> <p>-TN- Overall 88.5%</p> <p>Link to: Tennessee 2017 BMP Implementation Survey</p> <p>-OK- Overall 92.1%</p> <p>Link to: Oklahoma 2010 BMP Implementation Survey</p> <p>-TX- Overall 91.6%</p> <p>Link to: Texas 2018 BMP Implementation Survey</p> <p>As described above, a structured BMP program has been in place in the southern US for over two decades. In this same time period, the forest industry has embraced the Sustainable Forestry Initiative (est. 1994) which has championed BMP implementation through its trained logger requirements as well as the protection of biodiversity, requiring protection of G1 and G2 species (many of which are not federally listed). Furthermore, the State Wildlife Action Planning Process is now in its 15th year (State Wildlife Action Plans in place since 2005, Forest Action Plans in place since 2010). These industry-wide protections in place for protection of biological diversity can be considered standard practice as well as an industry expectation. DBI contractually requires implementation of BMPs and has a program to verify implementation of BMPs as well as biodiversity protections.</p> <ul style="list-style-type: none"> <li>• In addition to the Endangered Species Act and Federal Clean Water Act, there are other international treaties and conventions to which the US is a signatory. These include the Convention on Nature Protection and Wild Life Preservation in the Western Hemisphere (Washington, DC, 1940), Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar, Iran, 2 Feb 1971), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Washington DC, 1973), International Plant Protection Convention (IPPC) (1979 Revised Text) (Rome, Italy, 1979), Convention on the Conservation of Migratory Species of Wild Animals (Bonn, Germany, 23 Jun 1979). These high-level treaties provide biodiversity protections and direct conservation efforts (i.e. identification of Ramsar sites detailed in Indicator 2.1.1).</li> </ul>
Evidence Reviewed	•All means of verification reviewed
Risk Rating	Specified Risk
Comment or Mitigation Measure	FSC US has identified, and developed mitigation measures, for five specified risks which are relevant to residual fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), Native Longleaf Pine Systems (NLPS), Southern Appalachian Critical Biodiversity Area (SACBA), Central Appalachian Critical Biodiversity Area (CACBA), and the Dusky Gopher Frog (DGF). DBI utilizes the FSC approved mitigation measures for

addressing these specified risks. The specified risks and mitigation measures are described below:

Dusky Gopher Frog (DGF)

For the Dusky Gopher Frog, FSC identifies two small areas at the extreme south of our residual sourcing area. FSC has identified education and outreach as a mitigation option for the DGF. DBI will provide educational materials to the suppliers which have the potential to source from the FSC identified risk areas. Educational materials will be informed by the best available science and adapted as new information and/or approaches become available. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of DGF populations.

Late Successional Bottomland Hardwoods (LSBH)

As DBI primarily sources Southern Yellow Pine, Late Successional Bottomland Hardwoods are mainly an issue for residual suppliers who process hardwoods and are proximate to LSBH areas. The areas that potentially have LSBH have been mapped by FSC and integrated into DBI's GIS system. For residual suppliers, outreach and education will be the choice mitigation tool. Educational materials have been developed to engage landowners, foresters, and loggers in conservation of this forest system. DBI also actively supports workshops and learning exchanges focused on improving the management of bottomland hardwoods in the supply area.

Native Longleaf Pine Systems (NLPS)

For NLPS, the areas at risk have been identified by FSC at county/parish level. These areas have been included in DBI's GIS system. Education and outreach will be the primary mitigation for residual suppliers whose sourcing area intersects FSC identified risk areas. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of Native Longleaf Pine systems. DBI also actively supports workshops and learning exchanges focused on encouraging proactive management of longleaf pine in the supply area.

Southern and Central Appalachian Critical Biodiversity Area (CACBA and SACBA respectively)

Both the Central and Southern Appalachian Critical Biodiversity Areas will only affect DBI's residual sourcing due to the distance from existing pellet mills. Education and outreach will be the mitigation tool employed. As described for the risks above, these materials will be developed according to best available science and be adapted as new information and approaches come available (i.e. through FSC CW Regional meetings). This educational material will be aimed at increasing awareness of the sensitivities and unique nature of these CBAs in hopes of increasing conservation of these highly biodiverse areas.

Mitigation for primary feedstock includes DBI's program to verify BMP usage and protection of species of concern when sourcing directly from the forest. DBI has integrated the FSC HCV maps into its GIS system and "Rapid Risk Assessment" process which also includes all known species and natural communities of concern (NatureServe data). FSC US has identified two specified risks which are relevant to primary fiber

	<p>suppliers - Late Successional Bottomland Hardwoods (LSBH), and Native Longleaf Pine Systems (NLPS). DBI actively screens all in-woods fiber tracts for species of concern and FSC Specified Risks prior to accepting any fiber. DBI also records the cover type and species of stand from which fiber is sourced. In this way receipt of longleaf pine and harvesting associated with hardwood systems is monitored to ensure that there is no conversion or degradation of high conservation forests on tracts from which we receive roundwood or in-woods chips. If it is determined that the risk of negative impact to the HCV cannot be effectively mitigated through information flow and internal controls DBI can choose not to accept material from a region or a supplier.</p> <p><i>The mitigations described above are sufficient to bring the risk of non-compliance with this requirement to “low”.</i></p>
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	Indicator
2.2.5	The BP has implemented appropriate control systems and procedures for verifying that the process of residue removal minimises harm to ecosystems.
Finding	<ul style="list-style-type: none"> <li>• State BMPs encourage the use and distribution of logging slash across sites for nutrient distribution and to prevent soil erosion. Biomass retention happens naturally due to this beneficial reuse of slash.</li> <li>• Several states have developed biomass harvesting guidelines which are precautionary and based on assumptions of potential impacts. However, current research suggests that there are not significant negative impacts to biodiversity or soils from experimental levels of forest residual removal. Pilot studies have also not shown operational residual removal levels to the same scale as those used in some experimental designs.</li> </ul> <p>much smaller than the experimental changes involved in the studies we analysed”.  <a href="https://www.sciencedirect.com/science/article/abs/pii/S0378112710007243?via%3Dihub">https://www.sciencedirect.com/science/article/abs/pii/S0378112710007243?via%3Dihub</a></p> <ul style="list-style-type: none"> <li>• An experimental study conducted in loblolly pine plantations in Georgia and North Carolina purposefully manipulated levels of forest residuals left on site and found minimal effects on biodiversity. <ul style="list-style-type: none"> <li>• In his research thesis, Farrell found that biomass harvests appear to have limited effect on small mammal abundance. <a href="https://research.cnr.ncsu.edu/best/documents/Farrell_Christopher_B_201308_ms.pdf">https://research.cnr.ncsu.edu/best/documents/Farrell_Christopher_B_201308_ms.pdf</a></li> </ul> </li> <li>• Woody biomass harvest also had limited effects on the early-successional, breeding bird community . The successional trajectory of vegetation structure, rather than availability of harvest residues, primarily drove avian use of regenerating stands.</li> <li>• Grodsky SM, Moorman CE, Fritts SR, Castleberry SB, Wigley TB (2016) Breeding, Early-Successional Bird Response to Forest Harvests for</li> </ul>



	<p>Bioenergy. PLoS ONE 11(10): e0165070.  <a href="https://doi.org/10.1371/journal.pone.0165070">https://doi.org/10.1371/journal.pone.0165070</a> <a href="https://faculty.cnr.ncsu.edu/christophermoorman/wp-content/uploads/sites/9/2017/01/Grodsky_et_al._2016_BB.pdf">https://faculty.cnr.ncsu.edu/christophermoorman/wp-content/uploads/sites/9/2017/01/Grodsky_et_al._2016_BB.pdf</a></p> <ul style="list-style-type: none"> <li>• Several studies have investigated the response of soil carbon to harvesting and biomass removal. In most instances there is little, if any, change in mineral soil carbon. Changes in surface carbon are variable, with harvest often increasing carbon in the top organic layer initially and differing (experimental) levels of residual biomass removal levels being reflected in changing carbon content of surface soil layers. These findings also demonstrate that there are several variables at play including climate and decomposition rates. See Indicator 2.2.2 for list of applicable references.</li> <li>• DBI has a program to evaluate harvest of primary feedstock to assure BMPs are followed and biodiversity is protected. Evaluation of forest residual levels to assure site protection is a part of this procedure.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• Best Management Practices for forestry are established in each jurisdiction and contain guidance encouraging retention of slash for erosion control and forest productivity (high level of BMP implementation). See below for a few examples: <ul style="list-style-type: none"> <li>• Louisiana – “Where accelerated erosion is likely, use methods which leave logging debris and other natural forest litter scattered over the site.” <a href="http://www.ldaf.state.la.us/wp-content/uploads/2014/04/BMP.pdf">http://www.ldaf.state.la.us/wp-content/uploads/2014/04/BMP.pdf</a></li> <li>• Arkansas - Waterbars are recommended for stabilizing inactive roads, firelines, and trails. Logging slash may also be effective. When harvesting is completed, disperse water from landings and skid trails using water bars, logging slash, or vegetative cover” <a href="http://www.aad.arkansas.gov/Websites/aad/files/Content/5944986/BMPs.pdf">http://www.aad.arkansas.gov/Websites/aad/files/Content/5944986/BMPs.pdf</a></li> <li>• Mississippi – “SLASH DISPERSAL Slash is the debris such as unmerchantable limbs and tree tops created in the process of a normal logging operation. Slash dispersal is probably the most immediate solution for prevention of soil movement on an active logging site. Wherever possible slash should be scattered back over exposed soil on skid trails and evenly dispersed across logging sets. Slash has also been used successfully to build water bars on skid trails.” <a href="http://www.mfc.ms.gov/sites/default/files/Entire_bmp_2008-7-24_2.pdf">http://www.mfc.ms.gov/sites/default/files/Entire_bmp_2008-7-24_2.pdf</a></li> </ul> </li> <li>• MS Biomass BMPs - These guidelines focus on protecting sensitive sites based on soils characteristics. They provide a map of the state shaded to indicate the relative operability as it relates to harvesting operations utilizing forest residuals. The focus is on maintaining adequate residual material so that no bare soil is exposed. These guidelines, along with those developed in other states, are precautionary and based on assumptions of potential impacts.  <a href="https://www.mfc.ms.gov/sites/default/files/Biomass%20Brochure%20Web%20reduced%20file%20size.pdf">https://www.mfc.ms.gov/sites/default/files/Biomass%20Brochure%20Web%20reduced%20file%20size.pdf</a></li> <li>• NCASI conducted a review of biofuel harvests on coarse woody debris and biodiversity. In the review they stated, “Pilot biomass harvests report post-harvest changes in CWD levels much smaller than the experimental changes involved in the studies we analysed”.</li> </ul>

	<p><a href="https://www.sciencedirect.com/science/article/abs/pii/S0378112710007243?via%3Dihub">https://www.sciencedirect.com/science/article/abs/pii/S0378112710007243?via%3Dihub</a></p> <ul style="list-style-type: none"> <li>• An experimental study conducted in loblolly pine plantations in Georgia and North Carolina purposefully manipulated levels of forest residuals left on site and found minimal effects on biodiversity.</li> <li>• In his research thesis, Farrell found that biomass harvests appear to have limited effect on small mammal abundance. <a href="https://research.cnr.ncsu.edu/best/documents/Farrell_Christopher_B_201308_ms.pdf">https://research.cnr.ncsu.edu/best/documents/Farrell_Christopher_B_201308_ms.pdf</a></li> <li>• Woody biomass harvest also had limited effects on the early-successional, breeding bird community . The successional trajectory of vegetation structure, rather than availability of harvest residues, primarily drove avian use of regenerating stands.</li> <li>• Grodsky SM, Moorman CE, Fritts SR, Castleberry SB, Wigley TB (2016) Breeding, Early-Successional Bird Response to Forest Harvests for Bioenergy. PLoS ONE 11(10): e0165070. <a href="https://doi.org/10.1371/journal.pone.0165070">https://doi.org/10.1371/journal.pone.0165070</a> <a href="https://faculty.cnr.ncsu.edu/christophermoorman/wp-content/uploads/sites/9/2017/01/Grodsky_et_al._2016_BB.pdf">https://faculty.cnr.ncsu.edu/christophermoorman/wp-content/uploads/sites/9/2017/01/Grodsky_et_al._2016_BB.pdf</a></li> <li>• Several studies have investigated the response of soil carbon to harvesting and biomass removal. In most instances there is little, if any, change in mineral soil carbon. Changes in surface carbon are variable, with harvest often increasing carbon in the top organic layer initially and differing (experimental) levels of residual biomass removal levels being reflected in changing carbon content of surface soil layers. These findings also demonstrate that there are several variables at play including climate and decomposition rates. See Indicator 2.2.2 for list of applicable references.</li> <li>• DBI has a program to evaluate harvest of primary feedstock to assure BMPs are followed and biodiversity is protected. Evaluation of forest residual levels to assure site protection is a part of this procedure.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
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2.2.6	The BP has implemented appropriate control systems and procedures to verify that negative impacts on ground water, surface water and water downstream from forest management are minimised (CPET S5b).
Finding	<ul style="list-style-type: none"> <li>• The Clean Water Act (CWA) is the primary federal law in the United States governing water pollution. Its objective is to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The CWA provisions that are most significant to forestry are section 319 addressing non-point pollution and section 404 addressing discharge of dredge and fill into waterways and wetlands. States have developed Best Management Programs (BMPs) to meet the CWA. EPA has recently reviewed state oversight and effectiveness of BMP programs and found them to be successful in controlling non-point pollution. The EPA has direct oversight over section dredge and fill violations (section 404).</li> <li>• Forest certification makes BMP compliance mandatory for program participants (SFI, ATFS, FSC). DBI sources a significant proportion of fiber from certified lands and is certified to the SFI Fiber Sourcing program that requires all loggers delivering fiber to the pellet plant to be trained and comply with all BMPs.</li> <li>• SFI partners with state forestry commissions to conduct logger training on BMP's. Trained loggers help ensure that water quality is maintained and protected on certified and non-certified lands.</li> <li>• SFI's State Implementation Committees (SICs) regularly review and investigate public BMP complaints received via their inconsistent practices procedure and alert consuming mills of bad performers.</li> <li>• Many studies have been conducted on BMP effectiveness to reduce non-point pollution from Forestry operations</li> </ul>
Means of Verification	<p>• States use CWA section 319 funds to implement Best Management Practices for forestry established in each jurisdiction and monitored to achieve compliance to the federal Clean Water Act. Forestry is considered a non-point source of pollution under the federal Clean Water Act (CWA). Under the CWA states are directed to develop programs to minimize and avoid non-point source pollution. States have developed Best Management Practice, or "BMP" programs to achieve this. BMP programs are generally administered by the state forestry commission in partnership with the state department of environmental quality (which generally acts as the enforcement agency). States are allowed to develop independent approaches, but in the south, the Southern Group of State Foresters (SGSF) has introduced a framework to standardize BMP monitoring efforts among the 13 states.</p> <p>According to a 2018 SGSF report, which summarized rates of BMP implementation, all states in DBI's region were in conformance with the framework. Combining all BMP categories in all states and using only the most recent state survey data reported, average overall BMP implementation for the region was 93.6%, up from 92% in 2012. (<a href="https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view">https://www.southernforests.org/resources/publications/SGSF%20Water%20BMP%20Report%20FINAL.pdf/view</a>).</p> <p>BMP implementation rates in the states that DBI sources from are as follows:</p> <p>MS- Overall 95%</p> <p>Mississippi 2019 BMP Implementation Survey</p>

