

# Application for Listing: Bluesource – Edge of Appalachia Improved Forest Management Project

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## Part I. Entity Submitting Report

This form being submitted by the contact person for the Offset Project Operator (OPO).

## Part II. Offset Project Information

Project Name: Bluesource – Edge of Appalachia Improved Forest Management Project

City: West Union

State: Ohio

Zip: 45693

Registry: American Carbon Registry

Compliance Offset Protocol: U.S. Forest Projects

Version: June 25, 2015

Start Date: 11/06/2018

Reporting Period End Date: 5/05/2019

Crediting Period: 11/06/2018 to 11/05/2043

The commencement date is signified by the submittal of the project listing form to ACR. Per page 81 of the ARB 2015 Compliance Offset Protocol for U.S. Forest Projects, an IFM project's commencement date can be signified by the submittal of the project's listing information.

The reporting period end date is expected to be 6 months from project commencement.

## Part III. OPO/APD Information

### Offset Project Operator

OPO Name: The Nature Conservancy

CITSS ID#: CA1571

Mailing Address: 4254 North Fairfax Drive, Suite 100, Arlington, VA

Contact Person: Martin McAllister

Phone Number: 937-544-2188 ex.13

Email: [martin.mcallister@tnc.org](mailto:martin.mcallister@tnc.org)

### Authorized Project Designee

None

## Part IV. Land Ownership

1. **Whether the Offset Project Operator is the owner in fee for the project area. Yes**
  - a. **If yes, provide documentation (e.g. deed of trust, title report) showing the Offset Project Operator's ownership interest in the property and its interest in the trees and standing timber on the property.**

Please see provided deeds.
  - b. **Are there other forest owners including in fee as well as third parties with existing property interests within the project area that may have an effect on the trees and standing timber located in the project area or parties with a material interest in the real property in the forest project?**

No.
2. **A description of forestland and resource ownership for the real property within the project area.**

The property is owned by The Nature Conservancy.

3. **Offset project type (reforestation, improved forest management, or avoided conversion).**  
Improved Forest Management
4. **A description of the management activities that will lead to increased carbon stocks in the Project Area, compared to the baseline.**

**Project Activities:** All forest management activities on the project area are intended to meet or surpass all Best Management Practices (BMPs) and/ or Forest Practices Acts (FPAs). The harvest plans for the property are limited to a small amount of harvesting for the purposes of restoring age and diameter classes. As stocking shifts to a more ideal age and diameter distribution, carbon levels maintained across the property will increase.

**Baseline Activities:** Baseline harvesting activities would include meeting Ohio DNR's Best Management Practices (BMPs). Outside of these constraints, all hardwood stands could be managed aggressively, mimicking past management activities (see section 8c) and harvesting at or above annual growth. Overall, despite the constraints of Ohio BMP's, the project activities will lead to an increased carbon stock as compared to the baseline.

5. **Indicate if the offset project occurs on public or private lands, and further specify if the offset project occurs on any of the following categories of land:**  
Private Lands

- a. **Land that is owned by, or subject to an ownership or possessory interest of a Tribe; No**
- b. **Land that is "Indian lands" of a Tribe, as defined by 25 U.S.C. §81(a)(1); or No**
- c. **Land that is owned by any person, entity, or Tribe, within the external borders of such Indian lands. No**

## Part V. Offset Project Area

1. **Governing jurisdictions, and latitude/longitude coordinates**

Governing Jurisdiction: Adams County, Ohio  
Latitude/ Longitude: 38.82'N -83.44'W

2. **Existing land cover and land use**

Land Cover: Northern hardwoods/mixed conifer forestland  
Land Use: Commercial timber production

All non-forested acres will be removed from the project to a 2.5-acre minimum mapping unit.

3. **Forest vegetation types**

The project area is predominantly northern/upland hardwoods, oak-hickory, and mixed conifer forest types.

4. **Site classes**

Overall, the property has approximately 1.5% acres in high site class with the remained in all or low site classes as the annual forest productivity < 84 cubic feet/ acre. Site class will be determined using NRCS soil data and the associated NRCS Forestland Productivity reports.

## 5. Land pressures and climate zone/classification

The primary land pressure is intensive forestry operations and agriculture/cattle rearing.

**Climactic Zones:** The climate of southern Ohio is classified as humid continental with cold winters and warm, moist summers (Lucht and Brown, 1994). In winter, the average daily temperature is approximately 32 F. In summer the average daily temperature is 72 F degrees. Extremes in temperature range from -25F to +105F. Average annual precipitation is about 41 inches. Average annual snowfall is 22 inches, although it rarely accumulates to any degree. Adams County has a southwesterly prevailing wind with the highest average windspeed of 11 MPH, although seasonal storm events can see sustained winds up to 25 MPH and gusts of 40 MPH, or potentially more. These events typically fall in the spring month and can sometimes develop into tornadoes. These high wind events are another source of forest disturbance which aids in the creation of overstory gaps.

## 6. Historical land uses, current zoning, and projected land use within project area and surrounding areas

Historically, the bulk of the preserve system was utilized for timber harvesting, haying, cattle rearing, and residential purposes. Some parcels were heavily logged resulting in significant loss of desirable overstory hardwoods such as hickory, black cherry, walnut and oaks (see 'EoAManagementPlans.docx' for more detail). Over the past 150 years, the primary use of land within the preserve area has been that of subsistence farming, industrial iron, and charcoal production.

All lands within Adams County occur within the Virginia Military District, where property lines are defined by meets and bounds. This differs from regular boundary delineation practices, giving rise to disputes on confirmation of parcel boundaries.

## 7. Project Area Assessment Areas

Supersection	Assessment Area	Site Class	Acres
Southern Allegheny Plateau	Lowland Hardwoods	All	12.2
	Mixed