LA- Overall 89% (according to 2015 survey data reported in SGSF report, 2009 is most recent state-level report publicly available.)

LA BMP implementation - SGSF 2018 BMP Report

AR- Overall 93 %

Arkansas 2017-2018 BMP Implementation Survey

AL- Overall 98.2%

Alabama 2019 BMP Implementation Survey

TN- Overall 88.5%

Tennessee 2017 BMP Implementation Survey

OK- Overall 92.1%

Oklahoma 2010 BMP Implementation Survey

TX- Overall 91.6%

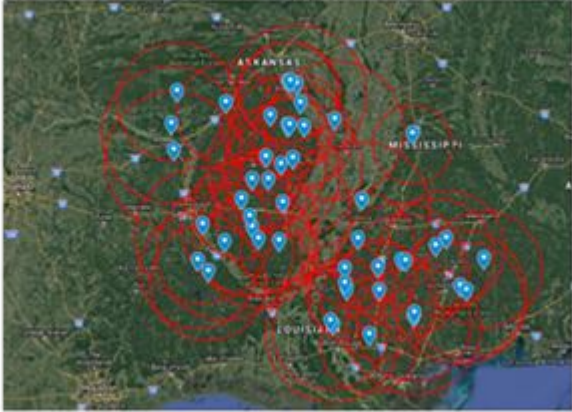
Texas 2018 BMP Implementation Survey

• A structured BMP program has been in place in the southern US for over two decades, with 67 state-wide monitoring surveys conducted since 1997. The Sustainable Forestry Initiative (established 1994) has championed BMP implementation, making compliance mandatory for continued certification. Logger training curriculums are developed and administered jointly by SFI Implementation Committees, state forestry commissions, and state forestry associations. See links to state BMP training programs below.

- Alabama Professional Logging Managers
- Ark Pro Logger
- LA Master Logger Program
- MS Professional Logging Manager Program
- TX Pro Logger Program
- Oklahoma Pro Logger
- TN Master Logger Program

• SFI State Implementation Committees have active Inconsistent Practices Committees that deal with reported BMP violations. This SIC involvement is extremely effective because mills certified to the SFI Fiber Sourcing Standard can immediately stop purchasing fiber from an offending supplier until the issue is remedied. This direct action taken by receiving mills generally addresses the problem so there is not a need to elevate to the regulatory agency. In 2019 MS had 13 issues investigated through the Inconsistent Practices Committee, LA had 6 and AR had 13. No issues were elevated to the regulatory agency (Department of Environmental Quality: MDEQ, LDEQ, ADEQ respectively).

• The EPA has a framework for imposing penalties. See the following link related to section 404: <https://www.epa.gov/sites/production/files/2015->

	<p>07/documents/2001_sec_404_penalty_policy.pdf</p> <p>DBI, and other wood using facilities certified to the SFI Standard, ensure a significant proportion of the forest landscape is implementing BMPs to protect water quality. DBI contractually requires the implementation of state BMPs and has a program to verify BMP implementation. A study conducted by Dwivedi et al. in 2018 found that BMP implementation rate was 2% higher in sites located within 65 miles of mills certified to the SFI Fiber Sourcing standard (<a href="https://www.sciencedirect.com/science/article/abs/pii/S1389934118300807">https://www.sciencedirect.com/science/article/abs/pii/S1389934118300807</a>)</p> <p>Map depicting coverage of SFI FS mill sourcing areas within DBI supply area:</p>  <ul style="list-style-type: none"><li>• A literature review by Cristan et al. in 2016 reviewed the effectiveness of forestry BMPs in the United States – “The literature indicates that forestry BMPs protect water quality when constructed correctly and in adequate numbers. Forestry BMP effectiveness studies allow state forestry BMP programs to evaluate progress in reducing non-point source pollution and achieving water quality goals established under the Clean Water Act (CWA).” The following link provides a good description of how forestry is regulated under the CWA: <a href="https://www.sciencedirect.com/science/article/abs/pii/S0378112715005824">https://www.sciencedirect.com/science/article/abs/pii/S0378112715005824</a></li></ul> <p>Effectiveness of forestry best management practices in the United States: Literature review. Forest Ecology and Management. 360. 133-151. 10.1016/j.foreco.2015.10.025.</p> <ul style="list-style-type: none"><li>• Technical Bulletin 966 (September 2009) issued by the National Council for Air and Stream Improvement (NCASI) reported high levels of compliance with water quality laws and BMP requirements across the U.S <a href="https://www.ncasi.org/wp-content/uploads/2019/02/tb966.pdf">https://www.ncasi.org/wp-content/uploads/2019/02/tb966.pdf</a></li><li>• In 2016 the EPA was forced to re-evaluate the efficacy of state BMP programs in a response to a lawsuit challenging BMP effectiveness at controlling sedimentation and runoff from forest roads. Following an evaluation of state BMP programs, the EPA decided it was still not necessary to regulate discharges from forest roads under the CWA Section 402 (NPDES) point source regulatory provisions. The EPA found that state BMP programs adequately addressed forest roads and that monitoring efforts were highly effective, therefore there was no need to enforcing a new federal regulatory program. <a href="https://www.epa.gov/npdes/forest-roads">https://www.epa.gov/npdes/forest-roads</a></li></ul>
Evidence Reviewed	<ul style="list-style-type: none"><li>• All means of verification reviewed</li></ul>
Risk Rating	Low Risk

Comment or Mitigation Measure	None
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	Indicator
<b>2.2.7</b>	The BP has implemented appropriate control systems and procedures for verifying that air quality is not adversely affected by forest management activities.
Finding	<ul style="list-style-type: none"> <li>• The Clean Air Act sets standards for air quality in order to protect public health and welfare.</li> <li>• States develop State Implementation Plans (SIPs) describing how they will implement the requirements of the Clean Air Act.</li> <li>• The Clean Air Act also charges the U. S. Forest Service as a Federal Land Manager of Class I areas, to protect air quality related values in the wilderness areas of a specified size. The Forest Service must ensure that its activities, or activities it permits, comply with these national standards and any State and local requirements for air pollution control.</li> <li>• All states DBI sources from have environmental compliance and monitoring agencies that are responsible for enforcement of air quality regulations.</li> <li>• Market provision for biomass provides a reduction in forest fire risk a reduction in fuel load.</li> <li>• Burn permits and licenced prescribed fire applicators are required in all states DBI procures biomass.</li> <li>• Smoke management guidelines are provided by forestry commissions.</li> <li>• Active forest management, and the markets that underpin it, help ensure forests remain forests and continue to help filter our air.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• Department of Environmental Quality in each jurisdiction with State Implementation Plans for air quality in place: <ul style="list-style-type: none"> <li>• LA - <a href="https://www.epa.gov/sips-la">https://www.epa.gov/sips-la</a></li> <li>• MS - <a href="https://www.epa.gov/sips-ms">https://www.epa.gov/sips-ms</a></li> <li>• AR - <a href="https://www.epa.gov/sips-ar">https://www.epa.gov/sips-ar</a></li> <li>• TX - <a href="https://www.epa.gov/sips-tx">https://www.epa.gov/sips-tx</a></li> <li>• OK - <a href="https://www.epa.gov/sips-ok">https://www.epa.gov/sips-ok</a></li> <li>• AL - <a href="https://www.epa.gov/sips-al">https://www.epa.gov/sips-al</a></li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• TN - <a href="https://www.epa.gov/sips-tn">https://www.epa.gov/sips-tn</a></li> <li>• Prescribed burning permits and smoke management plans are required for all prescribed burning operations in the forest. See links to the permit requirements by state: LA Burn Permit, MS Burn Permit, AR Burn Permit, AL Burn Permit, TX Burn Permit, OK Burn Permit</li> <li>• The Clean Air Act charges the U. S. Forest Service as a Federal Land Manager of Class I areas, to protect air quality related values in the wilderness areas of a specified size. <a href="https://www.fs.fed.us/air/respon.htm">https://www.fs.fed.us/air/respon.htm</a></li> <li>• Interagency Fire Prevention Strategy: This strategy follows on the successes guided by the 2000 Southern Wildfire Prevention Strategy that focused on debris burning and homeowner safety in the wildland urban interface.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.2.8</b>	The BP has implemented appropriate control systems and procedures for verifying that there is controlled and appropriate use of chemicals, and that Integrated pest management (IPM) is implemented wherever possible in forest management activities (CPET S5c).
Finding	<ul style="list-style-type: none"> <li>• Chemical use in forest stands, whether for insect control or for vegetation management, is regulated under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA). The US Environmental Protection Agency (EPA) has responsibility for implementing and enforcing FIFRA. All forest-use chemicals must be EPA-registered and forest land operators must follow application guidelines prescribed for each chemical.</li> <li>• States have developed Pesticide General Permits to meet the CWA. Applicators and Landowners must follow Permit guidance, further ensuring the proper application of forest pesticides.</li> <li>• State forestry BMPs contain guidelines for proper chemical applications.</li> <li>• Forest certification assures compliance with regulations and minimized, targeted use of forest chemicals.</li> <li>• Federal cost share programs operate in accordance with an Integrated Pest Management strategy.</li> </ul>

Means of Verification	<ul style="list-style-type: none"><li>• Forest certification assures compliance with regulations and minimized, targeted, use of forest chemicals. For example, see excerpt from the SFI Standard:<ul style="list-style-type: none"><li>• SFI Objective 2 - Forest Health and Productivity - To ensure long-term forest productivity, carbon storage and conservation of forest resources through prompt reforestation, afforestation, minimized chemical use, soil conservation, and protecting forests from damaging agents.</li><li>• Indicator 2.2.4: The World Health Organization (WHO) type 1A and 1B pesticides shall be prohibited, except where no other viable alternative is available.</li><li>• Indicator 2.2.5: Use of pesticides banned under the Stockholm Convention on Persistent Organic Pollutants (2001) shall be prohibited.</li><li>• Indicator 2.2.6: Use of integrated pest management where feasible</li></ul></li><li>• State-level BMPs typically restrict application to non-riparian zones. SMZs act as filters to reduce chance silvicultural chemicals will reach the water – MS BMP guide “Streamside Management Zones (SMZs) are vegetated areas adjacent to streams and watercourses that help protect them from these pollutants. This residual vegetation acts as a filter to trap sediments, chemicals, and nutrients before they reach the water.” See also the following excerpts from the BMP guide:</li></ul> <table><tr><th colspan="2">SMZ GUIDELINES FOR PERENNIAL STREAMS</th></tr><tr><th>Allowed</th><th>Not Allowed</th></tr><tr><td><ul style="list-style-type: none"><li>▪ Select Harvest: Must leave 50% crown cover</li><li>▪ Individual stem treatment with herbicides to release desirable regeneration</li></ul></td><td><ul style="list-style-type: none"><li>▪ Roads (except perpendicular to stream crossings)</li><li>▪ Excessive rutting</li><li>▪ Damage to stream bank</li><li>▪ Any broadcast chemical application</li><li>▪ Any fertilizer application</li><li>▪ High intensity fire, such as those associated with site prep burns.</li><li>▪ Mechanical site preparation</li><li>▪ Log decks or landings</li><li>▪ Excessive residual tree damage</li></ul></td></tr></table>	SMZ GUIDELINES FOR PERENNIAL STREAMS		Allowed	Not Allowed	<ul style="list-style-type: none"><li>▪ Select Harvest: Must leave 50% crown cover</li><li>▪ Individual stem treatment with herbicides to release desirable regeneration</li></ul>	<ul style="list-style-type: none"><li>▪ Roads (except perpendicular to stream crossings)</li><li>▪ Excessive rutting</li><li>▪ Damage to stream bank</li><li>▪ Any broadcast chemical application</li><li>▪ Any fertilizer application</li><li>▪ High intensity fire, such as those associated with site prep burns.</li><li>▪ Mechanical site preparation</li><li>▪ Log decks or landings</li><li>▪ Excessive residual tree damage</li></ul>
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	<div data-bbox="384 224 1315 813"> <p style="text-align: center;"><b>GENERAL GUIDELINES FOR SITE PREPARATION</b></p> <ul style="list-style-type: none"> <li>▪ Avoid excessive soil compaction.</li> <li>▪ Keep soil disturbance to a minimum.</li> <li>▪ Minimize disturbance on slopes.</li> <li>▪ Follow the <i>contour</i> as closely as possible when conducting <i>mechanical site preparation</i> (excluding <i>chopping</i>).</li> <li>▪ Discharge water from site-prepared areas onto vegetated surfaces, wherever possible.</li> <li>▪ Consider <b>chemical</b> site prep over mechanical site prep on highly erosive sites.</li> <li>▪ Never broadcast <b>chemicals</b> in watercourses and <i>streamside management zones</i>.</li> <li>▪ Never wash <b>chemical</b> containers or clean equipment in streams.</li> <li>▪ Mix <b>chemicals</b> carefully and in an environmentally safe location and according to label instructions.</li> <li>▪ Always choose the site prep method that creates the least soil disturbance, remains effective and safe and accomplishes <i>regeneration</i> goals.</li> </ul> </div> <p>• The use of class 1A and 1B pesticides, as drafted by the World Health Organisation, and of chlorinated hydrocarbons are not used in the DBI procurement area.</p> <p>• State Applicator License Programs</p> <p>• NRCS, who oversees the allocation of funding for conservation practices on private lands, has Integrated Pest Management (IPM) defined as Conservation Practice Standard.  <a href="https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044470.pdf">https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044470.pdf</a>  <a href="https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044470.pdf">https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1044470.pdf</a></p> <p>• Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) - provides for federal regulation of pesticide distribution, sale, and use. All pesticides distributed or sold in the United States must be registered (licensed) by EPA. See the following link for details on the Act and its enforcement: <a href="https://www.epa.gov/enforcement/federal-insecticide-fungicide-and-rodenticide-act-fifra-and-federal-facilities">https://www.epa.gov/enforcement/federal-insecticide-fungicide-and-rodenticide-act-fifra-and-federal-facilities</a></p> <p>Application of forest herbicides is regulated as a “point source” pollutant under section 402 of the Clean Water Act. To address this states have developed Pesticide General Permits (PGPs) <a href="https://www.epa.gov/npdes/pesticide-permitting">https://www.epa.gov/npdes/pesticide-permitting</a>. State permits are unique but in general they require the development of application plans, accurate record keeping, and conformance with a set of criteria for “All Operators”. See AR PGP for reference:</p> <p><a href="https://www.adeq.state.ar.us/water/permits/npdes/nonstormwater/pdfs/arg870000/fact-sheet.pdf">https://www.adeq.state.ar.us/water/permits/npdes/nonstormwater/pdfs/arg870000/fact-sheet.pdf</a></p>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None



	Indicator
2.2.9	The BP has implemented appropriate control systems and procedures for verifying that methods of waste disposal minimise negative impacts on forest ecosystems (CPET S5d).
Finding	<ul style="list-style-type: none"> <li>• The US Environmental Protection Agency (EPA) established federal requirements for reporting hazardous substance spills, including those associated with logging waste (i.e. oil/hydraulic fluid).</li> <li>• The department of environmental quality in the states where DBI operates all maintain guidance on spill thresholds and reporting requirements.</li> <li>• Solid Waste Disposal Act of 1986: Persons or organizations violating compliance orders for management of hazardous wastes are subject to civil and criminal penalties ranging from maximums of \$25,000 to \$1,000,000 and from two to 15 years imprisonment. State forestry BMPs address waste management that may contribute to contamination of state waters.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• The US Environmental Protection Agency (EPA) established federal requirements for reporting the release of oil and hazardous substances. States usually follow the federal minimum standards, but many have stricter requirements. <ul style="list-style-type: none"> <li>• List of reportable quantities of hazardous substances can be found here: <a href="http://www.ecfr.gov/cgi-bin/text-idx?SID=d2ae7b1ab544a4e1838d37793c971dc6&amp;andmc=true&amp;andnode=se40.28.302_14&amp;andrgn=div8">http://www.ecfr.gov/cgi-bin/text-idx?SID=d2ae7b1ab544a4e1838d37793c971dc6&amp;andmc=true&amp;andnode=se40.28.302_14&amp;andrgn=div8</a></li> <li>• EPA also publishes a “list of lists” that provides a consolidated list of chemicals that are subject to reporting under the Emergency Planning and Community Right-to-Know Act (EPCRA), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and the Clean Water Act (CWA) <a href="https://www.epa.gov/epcra/consolidated-list-lists">https://www.epa.gov/epcra/consolidated-list-lists</a></li> </ul> </li> <li>• The Department of Environmental Quality in all states in which DBI sources have established thresholds for spills and published phone numbers for reporting spills. This table compiled by The Retail Compliance Center provides this information for all US States: <a href="https://www.rila.org/retail-compliance-center/spill-reporting">https://www.rila.org/retail-compliance-center/spill-reporting</a>. Petroleum spills of 25 gallons or more or any petroleum spill that causes a sheen on water is reportable.</li> <li>• State BMPs all address waste and associated hazardous spills as do SIC Logger Training Programs (See Indicator 2.2.6)</li> <li>• DBI contractually requires contractors to properly dispose of waste and has a program to evaluate BMP implementation.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>



Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
2.3.1	Analysis shows that feedstock harvesting does not exceed the long-term production capacity of the forest, avoids significant negative impacts on forest productivity and ensures long-term economic viability. Harvest levels are justified by inventory and growth data.
Finding	<p>A healthy forest products industry drives investment in silviculture which can improve forest productivity.</p> <ul style="list-style-type: none"> <li>• The biomass market provides markets for thinnings which can increase stand productivity. Additional income from harvest of low-grade fiber allows for further investment in practices which can improve forest productivity.</li> <li>• Data provided through the USFS Forest Inventory and Analysis (FIA) Program shows positive growth to drain ratios in the DBI catchment area.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• Investment in silviculture has improved forest productivity. <ul style="list-style-type: none"> <li>• F2M's Historical Perspective on the Relationship between Demand and Forest Productivity in the US South</li> <li>• Programs to improve seedling quality (through standard breeding techniques), targeted fertilization, and competition control have resulted in significant increases in managed pine forest productivity. See table below from Fox, T.R., E.J. Jokela and H.L. Allen. 2007. The development of pine plantation silviculture in the southern United States. J. Forestry 105:337-3</li> </ul> </li> <li>• Forest thinning improves forest growth, health, and wildlife habitat. See the following University of Florida Extension article: <a href="http://edis.ifas.ufl.edu/pdffiles/FR/FR15900.pdf">http://edis.ifas.ufl.edu/pdffiles/FR/FR15900.pdf</a></li> <li>• The Forest Inventory and Analysis (FIA) Program of the US Forest Service provides valuable information on forest growth through a long-term sampling program. Combined with industry removals data provides the information needed to assess America's forests can be accurately obtained <ul style="list-style-type: none"> <li>• According to 2014 USFS report (FS 1035), growth exceeds removals in southern forests (US Forest Resource Facts and Historical Trends)</li> <li>• Analysis of growth to drain dynamics immediately surrounding DBI's plants provides evidence that harvest levels are justified by inventory.</li> </ul> </li> </ul>

Morehouse Bioenergy catchment (analysis and table provided by Forisk Consulting)



Amite Bioenergy catchment (analysis and table provided by Hood Consulting).

Amite BioEnergy Catchment Area - Annual Growth, Removals, & Growth-to-Removal Ratios by Major Timber Product (2017)

Softwood (Pine)	Growth (million ft3)	Removals (million ft3)	G:R Ratio
Pine Pulpwood	53.7	29.9	1.80
Pine Chip-n-saw	43.6	17.4	2.50
Pine Sawtimber	45.9	23.4	1.96
<b>Softwood (Pine) Total</b>	<b>143.2</b>	<b>70.7</b>	<b>2.02</b>

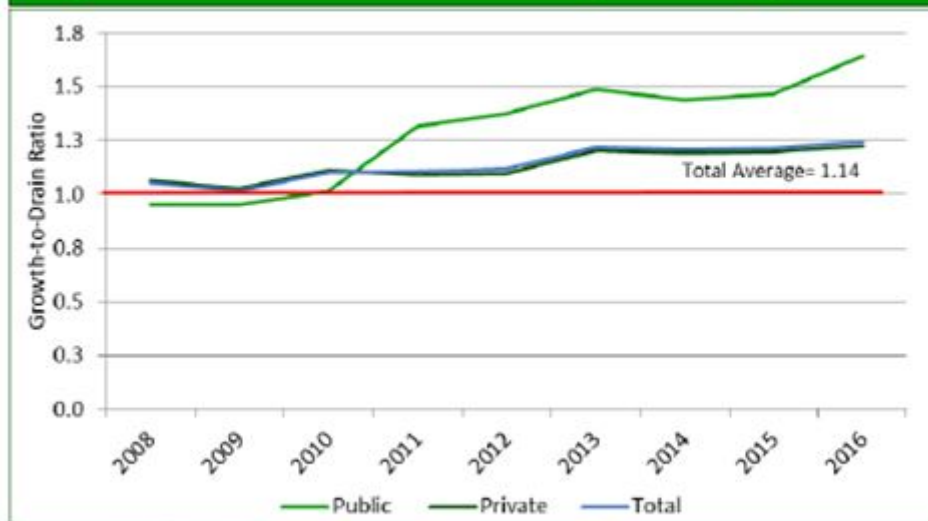
Hardwood	Growth (million ft3)	Removals (million ft3)	G:R Ratio
Hardwood Pulpwood	18.0	3.4	5.32
Hardwood Sawtimber	19.2	11.0	1.74
<b>Hardwood Total</b>	<b>37.2</b>	<b>14.4</b>	<b>2.58</b>

Product	Growth (million ft3)	Removals (million ft3)	G:R Ratio
Pulpwood	71.7	33.3	2.16
Sawtimber	108.7	51.9	2.10
<b>Total</b>	<b>180.4</b>	<b>85.1</b>	<b>2.12</b>

Source: USDA - US Forest Service

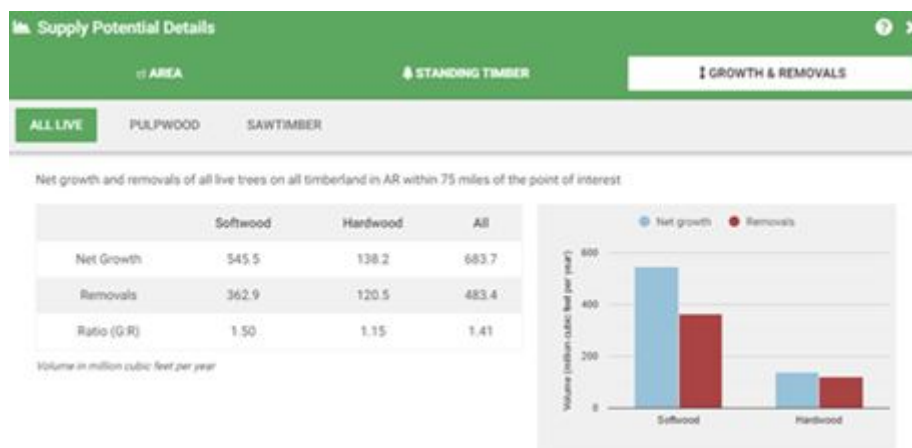
LaSalle Bioenergy catchment

**Figure 15. Growth-to-Drain Ratio by Owner Type**

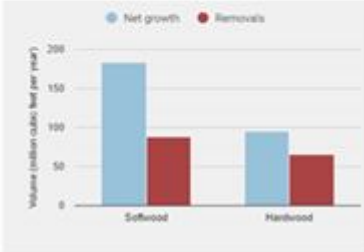


Source: US Forest Service

Arkansas Bioenergy - Leola catchment (analysis and table produced by Southern Group of State Foresters Timber Analysis tool: [byhttps://texasforestinfo.tamu.edu/tsa/](https://texasforestinfo.tamu.edu/tsa/) )



Arkansas Bioenergy - Russellville catchment (analysis and table produced by Southern Group of State Foresters Timber Analysis tool: [byhttps://texasforestinfo.tamu.edu/tsa/](https://texasforestinfo.tamu.edu/tsa/) )

	<div><div>Supply Potential Details</div><div><div>AREA</div><div>STANDING TIMBER</div><div>GROWTH &amp; REMOVALS</div></div><div><div>ALL LIVE</div><div>PULPWOOD</div><div>SAWTIMBER</div></div></div> <p>Net growth and removals of all live trees on all timberland in AR, OK (E) within 75 miles of the point of interest</p> <table><thead><tr><th></th><th>Softwood</th><th>Hardwood</th><th>All</th></tr></thead><tbody><tr><td>Net Growth</td><td>183.7</td><td>95.6</td><td>279.3</td></tr><tr><td>Removals</td><td>88.2</td><td>65.6</td><td>153.8</td></tr><tr><td>Ratio (G/R)</td><td>2.08</td><td>1.46</td><td>1.82</td></tr></tbody></table> <p>Volume in million cubic feet per year</p>  <div><ul style="list-style-type: none"><li>• See links to FIA Data , Timber Production Output Reports, USDA, State Forest Fact Sheets, and the Southern Forest Future Project for further evidence of sustained productivity in the US South.</li></ul></div>		Softwood	Hardwood	All	Net Growth	183.7	95.6	279.3	Removals	88.2	65.6	153.8	Ratio (G/R)	2.08	1.46	1.82
	Softwood	Hardwood	All														
Net Growth	183.7	95.6	279.3														
Removals	88.2	65.6	153.8														
Ratio (G/R)	2.08	1.46	1.82														
Evidence Reviewed	<div><ul style="list-style-type: none"><li>• All means of verification reviewed</li></ul></div>																
Risk Rating	Low Risk																
Comment or Mitigation Measure	None																

	Indicator
2.3.2	Adequate training is provided for all personnel, including employees and contractors (CPET S6d).
Finding	<ul style="list-style-type: none"> <li>• The FSC, SFI, PEFC, and ATFS standards all require periodic employee training for an organization to remain certified to the Forest Management and/or Chain of Custody Standards.</li> <li>• SFI requires loggers to be up-to-date in their SIC sponsored Master Logger training courses in order to harvest wood for and/or supply fiber to certified participants.</li> <li>• Credentialing programs exist for professional foresters in the supply chain by jurisdiction and/or by employer.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• Forest certification and chain of custody standards require a level of competence and training. See relevant sections from the SFI and PEFC Standards for reference.</li> </ul> <p>SFI Principle 10 - Training and Education - To improve the practice of sustainable forestry through training and education programs</p>

PEFC - 8.5.1 Human resources/personnel

- The organisation shall ensure and demonstrate that all personnel performing activities affecting the implementation and maintenance of the chain of custody are competent on the basis of appropriate training, education, skills and experience.
  - The organisation shall ensure and demonstrate that all personnel performing activities affecting the implementation and maintenance of the chain of custody are competent on the basis of appropriate training, education, skills and experience.
- SFI logger training program is a comprehensive program that covers topics in (1) Environmental (2) Safety and (3) Business management. Loggers as well as foresters (working for SFI certified companies) are required to take the course. It generally includes an initial set of core classes followed by a continuing education requirement. See links below for more information on logger training programs:
- Alabama Professional Logging Managers
  - Ark Pro Logger
  - LA Master Logger Program
  - MS Professional Logging Manager Program
  - TX Pro Logger Program
  - Oklahoma Pro Logger
  - TN Master Logger Program
- Registered Forester programs also exist within DBI's supply area. These often have a written exam and additional training requirements to maintain registration:
- <http://www.borf.ms.gov/>
  - <http://www.arkansas.gov/abof/>
  - <https://www.texasforestry.org/programs/texas-accredited-forester-council>
  - <http://www.asbrf.alabama.gov/>
  - <http://www.forestry.ok.gov/Websites/forestry/Images/FORBDROSTER-PublicVersion.pdf>
- The Society of American Foresters offers a Certified Forester program that requires a level of education and experience as well as completion of continuing education courses. Many industry professionals maintain this certification.  
[https://www.eforester.org/Main/Certification/Certification\\_Home.aspx](https://www.eforester.org/Main/Certification/Certification_Home.aspx)
- DBI has integrated training requirements into written procedures which define employee training procedures and expectations.

	<ul style="list-style-type: none"> <li>• DBI has contractual requirements related to training in all in-woods fiber contracts.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.3.3</b>	Analysis shows that feedstock harvesting and biomass production positively contribute to the local economy, including employment.
Finding	<ul style="list-style-type: none"> <li>• DBI plants were built in areas with abundant forest resources that had either lost markets or markets were waning. Talented and knowledgeable employees resided in these areas and are now being utilized.</li> <li>• State and local economic incentives were granted to attract investment and jobs into these areas.</li> <li>• Provision of biomass market enables forest landowners to conduct additional forest stand treatments thereby providing an intermediate source of income and improving fiber production and associated timber revenue associated with their forestland.</li> <li>• Forestry Associations in each state keep track of the positive economic impact that the forestry industry has.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• Location of pellet plants and infrastructure improves local economies, provides exponential effects, and contributes to employment. <ul style="list-style-type: none"> <li>• Decline in pulp and paper. Effects on backward linked forest industries and local economies. Forest Product Journal, USDA</li> <li>• Pellet Plants Spur New Life in Rural South, 2015 World Biomass</li> <li>• Wood Pellet Co-Firing for Electric Generation Source of Income for Forest Based Low Income Communities in Alabama</li> <li>• <a href="http://www.draxbiomass.com/wood-pellets-revitalizing-community/">http://www.draxbiomass.com/wood-pellets-revitalizing-community/</a></li> </ul> </li> <li>• Economic profiles of areas where DBI pellet plants are located demonstrates the value of bringing jobs to the area: <ul style="list-style-type: none"> <li>• LaSalle Parish, LA Economic Profile</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Amite County, MS Forestry Economic Impact Profile</li> <li>• Morehouse Parish, LA Economic Profiles</li> <li>• Pope County, AR Economic Profile</li> <li>• Grant County, AR Economic Profile</li> </ul> <p>• Bioenergy presents an important market for forest landowners which has been positively received.</p> <ul style="list-style-type: none"> <li>• Forest landowner associations support of biomass</li> <li>• An assessment of nonindustrial private forest landowner willingness to harvest woody biomass in support of bioenergy production in Mississippi: A contingent rating approach. Steven R. Gruchya, Donald L. Grebnerb, Ian A. Munnb, Omkar Joshib, Anwar Hussainc</li> </ul> <p>• DBI contracted Dr. Robert Eisenstadt and Paul Nelson at the University of Louisiana Monroe (ULM) to conduct an economic impact study of all DBI operations. Their work characterized the positive economy stimulus which can be attributed to the company.</p> <p>• Drax is working with Earthworm (formerly The Forest Trust), to better understand communities and forest in which we operate. Earthworm conducted a socioeconomic study in the Amite Bioenergy catchment in 2019 which is informing DBI's community engagement.</p>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.4.1</b>	The BP has implemented appropriate control systems and procedures for verifying that the health, vitality and other services provided by forest ecosystems are maintained or improved (CPET S7a).
Finding	<ul style="list-style-type: none"> <li>• Forests are recognized as providing valuable ecosystem services. Regional programs exist to support the conservation, health, and vitality of forestlands including tax abatement programs, Forest Action plans, and</li> </ul>

	<p>cost share programs, all designed to encourage landowners to manage their forest for these intrinsic values.</p> <ul style="list-style-type: none"> <li>• Each state has a forestry agency, department, or division whose collective responsibilities include providing services, outreach, land management, and forest practices oversight. State agencies also manage state lands.</li> <li>• Laws and regulations exist to protect the wildlife resources, including the Endangered Species Act, state level Wildlife laws, and the Clean Water Act.</li> <li>• State level BMPs associated with the CWA are in place to protect water quality.</li> <li>• Each state also has a wildlife agency, department, or division that provides services and outreach to landowners as well as oversight and management of state lands.</li> <li>• Privately sponsored programs that encourage managing the health and vitality of the forest system include the Tree Farm programs coordinated by the American Forest Foundation (American Tree Farm System Web site 2011) and the Longleaf Restoration Program sponsored by The Longleaf Alliance.</li> <li>• Forest level certification (SFI and ATFS) is prevalent on the landscape and provides assurances of the sustainable management of the forest resource.</li> <li>• The FSC US Controlled Wood Risk Assessment has identified two ecosystems that appear within DBI's catchment, Late Successional Bottomland Hardwoods, and Native Longleaf Pine Systems, that have been designated as "Specified Risk". These systems are components that in part reflect the overall health and vitality of the forest. This designation gives rise to mitigations as stated in 2.1.2 above, mitigations to which are included below.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• State programs - educational and technical assistance for management of wildlife habitat or riparian areas, water quality, resource conservation, and protection from invasive species is available in all states through forestry, wildlife, and cooperative extension personnel. States have developed comprehensive "Forest Action Plans" and "Wildlife Action Plans" to direct and inform natural resource management in each state. <ul style="list-style-type: none"> <li>○ The Southern Group of State Foresters provide leadership in sustaining the economic, environmental, and social benefits of the South's forests. The Group is composed of State Foresters and provides direction and leadership for the southern states. Information and links to individual state programs can be found here: <a href="https://www.southernforests.org/">https://www.southernforests.org/</a>.</li> </ul> </li> </ul>



	<ul style="list-style-type: none"> <li>○ The Southeastern Association of Fish and Wildlife Agencies (SEAFWA) is an organization representing southern fish and wildlife agencies responsible for management and protection of the fish and wildlife habitat. Information on SEAFWA and individual state agencies can be found here: <a href="http://www.seafwa.org/">http://www.seafwa.org/</a></li> <li>● Tax abatement programs and conservation easement programs encourage forest management throughout the supply base. <ul style="list-style-type: none"> <li>○ Details on the tax programs for all US States can be found here: <a href="https://taxfoundation.org/states-use-gentle-hand-taxing-timberland/">https://taxfoundation.org/states-use-gentle-hand-taxing-timberland/</a></li> </ul> </li> <li>● The Forest Legacy Program, a United States Department of Agriculture Forest Service program in partnership with States, supports State efforts to protect environmentally sensitive forest lands.<a href="https://www.fs.usda.gov/managing-land/private-land/forest-legacy">https://www.fs.usda.gov/managing-land/private-land/forest-legacy</a>.</li> <li>● Private conservation organizations hold conservation easements see LandScope America, a national conservation easement database <a href="http://www.landscape.org/focus/protected_areas/nced/">http://www.landscape.org/focus/protected_areas/nced/</a></li> <li>● Cost share programs funnel federal funding to landowners through a number of different programs, all of which are intended to improve management of the forest resource. A description of these cost share programs and links are provided in Indicator 2.2.1</li> <li>● The CWA and BMP programs are instrumental in protecting ecosystem services provided by forests. See Indicators 2.2.4 and 2.2.6 for a review of the CWA and BMPs.</li> <li>● The ESA is in place to help prevent further loss, and drive recovery of animal and plant species considered federally threatened and endangered. See Indicator 2.2.4, 2.2.2, and 2.2.1 for a review of the ESA.</li> <li>● By providing a market for fiber, DBI assists in the development of a robust and resilient forest. Thinnings assist in developing ground flora and forest structure, including helping in providing better hunting and recreation; utilizing mill residuals is assistive in encouraging sawlog production. Additional returns to landowners from the biomass market allow further investment in robust forests.</li> <li>● DBI's "Rapid Risk Assessment" process and internal audit protocol also provide assurances that the health, vitality, and other ecosystem services are preserved in the sourcing of in-woods fiber</li> </ul>
Evidence Reviewed	All Means of Evidence reviewed.
Risk Rating	Specified Risk
Comment or Mitigation Measure	FSC US has identified, and developed mitigation measures, for four specified risks which are relevant to residual fiber suppliers - Late Successional Bottomland

Hardwoods (LSBH), Native Longleaf Pine Systems (NLPS), Southern Appalachian Critical Biodiversity Area (SACBA), and the Central Appalachian Critical Biodiversity Area (CACBA). DBI utilizes the FSC approved mitigation measures for addressing these specified risks. The specified risks and mitigation measures are described below:

Dusky Gopher Frog (DGF)

For the Dusky Gopher Frog, FSC identifies two small areas at the extreme south of our residual sourcing area. FSC has identified education and outreach as a mitigation option for the DGF. DBI will provide educational materials to the suppliers which have the potential to source from the FSC identified risk areas. Educational materials will be informed by the best available science and adapted as new information and/or approaches become available. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of DGF populations.

Late Successional Bottomland Hardwoods (LSBH)

As DBI primarily sources Southern Yellow Pine, Late Successional Bottomland Hardwoods are mainly an issue for residual suppliers who process hardwoods and are proximate to LSBH areas. The areas that potentially have LSBH have been mapped by FSC and integrated into DBI's GIS system. For residual suppliers, outreach and education will be the choice mitigation tool. Educational materials have been developed to engage landowners, foresters, and loggers in conservation of this forest system. DBI also actively supports workshops and learning exchanges focused on improving the management of bottomland hardwoods in the supply area.

Native Longleaf Pine Systems (NLPS)

For NLPS, the areas at risk have been identified by FSC at county/parish level. These areas have been included in DBI's GIS system. Education and outreach will be the primary mitigation for residual suppliers who's sourcing area intersects FSC identified risk areas. The desired outcome of these communications is engaging landowners, foresters, and loggers in conservation of Native Longleaf Pine systems. DBI also actively supports workshops and learning exchanges focused on encouraging proactive management of longleaf pine in the supply area.

Southern and Central Appalachian Critical Biodiversity Area (CACBA and SACBA respectively)

Both the Central and Southern Appalachian Critical Biodiversity Areas will only affect DBI's residual sourcing due to the distance from existing pellet mills. Education and outreach will be the mitigation tool employed. As described for the risks above, these materials will be developed according to best available science and be adapted as new information and approaches come available (i.e. through FSC CW Regional meetings). This educational material will be aimed at increasing awareness of the sensitivities and unique nature of these CBAs in hopes of increasing conservation of these highly biodiverse areas.

	<p>Only two of these specified risks are relevant to DBI's primary sourcing, Late Successional Bottomland Hardwoods and the Native Longleaf Pine System. Mitigation for primary feedstock includes DBI's program to verify BMP usage and protection of species of concern when sourcing directly from the forest. DBI has integrated the FSC HCV maps into its GIS system and "Rapid Risk Assessment" process which also includes all known species and natural communities of concern (NatureServe data). FSC US has identified two specified risks which are relevant to primary fiber suppliers - Late Successional Bottomland Hardwoods (LSBH), and Native Longleaf Pine Systems (NLPS). DBI actively screens all in-woods fiber tracts for species of concern and FSC Specified Risks prior to accepting any fiber. DBI also records the cover type and species of stand from which fiber is sourced. In this way receipt of longleaf pine and harvesting associated with hardwood systems is monitored to ensure that there is no conversion or degradation of high conservation forests on tracts from which we receive roundwood or in-woods chips. If it is determined that the risk of negative impact to the HCV cannot be effectively mitigated through information flow and internal controls DBI can choose not to accept material from a region or a supplier.</p>
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	Indicator
2.4.2	The BP has implemented appropriate control systems and procedures for verifying that natural processes, such as fires, pests and diseases are managed appropriately (CPET S7b).
Finding	<ul style="list-style-type: none"> <li>•National Cohesive Wildland Fire Management Strategy</li> <li>•Plant pest quarantine programs and USDA-Animal and Plant Health Inspection Service (APHIS) monitor and enforce regulations pertaining to invasive species which have the potential to significantly impact forests and agricultural crops (i.e. emerald ash borer).</li> <li>•Federal cost-share funds through NRCS require adherence to NRCS Integrated Pest Management Plan.</li> <li>•Market provision for biomass provides a reduction in forest fire risk and less need to conduct prescribed burns to reduce fuel load.</li> <li>•Market provision for biomass enables use/removal of diseased and damaged</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•USFS conducts aerial surveys to monitors forest pest and disease outbreaks on National Forest and adjacent lands.</li> <li>•Each state has a forestry agency, department, or division whose collective responsibilities include providing services and outreach, land management, and forest practices oversight. State forestry agencies assist timber owners in forest pest management by conducting forest pest surveys and evaluations.</li> <li>•The National Cohesive Wildland Fire Management Strategy focuses on debris burning and homeowner safety in the wildland urban interface. It is an interagency</li> </ul>

effort, with USFS, State environmental agencies, municipal organizations, and NGOs (i.e. Nature Conservancy).

- NRCS Integrated Pest Management Plan applies to all applicants and lands which receive federal cost share MP: Forest management standard and assistance to implement integrated pest management plan into land management objectives.

- Burn permitting and licencing requirements are required in all states where DBI procures biomass and smoke management guidelines are provided by forestry commissions.

- State Smoke Guidelines -

[https://www.mfc.ms.gov/sites/default/files/Voluntary\\_Smoke\\_Management\\_Guidelines\\_2012\\_2.pdf](https://www.mfc.ms.gov/sites/default/files/Voluntary_Smoke_Management_Guidelines_2012_2.pdf)

- See 2.2.8 Chemical Applicator and BMP information.

- State Forest and Wildlife Action Plans – Each of these plans address invasive species, pests, wildfire, and other threats that exist within each state. They provide a strategy to help control and prevent harmful effects of these threats to the landscape.

- FIA Forest Inventories – FIA inventories provide insight for each state into the amount of dead and down debris, growth, removals, and standing stock and monitors changes over time. This insight can show indicators for invasives, forest pest, as well as help calculate damage from fires and natural disasters.

- Drax Company Policies

- See link detailing southern region forest health evaluations and information on the forest pests in the area. In cases such as the southern pine beetle biomass harvesting

- can assist in thinning operations to reduce tree density and therefore assist in the prevention of SBP outbreaks. <https://www.fs.usda.gov/detail/r8/forest-grasslandhealth/insects-diseases/?cid=stelprdb5414469>

- Market provision for biomass provides a reduction in forest fire risk and less need to conduct prescribed burns to reduce fuel load. See Evans et al. 2009 - From renewable energy to fire risk reduction: a synthesis of biomass harvesting and utilization case studies in US forests

- Interagency Fire Prevention Strategy - This strategy provides agency with assistance, education, and monitoring to help prevent and control the spread of wildfires.

- The Southern Group of State Foresters provides us with a look at the successes of having a southern wide Stewardship Strategy:

[https://www.southernforests.org/fire/implementing-shared-stewardship-a-collection-of-cohesive-strategy-success-stories-from-across-the-south/SGSF%20Final%20Report\\_FINALSharedStewardship.pdf](https://www.southernforests.org/fire/implementing-shared-stewardship-a-collection-of-cohesive-strategy-success-stories-from-across-the-south/SGSF%20Final%20Report_FINALSharedStewardship.pdf)

- DBI Foresters are active on all State Forestry Associations and SICs, which provide a forum for critical information transfer from federal and state forestry agencies related to current forest health issues (pest/invasive outbreaks and fire).

- Fiber Purchase Agreement language specific to preventing the spread of emerald ash borer. Drax does not accept ash from primary feedstock.

Evidence Reviewed	• All means of verification reviewed
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator																								
2.4.3	The BP has implemented appropriate control systems and procedures for verifying that there is adequate protection of the forest from unauthorised activities, such as illegal logging, mining and encroachment (CPET S7c).																								
Finding	<ul style="list-style-type: none"><li>•According to the FSC US Controlled Wood Risk assessment there is a low risk of illegal harvesting.</li><li>•Enforcement actions in each state sourced from demonstrates effective application of law to protect landowners from illegal logging, unpermitted mining and encroachment.</li><li>•Occurrences of timber theft and encroachment are not systemic in the states from which DBI sources. Pathways for recourse exists in each state to remedy the problem.</li><li>•Federal laws ban commerce in all illegally sourced forest products.</li><li>•All states from which DBI sources fiber have timber theft laws that carry civil and criminal penalties.</li></ul>																								
Means of Verification	<ul style="list-style-type: none"><li>•Each jurisdiction has its own version of legislation with well governed agencies that enforce these elements that carry civil and criminal penalties.</li></ul> <table><tr><td>Texas</td><td>Tennessee</td><td>Mississippi</td><td>Louisiana</td><td>Arkansas</td><td>Alabama</td><td>Oklahoma</td><td>Federal</td></tr><tr><td>State Timber Theft Law</td><td>State Timber Theft Law</td><td>State Timber Theft Law</td><td>State Timber Theft Law</td><td>Arkansas Timber Theft</td><td>AL Timber Theft Law</td><td>OK Forest ry Code</td><td>US: Lacey Act</td></tr><tr><td>Publication explaining timber theft law.</td><td>UT Extension Fact sheet</td><td>MS Agricultural and Livestock Theft Bureau</td><td>Timber theft cases and litigation disclosed via search</td><td>Timber Theft Fact Sheet</td><td>AL Change in Enforcement Agency</td><td><u>No reports</u> - <u>returned by web crawl</u></td><td>Enforcement Action: Article summarizing recent cases.</td></tr></table>	Texas	Tennessee	Mississippi	Louisiana	Arkansas	Alabama	Oklahoma	Federal	State Timber Theft Law	State Timber Theft Law	State Timber Theft Law	State Timber Theft Law	Arkansas Timber Theft	AL Timber Theft Law	OK Forest ry Code	US: Lacey Act	Publication explaining timber theft law.	UT Extension Fact sheet	MS Agricultural and Livestock Theft Bureau	Timber theft cases and litigation disclosed via search	Timber Theft Fact Sheet	AL Change in Enforcement Agency	<u>No reports</u> - <u>returned by web crawl</u>	Enforcement Action: Article summarizing recent cases.
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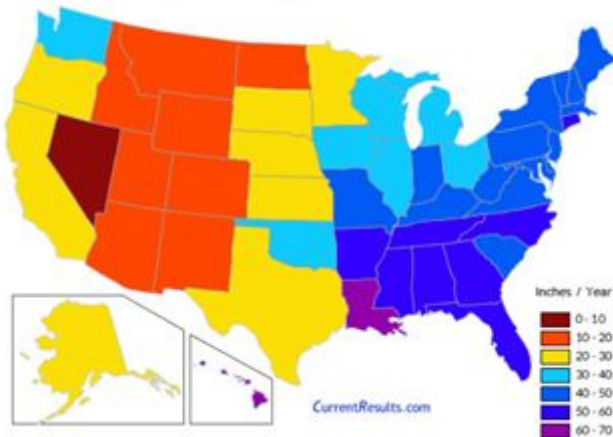
	<ul style="list-style-type: none"> <li>•See Chatham House Illegal logging portal for analysis and review of forest governance and legality..</li> <li>•Masters thesis on timber theft and financial impacts on the US South: A Nationwide Survey of Timber Trespass Legislation. Hicks, Timothy. Master of Forestry Thesis March 2005 PSU School of Forest Resources</li> <li>•Environmental Investigation Agency: The website's only references to the United States are about US-based companies operating in other countries and regarding the Lacey Act.</li> <li>•SFI State Implementation Committees Inconsistent Practices committees provide the public an opportunity to make complaints related to harvest practices.</li> <li>•Mining - each jurisdiction has its own version of legislation governing mining, but the federal government has oversight. <a href="https://www.osmre.gov/">https://www.osmre.gov/</a></li> <li>oUS Code: US Code: Title 30 - MINERAL LANDS AND MINING</li> <li>oAnnual reports presenting mine permitting and oversight inspections.</li> <li>•Each jurisdiction has its own version of legislation governing land encroachment.Preamble citations including Worldwide Governance Indicators</li> <li>•Drax Group and DBI Policy statements related to avoidance of illegally harvested and sourced fiber <a href="http://www.drax.com/biomass/sustainability-policy/#sthash.nfaO36gM.dpuf">http://www.drax.com/biomass/sustainability-policy/#sthash.nfaO36gM.dpuf</a>, <a href="https://www.draxbiomass.com/sustainability/">https://www.draxbiomass.com/sustainability/</a></li> <li>•In the EU, the organization that places material/products on the EU market “for the first time” must apply a DDS, and other supply chain actors need to maintain records so that the original supplier can be identified.</li> <li>•The DBI Fiber Purchase Agreement requires legal compliance, and its ongoing supplier monitoring system ensure that illegal logging is of negligible impact to the company.</li> <li>•DBI conducted a comprehensive stakeholder consultation to capture feedback about legality issues in the procurement regions.</li> <li>oOne stakeholder voiced their concern about the level of law enforcement and the effectiveness of existing legal controls as they relate to logging. However, DBI continues to support FSC assessment of “low-risk” and through continued monitoring of their catchment finds that the level of enforcement is effective, and that timber trespass is not systemic in procurement region</li> <li>•DBI Severance Tax Records</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
2.5.1	<p>The BP has implemented appropriate control systems and procedures for verifying that legal, customary and traditional tenure and use rights of indigenous people and local communities related to the forest, are identified, documented and respected (CPET S9).</p>
Finding	<ul style="list-style-type: none"> <li>•The FSC Controlled Wood National Risk Assessment for the US has determined that there is a “Low Risk” of “wood harvested in violation of traditional and human rights”.</li> <li>•US support of UN Indigenous Peoples initiative</li> <li>•The legal system in the United States is generally considered fair and efficient in resolving conflicts pertaining to traditional rights including use rights, cultural interests or traditional cultural identity. There are different mechanisms or processes that allow Native American tribes, as well as any private citizen, to deal with disagreement and conflict related to decisions affecting natural resources, and forests that are considered to be equitable.</li> <li>•Sustainable Forestry and African American Land Retention Program (SFLR) focuses on issues associated with African American land ownership.</li> <li>•State of America’s Forest, SAF Figure 4 and 13 displaying distribution of landownership showing stable patterns between public and private ownerships.</li> <li>•Today, federal, state, and local governments regulate growth and development through statutory law. The majority of controls on land, however, stem from the actions of private developers and individuals.</li> <li>•Two major federal laws have been passed in the last half century that limit the use of land significantly. These are the National Historic Preservation Act of 1966 (today embodied in 16 USC. 461 et seq.) and the National Environmental Policy Act of 1969 (42 USC. 4321 et seq.).</li> <li>•Stakeholder consultation process revealed no concerns expected to affect feedstock sourcing</li> <li>•Preamble citations including Worldwide Governance Indicators</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•Announcement of US Support for the United Nations Declaration on the Rights of Indigenous Peoples</li> <li>•Sustainable Forestry and African American Land Retention Program (SFLR) helps to connect African American landowners with established networks of forestry support including federal and state government programs. Title issues and ownership disputes are a focus of this initiative.</li> <li>•Each jurisdiction has statutory law that governs these elements. Ample case law is present demonstrating path of recourse exists for all parties. Each jurisdiction, with well governed agencies, enforces these elements that carry civil and criminal penalties, and administer land use monitoring programs. See table presented in Indicator 2.4.3.</li> </ul>



	<p>•NEPA Methods provides information for communities who want to assure that their environmental justice (EJ) issues are adequately considered when there is a federal agency action that may involve environmental impacts on minority populations, low-income populations, and/or Indian tribes and indigenous communities.  <a href="https://www.energy.gov/nepa/downloads/community-guide-environmental-justice-and-nepa-methods">https://www.energy.gov/nepa/downloads/community-guide-environmental-justice-and-nepa-methods</a></p> <p>•Intra-tribal councils and the Bureau of Indian Affairs resources provide information concerning consultations, actions and resolutions.  <a href="https://www.bia.gov/sites/bia.gov/files/assets/public/webteam/pdf/idc1-028635.pdf">https://www.bia.gov/sites/bia.gov/files/assets/public/webteam/pdf/idc1-028635.pdf</a>  <a href="https://biamaps.doi.gov/">https://biamaps.doi.gov/</a>  <a href="https://www.choctaw.org/government/development/forestry.html">https://www.choctaw.org/government/development/forestry.html</a>  <a href="http://www.koasatiheritage.org/pages/tribal-history/">http://www.koasatiheritage.org/pages/tribal-history/</a>  <a href="http://www.jenachoctaw.org/content/epa">http://www.jenachoctaw.org/content/epa</a>  <a href="https://www.tunicabiloxi.org/tribal-info/departments/land-office/">https://www.tunicabiloxi.org/tribal-info/departments/land-office/</a>  <a href="https://itec.cherokee.org/">https://itec.cherokee.org/</a>  <a href="http://www.shawnee-tribe.com/Environmental.html">http://www.shawnee-tribe.com/Environmental.html</a></p> <p>•Other publications detailing land use which are informative to understanding ownership patterns:  <a href="https://www.ers.usda.gov/webdocs/publications/84880/eib-178.pdf?v=0">https://www.ers.usda.gov/webdocs/publications/84880/eib-178.pdf?v=0</a>  <a href="https://www.ers.usda.gov/data-products/state-fact-sheets/">https://www.ers.usda.gov/data-products/state-fact-sheets/</a>  State of America's Forest, SAF- <a href="https://usaforests.org/">https://usaforests.org/</a></p> <p>•Through the Stakeholder Consultation process DBI has attempted to communicate with tribes located in procurement region. There has been no return communication</p>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
2.5.2	The BP has implemented appropriate control systems and procedures for verifying that production of feedstock does not endanger food, water supply or subsistence means of

	communities, where the use of this specific feedstock or water is essential for the fulfillment of basic needs.
Finding	<ul style="list-style-type: none"> <li>•No food related feedstock used. No subsistence living on large scale in US.</li> <li>•Water resources are ample in the sourcing area and working forests from which biomass are sources help maintain forest cover.</li> <li>•No land use change on landscape level since 1950s</li> <li>•No adverse commentary during stakeholder consultation process</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•Subsistence living levels in limited or regionalized cases supported by well governed public agencies.</li> <li>•Publications detailing land use which are informative to understanding ownership patterns:  <a href="https://www.ers.usda.gov/webdocs/publications/84880/eib-178.pdf?v=0">https://www.ers.usda.gov/webdocs/publications/84880/eib-178.pdf?v=0</a>  <a href="https://www.ers.usda.gov/data-products/state-fact-sheets/">https://www.ers.usda.gov/data-products/state-fact-sheets/</a>  <a href="https://usaforests.org/">State of America's Forest, SAF- https://usaforests.org/</a> </li> <li>•Abundant water resources in procurement region. Forests are important to protecting and maintaining water supplies. The biomass market encourages forest to remain forest by providing a market for low-value fiber.</li> <li>•Average annual rainfall by state</li> </ul> <p>Annual State Precipitation Averages</p>  <p>CurrentResults.com</p>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk

Comment or Mitigation Measure	None
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	Indicator
2.6.1	The BP has implemented appropriate control systems and procedures for verifying that appropriate mechanisms are in place for resolving grievances and disputes, including those relating to tenure and use rights, to forest management practices and to work conditions.
Finding	<ul style="list-style-type: none"> <li>•Statutory law and regulations exist and persist with the enforcement of employment, labor, health and safety law. Related management systems, internal processes and company policies are reviewed as part of third party external audits.</li> <li>•The Employment Standards Administration of the US Department of Labor implements and enforces US labor law.</li> <li>•Federal laws specific to forestry occupations including logging, operation of sawmills.</li> <li>•Federal laws have been passed in the last half century that require attention to land tenure and use including the National Historic Preservation Act of 1966 and the National Environmental Policy Act of 1969</li> <li>•WGI indicates effective enforcement of laws in US</li> <li>•No adverse commentary during stakeholder consultation process.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•AHEC reports that: "Forest employment in the US is regulated under federal and state laws and codes, which prohibit child labor and are consistent with the ILO Fundamental Principles and Rights at work."</li> <li>•Federal laws in place regarding forestry occupations including logging, operation of sawmill, lath mill, shingle mill, or cooperage stock mill abide by (Order 4). [75 FR 28453, May 20,2010] .</li> <li>•Statutory law and regulations exist and persist with the enforcement of employment, labor, health and safety law. Related management systems, internal processes and company policies are reviewed as part of third party external audits.</li> <li>•Forest fire fighting and forest fire prevention occupations, timber tract occupations, forestry service occupations, logging occupations, and occupations in the operation of any sawmill, lath mill, shingle mill, or cooperage stock mill abide by (Order 4). [75 FR 28453, May 20, 2010]</li> <li>•The Fair Labor Standards Act (FLSA) establishes minimum wage, overtime pay, recordkeeping, and child labor standards affecting full-time and part-time workers in the private sector and in federal, state, and local governments.</li> <li>•The National Labor Relations Act</li> </ul>

	<ul style="list-style-type: none"> <li>•Two major federal laws have been passed in the last half century that limit the use of land significantly. These are the National Historic Preservation Act of 1966 (today embodied in 16 USC. 461 et seq.) and the National Environmental Policy Act of 1969 (42 USC. 4321 et seq.).</li> <li>•OSHA eTool: This eTool outlines the required and recommended work practices that may reduce logging hazards. Workers have a right to a safe workplace. The law requires employers to provide their employees with working conditions that are free of known dangers. The OSHA law also prohibits employers from retaliating against employees for exercising their rights under the law (including the right to raise a health and safety concern or report an injury). For more information see <a href="http://www.whistleblowers.gov">www.whistleblowers.gov</a> or worker rights. OSHA eTool</li> <li>•The federal government largely defers and relies on state governments to develop and implement standards for private lands and forest practices pursuant to federal law. As a general rule, land use and management tend to be under state and local jurisdiction. However, several important federal environmental laws have direct implications for forest management on private lands. They include: The Clean Water Act (CWA); the Endangered Species Act (ESA); the Clean Air Act (CAA); the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); and, the Coastal Zone Management Act (CZMA).</li> <li>•Survey of violations of trade union rights by the International Trade Union Congress ITUC</li> <li>•Though not ratified, the United States is in overall compliance with the ILO Convention 169, which addresses customs and beliefs, education and training, health services, land rights, social security, protection of language and culture, and pay and working conditions. For monitoring of non-compliance by the ILO, see the ILO NORMLEX database.</li> <li>•FSC Chain of Custody requires acknowledgements relating to health, safety and labour issues that are based on ILO Declaration on Fundamental Principles and Rights at Work, 1998.</li> <li>•DBI has written contractual requirements requiring compliance.</li> <li>•Stakeholder Consultation process</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
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2.7.1	The BP has implemented appropriate control systems and procedures for verifying that Freedom of Association and the effective recognition of the right to collective bargaining are respected.
Finding	<ul style="list-style-type: none"> <li>•All employees in the US are allowed to unionize and gather for collective bargaining. Unions exist across the US and have for quite some time signifying their ability to operate lawfully.</li> <li>•ITUC and IOE: The US and some employers have direct complaints cited but none are related to forestry or the forest industry.</li> <li>•The link below provides a list and explanations for the Major Laws of the Department of Labor <a href="https://www.dol.gov/general/aboutdol/majorlaws">https://www.dol.gov/general/aboutdol/majorlaws</a></li> <li>•No adverse commentary during stakeholder consultation process.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•Statutory labor and employment laws and regulations are protective of employees' rights, health and safety.</li> <li>•WGI indicates effective enforcement of laws in US</li> <li>•Risk management of business operations inherently drives compliance.</li> <li>•Equal Opportunity Employment Act – This act requires that Applicants to and employees of most private employers, state and local governments, educational institutions, employment agencies and labor organizations be protected under Federal law from discrimination.</li> <li>•The National Labor Relations Act - according to the National Relations Board this was enacted to protect the rights of employees and employers, to encourage collective bargaining, and to curtail certain private sector labor and management practices, which can harm the general welfare of workers, businesses and the US economy.</li> <li>•Drax's Chain of Custody Certifications require both internal and external auditing on the annual basis to assure standards are being met and our monitoring systems are working</li> <li>•FSC Chain of Custody requires acknowledgements relating to health, safety and labour issues that are based on ILO Declaration on Fundamental Principles and Rights at Work, 1998.</li> <li>•DBI operational control procedure "Know Your Vendor (KYV)" is conducted to ensure a supplier has not been in violation of the law.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
2.7.2	The BP has implemented appropriate control systems and procedures for verifying that feedstock is not supplied using any form of compulsory labour.
Finding	<ul style="list-style-type: none"> <li>•Sufficient laws and consequences exist in the US to deter forced labor from occurring.</li> <li>•WGI indicates effective enforcement of laws in US</li> <li>•The link below provides a list and explanations for the Major Laws of the Department of Labor <a href="https://www.dol.gov/general/aboutdol/majorlaws">https://www.dol.gov/general/aboutdol/majorlaws</a></li> <li>•No adverse commentary during stakeholder consultation process.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•Statutory labor and employment laws and regulations are protective of employees' rights, health and safety.</li> <li>•According to the 2010 US Department of Labor's List of Goods Produced by Child or Forced Labor, forced labor has been identified in the harvesting and production of timber in Brazil, Peru, and Myanmar (Burma).</li> <li>•18 US Code § 1589 - Forced labor: Whoever knowingly provides or obtain labor by force in the US is subject to be fined under this title, imprisoned not more than 20 years, or both.</li> <li>•Equal Opportunity Employment Act – This act requires that Applicants to and employees of most private employers, state and local governments, educational institutions, employment agencies and labor organizations be protected under Federal law from discrimination.</li> <li>•The National Labor Relations Act - according to the National Relations Board this was enacted to protect the rights of employees and employers, to encourage collective bargaining, and to curtail certain private sector labor and management practices, which can harm the general welfare of workers, businesses and the US economy.</li> <li>•The Migrant and Season Worker Protection Act has applied to forestry contract workers since 1987. The provisions provide protection for seasonal and migrant workers in the forestry sector conducting reforestation, pre-commercial thinning and other seasonal work, as well as vehicle safety, safe housing, disclosure of wages and hours and payroll record keeping. The US Department of Labor has conducted audits of reforestation contractors that serve in an independent contractor role. Landowners are required by DOL to ensure that contractors providing services are certified by the DOL and comply with the major provisions of MSPA</li> <li>•DBI has written contracts requiring compliance with legislation.</li> <li>•Drax's Chain of Custody Certifications require both internal and external auditing on an annual basis to assure standards are being met and our monitoring systems are working</li> <li>•DBI operational control procedure "Know Your Vendor (KYV)" is conducted to ensure a supplier has not been in violation of the law.</li> </ul>

Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.7.3</b>	The BP has implemented appropriate control systems and procedures to verify that feedstock is not supplied using child labour.
Finding	<ul style="list-style-type: none"> <li>•The FSC US Controlled Wood Risk Assessment (sections 1.12 and 2.2) has found that there is low risk in connection with child labor.</li> <li>•Strong and effective federal and state legislative controls are in place for this aspect in the wood procurement catchment.</li> <li>•WGI indicates effective enforcement of laws in US</li> <li>•The link below provides a list and explanations for the Major Laws of the Department of Labor <a href="https://www.dol.gov/general/aboutdol/majorlaws">https://www.dol.gov/general/aboutdol/majorlaws</a></li> <li>•The US has not ratified all the core ILO labor standards, however; there is sufficient evidence to suggest that the US does not violate key principles.</li> <li>•There is no evidence of child labor or violation of ILO Fundamental Principles and Rights at work taking place in region.</li> <li>•No adverse commentary during stakeholder consultation process.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•Global Child labor trends 2000 to 2004. ILO (International Labour Office). Statutory labor and employment laws and regulations are protective of employees' rights, health and safety.</li> <li>•The Fair Labor Standards Act (FLSA) sets wage, hours worked, and safety requirements for minors (individuals under age 18) working in jobs covered by the statute. The rules vary depending upon the particular age of the minor and the particular job involved. As a general rule, the FLSA sets 14 years of age as the minimum age for employment and limits the number of hours worked by minors under the age of 16. FLSA generally prohibits the employment of a minor in work declared hazardous by the Secretary of Labor (for example, work involving excavation, driving, and the operation of many types of power-driven equipment). The FLSA contains several requirements that apply only to particular types of jobs (for example, agricultural work or the operation of motor vehicles) and many exceptions to the general rules (for example, work by a minor for his or her parents).</li> </ul>

	<ul style="list-style-type: none"> <li>•Each state also has its own laws relating to employment, including the employment of minors. If state law and the FLSA overlap, the law which is more protective of the minor will apply.</li> <li>•The National Labor Relations Act - according to the National Relations Board this was enacted to protect the rights of employees and employers, to encourage collective bargaining, and to curtail certain private sector labor and management practices, which can harm the general welfare of workers, businesses and the US economy.</li> <li>•DBI has written contracts requiring compliance with legislation.</li> <li>•DBI operational control procedure "Know Your Vendor (KYV)" is conducted to ensure a supplier has not been in violation of the law.</li> <li>•FSC Chain of Custody requires acknowledgements relating to health, safety and labour issues that are based on ILO Declaration on Fundamental Principles and Rights at Work, 1998.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.7.4</b>	The BP has implemented appropriate control systems and procedures for verifying that feedstock is not supplied using labour which is discriminated against in respect of employment and occupation.
Finding	<ul style="list-style-type: none"> <li>•The FSC US Controlled Wood Risk Assessment (sections 1.12 and 2.2) has found that there is low risk in connection with discrimination.</li> <li>•Strong and effective legislation exists to prevent discrimination.</li> <li>•DBI employee handbook has EEO policies in place: EEO and Non-discrimination Statement, Anti-harassment Guidelines, Reasonable Accommodation</li> <li>•Even though the US has not ratified all the ILO conventions due to sovereignty concerns; US employers and laws comply with indicators and rule of law enforces.</li> <li>•No adverse commentary during stakeholder consultation process.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•The link below provides a list and explanations for the Major Laws of the Department of Labor <a href="https://www.dol.gov/general/aboutdol/majorlaws">https://www.dol.gov/general/aboutdol/majorlaws</a></li> </ul>



- The Age Discrimination in Employment Act (ADEA): prohibits employers from discriminating on the basis of age.
- Equal Opportunity Employment Act – This act requires that Applicants to and employees of most private employers, state and local governments, educational institutions, employment agencies and labor organizations be protected under Federal law from discrimination.
- Statutory labor and employment laws and regulations are protective of employees' rights, health and safety.
- Title VII of the Civil Rights Act of 1964: prohibits discrimination based on race, color, religion, sex or national origin
- The Pregnancy Discrimination Act: specifying that unlawful sex discrimination includes discrimination based on pregnancy, childbirth, and related medical conditions
- The Family and Medical Leave Act: sets requirements governing leave for pregnancy and pregnancy-related conditions
- The Rehabilitation Act of 1973: prohibits employment discrimination on the basis of disability
- The Bankruptcy Reform Act of 1978: prohibits employment discrimination on the basis of bankruptcy or bad debts.
- The Immigration Reform and Control Act of 1986: prohibits employers with more than three employees from discriminating against anyone (except an unauthorized immigrant) on the basis of national origin or citizenship status.
- The Americans with Disabilities Act of 1990 (ADA): enacted to eliminate discriminatory barriers against qualified individuals with disabilities, individuals with a record of a disability, or individuals who are regarded as having a disability.
- The Migrant and Seasonal Worker Protection Act has applied to forestry contract workers since 1987. The provisions provide protection for seasonal and migrant workers in the forestry sector conducting reforestation, pre-commercial thinning and other seasonal work, as well as vehicle safety, safe housing, disclosure of wages and hours and payroll record keeping. The US Department of Labor has conducted audits of reforestation contractors that serve in an independent contractor role. Landowners are required by DOL to ensure that contractors providing services are certified by the DOL and comply with the major provisions of MSPA
- Risk management of business operations inherently drives compliance. Related management systems, internal processes and company policies are reviewed as part of third party external audits.
- The National Labor Relations Act - according to the National Relations Board this was enacted to protect the rights of employees and employers, to encourage collective bargaining, and to curtail certain private sector labor and management practices, which can harm the general welfare of workers, businesses and the US economy.
- The link below provides a list and explanations for the Major Laws of the Department of Labor <https://www.dol.gov/general/aboutdol/majorlaws>
- DBI operational control procedure “Know Your Vendor (KYV)” is conducted to ensure a supplier has not been in violation of the law.

	<ul style="list-style-type: none"> <li>•DBI has written contracts requiring compliance with legislation.</li> <li>•HR materials</li> <li>•DBI employee handbook has EEO policies in place</li> <li>•FSC Chain of Custody requires acknowledgements relating to health, safety and labour issues that are based on ILO Declaration on Fundamental Principles and Rights at Work, 1998.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.7.5</b>	The BP has implemented appropriate control systems and procedures for verifying that feedstock is supplied using labour where the pay and employment conditions are fair and meet, or exceed, minimum requirements.
Finding	<ul style="list-style-type: none"> <li>•Strong and effective legislation exists to for this aspect.</li> <li>•WGI indicates effective enforcement of laws in US</li> <li>•Even though the US has not ratified all the ILO conventions due to sovereignty concerns; US employers and laws comply with indicators and rule of law enforces.</li> <li>•No adverse commentary during stakeholder consultation process</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•ITUC and IOE: The US and some employers have direct complaints cited but none are related to forestry or the forest industry</li> <li>•The link below provides a list and explanations for the Major Laws of the Department of Labor <a href="https://www.dol.gov/general/aboutdol/majorlaws">https://www.dol.gov/general/aboutdol/majorlaws</a></li> <li>•Statutory labor and employment laws and regulations are protective of employees' rights, health and safety.</li> <li>•The Fair Labor Standards Act (FLSA) is a federal law which establishes minimum wage, overtime pay eligibility, recordkeeping, and child labor standards affecting full-time and part-time workers in the private sector and in federal, state, and local governments.</li> <li>•The Equal Pay Act amended the Fair Labor Standards Act in 1963. The Equal Pay Act</li> </ul>

	<p>prohibits employers and unions from paying different wages based on sex.</p> <ul style="list-style-type: none"> <li>•The Migrant and Seasonal Worker Protection Act has applied to forestry contract workers since 1987. The provisions provide protection for seasonal and migrant workers in the forestry sector conducting reforestation, pre-commercial thinning and other seasonal work, as well as vehicle safety, safe housing, disclosure of wages and hours and payroll record keeping. The US Department of Labor has conducted audits of reforestation contractors that serve in an independent contractor role. Landowners are required by DOL to ensure that contractors providing services are certified by the DOL and comply with the major provisions of MSPA</li> <li>•Equal Opportunity Employment Act – This act requires that Applicants to and employees of most private employers, state and local governments, educational institutions, employment agencies and labor organizations be protected under Federal law from discrimination.</li> <li>•The National Labor Relations Act - according to the National Relations Board this was enacted to protect the rights of employees and employers, to encourage collective bargaining, and to curtail certain private sector labor and management practices, which can harm the general welfare of workers, businesses and the US economy.</li> <li>•The link below provides a list and explanations for the Major Laws of the Department of Labor <a href="https://www.dol.gov/general/aboutdol/majorlaws">https://www.dol.gov/general/aboutdol/majorlaws</a></li> <li>•DBI has written contracts requiring compliance with legislation.</li> <li>•Risk management of business operations inherently drives compliance.</li> <li>•DBI operational control procedure “Know Your Vendor (KYV)” is conducted to ensure a supplier has not been in violation of the law.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.8.1</b>	The BP has implemented appropriate control systems and procedures for verifying that appropriate safeguards are put in place to protect the health and safety of forest workers (CPET S12).
Finding	<ul style="list-style-type: none"> <li>•The FSC US Controlled Wood Risk Assessment has found that there is a low risk in respect of Health and safety (section 1.11)</li> </ul>

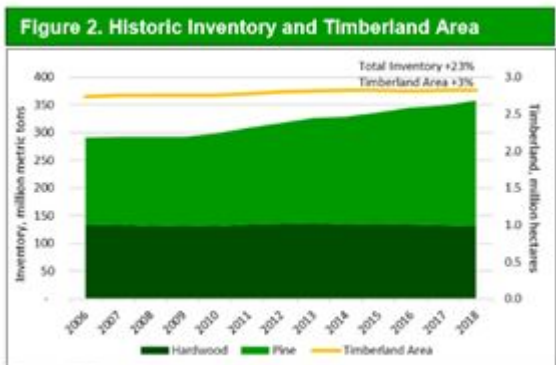
	<ul style="list-style-type: none"> <li>•Laws and regulations exist to establish and govern minimum standards and establish safe conditions for employees.</li> <li>•WGI indicates effective enforcement of laws in US</li> <li>•The United States has in place Federal legislation regulating employers' responsibilities for worker health and safety – Occupational Safety and Health Act (OSHA) of 1970. Within this Act there are logging-specific regulations: OSHA 1910.266</li> <li>•Each of the States that DBI operates in have additional departments, legislation, and regulation regarding worker safety and health.</li> <li>•Forest safety and health are a primary focus of state level logger training programs jointly administered by forestry agencies, forestry associations, and SFI.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•The link below provides a list and explanations for the Major Laws of the Department of Labor <a href="https://www.dol.gov/general/aboutdol/majorlaws">https://www.dol.gov/general/aboutdol/majorlaws</a></li> <li>•State level logger training programs focus on safety and forest health. Arkansas Pro Logger, Texas Master Logger, Mississippi Pro Logging Manager and Louisiana Master Logger curriculums promote health and safety of forest workers by providing OSHA training. There are High levels of trained loggers due to market requirements.</li> <li>oLink to Logger Training Report</li> <li>•The United States has in place Federal legislation regulating employers' responsibilities for worker health and safety – Occupational Safety and Health Act (OSHA) of 1970. Within this Act there are logging-specific regulations: OSHA 1910.266</li> <li>•OSHA eTool: This eTool outlines the required and recommended work practices that may reduce logging hazards. Workers have a right to a safe workplace. The law requires employers to provide their employees with working conditions that are free of known dangers. The OSHA law also prohibits employers from retaliating against employees for exercising their rights under the law (including the right to raise a health and safety concern or report an injury). For more information see <a href="http://www.whistleblowers.gov">www.whistleblowers.gov</a> for worker rights.</li> <li>•Each state has an active OSHA plan - <a href="https://www.osha.gov/stateplans">https://www.osha.gov/stateplans</a></li> <li>•The Migrant and Seasonal Worker Protection Act has applied to forestry contract workers since 1987. The provisions provide protection for seasonal and migrant workers in the forestry sector conducting reforestation, pre-commercial thinning and other seasonal work, as well as vehicle safety, safe housing, disclosure of wages and hours and payroll record keeping. The US Department of Labor has conducted audits of reforestation contractors that serve in an independent contractor role. Landowners are required by DOL to ensure that contractors providing services are certified by the DOL and comply with the major provisions of MSPA</li> <li>•Each of the States that DBI operates in have additional departments, legislation, and regulation regarding worker safety and health: Louisiana Workforce Commission, Texas Workforce Commission (TWC), AL Dept of Labor, MS Dept of Employment Security (defers to OSHA) and the Arkansas Dept of Labor.</li> <li>•Fiber Purchase Agreement: Compliance with Laws, Forestry Practices and Safety Rules. Suppliers are signatory.</li> </ul>

	<ul style="list-style-type: none"> <li>•Drax Biomass has signed the FSC Evaluation of the organization's commitment to FSC values and occupational health and safety in the Chain of Custody FSC-PRO-20-001 V1-0 EN regarding FSC values and occupational health and safety.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None

	Indicator
<b>2.9.1</b>	Feedstock is not sourced from areas that had high carbon stocks in January 2008 and no longer have those high carbon stocks.
Finding	<ul style="list-style-type: none"> <li>•FSC Controlled Wood National Risk Assessment does not identify conversion to non-forest as a risk in DBI's sourcing area.</li> <li>•SBP highlights wetlands and peatlands as sources of high carbon stock that should not be either drained or converted. Wetlands are defined by SBP as "Land that is covered with or saturated by water, permanently or for a significant part of the year". Peatlands are specific type of wetland ecosystem where continuous soil saturation leads to anaerobic conditions where organic matter is accumulated faster than it can be decomposed.</li> <li>oWetlands with high peat concentration are not a feature of concern on the landscape from which DBI sources.</li> <li>oWetlands with shorter periods of saturation can and do support a component of SYP. However, the risk of sourcing from areas which have been "drained or converted as of January 2008" is negligible due to CWA restrictions.</li> <li>•With the exception of a few protected areas, forests of the southern US have all been harvested at least once, often multiple times, reducing the risk of encountering high carbon forests.</li> <li>•There is a positive growth to drain ratio in the region, demonstrating the maintenance of forest carbon stocks on the landscape.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>•Section 404 of the CWA addresses the discharge of dredge and fill into waterways. There is an exemption for on-going silviculture practices, however, the Recapture Provision does not allow conversion of wetland forest to upland. See exemption to the CWA section 404 (f), Recapture Provision "Recapture Provision. Section 404(f) exemptions DO NOT APPLY where any discharge of dredged and/or fill material into "waters of the US", including wetlands, IF 1] the activity would convert an area of</li> </ul>

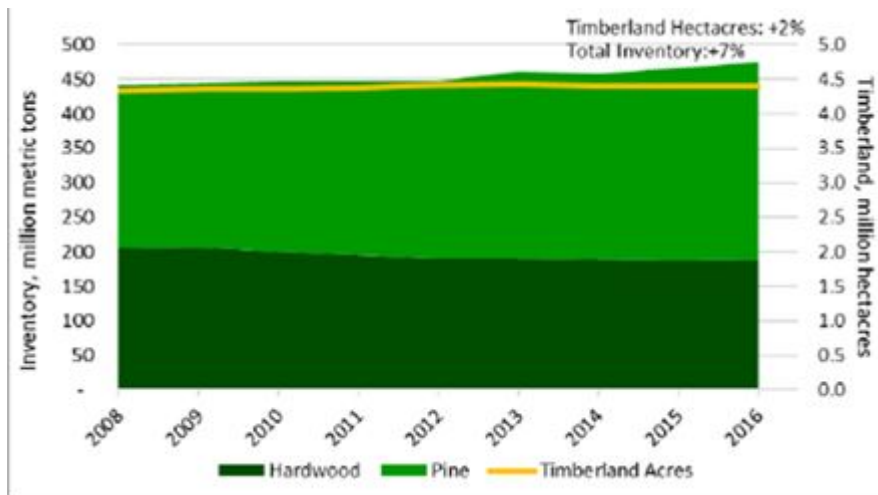
	<p>waters of the US into a new use (e.g. wetland to upland, wetland to open water, etc.).</p> <p>oAccording to a report commissioned by the American Hardwood Council in 2017 titled Assessment of Lawful Harvesting and Sustainability of US Hardwood Exports, “Available data suggest that CWA404 violations are aggressively prosecuted by the regulatory agencies. According to the Corps of Engineers, about 6,000 alleged violations of the Clean Water Act that falls under the Corps' jurisdiction are processed in district offices each year. Of these, over 60 percent relate to Section 404 permitting (although only a very small number involve silvicultural activities in wetlands).63 Corps of Engineers. See overview at: <a href="http://www.usace.army.mil/cw/cecwo/reg/oceover.htm">http://www.usace.army.mil/cw/cecwo/reg/oceover.htm</a>.” Link to report:<a href="https://www.americanhardwood.org/index.php/en/latest/news/seneca-creek-study">https://www.americanhardwood.org/index.php/en/latest/news/seneca-creek-study</a></p> <ul style="list-style-type: none"> <li>•The Southern Forests Futures Project states “Landowners have harvested timber from southern forests for more than 300 years since European settlement, and most forests have been harvested multiple times.” <a href="https://www.srs.fs.fed.us/pubs/gtr/gtr_srs168.pdf">https://www.srs.fs.fed.us/pubs/gtr/gtr_srs168.pdf</a></li> <li>•There are no “Intact Forest Landscapes” (collaborative effort including among others Greenpeace, WRI, WWF) <a href="http://www.intactforests.org/world.webmap.html">http://www.intactforests.org/world.webmap.html</a></li> <li>•There are no High Biodiversity Wilderness Areas per Conservation International <a href="https://www.worldheritagesite.org/connection/High-Biodiversity+Wilderness+Area">https://www.worldheritagesite.org/connection/High-Biodiversity+Wilderness+Area</a></li> <li>•There are no regions identified by the World Resources Institute as a Frontier Forest <a href="https://databasin.org/datasets/303c7eaabda34c5881553d29cfb01015">https://databasin.org/datasets/303c7eaabda34c5881553d29cfb01015</a></li> <li>•DBI’s primary feedstock is southern yellow pine (SYP) grown on 25-30 year rotations, further reducing the risk of sourcing from “high carbon stock” forests (evidenced by internal transactional records and Fiber Purchase Agreement)</li> <li>•FSC Controlled Wood National Risk Assessment does not identify conversion to non-forest as a risk in DBI’s sourcing area and DBI assessment, which includes consideration of WWF ecoregions, concurs (see Indicator 2.1.3 for detailed review).</li> <li>•Compliance with Best Management Practices ensures that areas with particular carbon sensitivities (stream sides and associated riparian habitats, and older trees) are subject to effective controls – According to F2M, states with robust harvest activity tend to have higher BMP compliance rates (i.e. MS 91%, LA 96%) F2M Blog</li> <li>•DBI’s procurement procedures collect information on forest type. Despite sourcing primarily second growth southern yellow pine, harvests from forests identified as hardwood or hardwood/pine are evaluated to assure there will be no conversion out of high carbon stock hardwood forests.</li> <li>•DBI has contracted with NatureServe to develop a tool to help identify areas converted from hardwood into planted pine forests. This tool is still under development, but it will be useful to evaluate the history of pine stands planted in 2008 which are now nearing thinning age thinning age.</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk

Comment or Mitigation Measure	None
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	Indicator
2.9.2	Analysis demonstrates that feedstock harvesting does not diminish the capability of the forest to act as an effective sink or store of carbon over the long term.
Finding	<ul style="list-style-type: none"> <li>•The US and the US South has a 60 plus year history of both increasing production of forest products and an increasing forest inventory resulting in increasing carbon stocks (USDA Forest Service).</li> <li>•Studies investigating the response of soil carbon to harvesting and biomass removal demonstrate little, if any, change in mineral soil carbon and changes in surface carbon are variable.</li> <li>•Recent catchment area analysis demonstrates that forest inventories continue to grow after the DBI plants were in full production.</li> <li>•Historic records and forest modelling, which includes the effects of market demand, indicate a positive relationship between forest markets and forest growth.</li> </ul>
Means of Verification	<ul style="list-style-type: none"> <li>• FIA data indicated carbon stocks are maintained in DBI's sourcing area.</li> </ul> <p>Morehouse Bioenergy Primary Catchment area:</p>  <p>Source: US Forest Service</p> <p>Amite Bioenergy primary catchment area:</p>



LaSalle Bioenergy primary catchment area:



Arkansas Bioenergy – Leola primary catchment area



Arkansas Bioenergy – Russellville primary catchment area





- Growth to Drain data also supports a maintenance of carbon stock on the landscape:

*Amite BioEnergy Catchment Area - Annual Growth, Removals, & Growth-to-Removal Ratios by Major Timber Product (2017)*

Softwood (Pine)	Growth (million ft <sup>3</sup> )	Removals (million ft <sup>3</sup> )	G:R Ratio
Pine Pulpwood	53.7	29.9	1.80
Pine Chip-n-saw	43.6	17.4	2.50
Pine Sawtimber	45.9	23.4	1.96
<b>Softwood (Pine) Total</b>	<b>143.2</b>	<b>70.7</b>	<b>2.02</b>

Hardwood	Growth (million ft <sup>3</sup> )	Removals (million ft <sup>3</sup> )	G:R Ratio
Hardwood Pulpwood	18.0	3.4	5.32
Hardwood Sawtimber	19.2	11.0	1.74
<b>Hardwood Total</b>	<b>37.2</b>	<b>14.4</b>	<b>2.58</b>

Product	Growth (million ft <sup>3</sup> )	Removals (million ft <sup>3</sup> )	G:R Ratio
Pulpwood	71.7	33.3	2.16
Sawtimber	108.7	51.9	2.10
<b>Total</b>	<b>180.4</b>	<b>85.1</b>	<b>2.12</b>

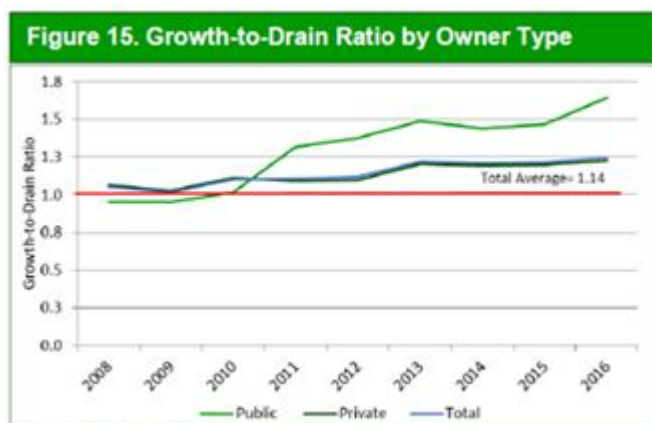
Source: USDA - US Forest Service

Morehouse Bioenergy catchment



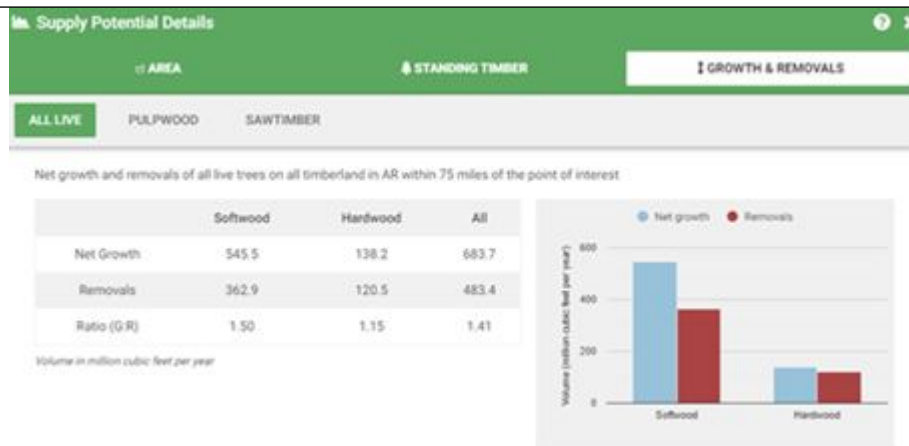
Source: US Forest Service

LaSalle Bioenergy catchment

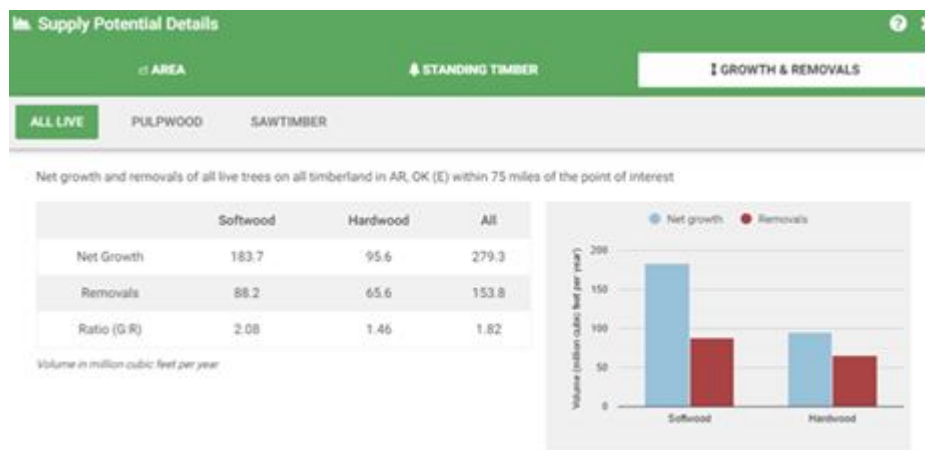


Source: US Forest Service

Arkansas Bioenergy - Leola catchment (analysis and table produced by Southern Group of State Foresters Timber Analysis tool: [byhttps://texasforestinfo.tamu.edu/tsa/](https://texasforestinfo.tamu.edu/tsa/) )



Arkansas Bioenergy - Russellville catchment (analysis and table produced by Southern Group of State Foresters Timber Analysis tool: [byhttps://texasforestinfo.tamu.edu/tsa/](https://texasforestinfo.tamu.edu/tsa/) )



Southern Forest Futures reports that: after accounting for harvests, forest growth, land use, and climate change, the total carbon pool represented by the South's forests is forecasted to increase slightly from 2010 to 2020/2030 and then decline, primarily due to urban encroachment. <https://www.srs.fs.fed.us/futures/summary-report/>

- A study by Richter et al. found that forests increased the carbon in the top mineral soils of previously cropped land - Richter, D., Markewitz, D., Trumbore, S. et al. Rapid accumulation and turnover of soil carbon in a re-establishing forest. Nature 400, 56–58 (1999). Forests are important to rebuilding soils on previously cropped lands. Much of the southeastern US has been cleared for agriculture at some point and most of the managed pine forests are found on previously cropped soils. The choice to maintain land in forest or convert from agriculture to forestry is influenced by the availability of markets for forest products. In this sense, the biomass market, which utilizes low-value fiber, can be considered to help incentivise landowners to manage forests important to building and maintaining soil which will help rebuild soil carbon and, potentially, help reduce the chances of conversion into cropland which causes significant soil C losses. <https://www.sciencedirect.com/science/article/abs/pii/S0378112700002826>

- Several studies have investigated the response of soil carbon to harvesting and biomass removal. In most instances there is little, if any, change in mineral soil carbon. Changes in surface carbon are variable, with harvest often increasing carbon in the top organic layer initially, and differing (experimental) levels of residual biomass removal levels being reflected in changing carbon content of surface soil layers. These findings also demonstrate that there are several variables at

play including climate and decomposition rates. See Indicator 2.2.2 for list of applicable references.

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•Johnson, Dale and Curtis, Peter. (2001). Johnson DW, Curtis PS.. Effects of forest management on soil C and N storage: meta analysis. *Forest Ecol Manag* 140: 227-238. *Forest Ecology and Management*. 140. 227-238. 10.1016/S0378-1127(00)00282-6. [https://www.researchgate.net/publication/222680961\\_Johnson\\_DW\\_Curtis\\_PS\\_Effects\\_of\\_forest\\_management\\_on\\_soil\\_C\\_and\\_N\\_storage\\_meta\\_analysis\\_Forest\\_Ecol\\_Manag\\_140\\_227-238/citation/download](https://www.researchgate.net/publication/222680961_Johnson_DW_Curtis_PS_Effects_of_forest_management_on_soil_C_and_N_storage_meta_analysis_Forest_Ecol_Manag_140_227-238/citation/download)

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•F2M's Historical Perspective on the Relationship between Demand and Forest Productivity in the US South

•Decline in the pulp and paper industry: Effects on backward linked forest industries and local economies, USDA

	<ul style="list-style-type: none"> <li>•Market Response Article, Karen Apt, USDA</li> </ul>
Evidence Reviewed	<ul style="list-style-type: none"> <li>• All means of verification reviewed</li> </ul>
Risk Rating	Low Risk
Comment or Mitigation Measure	None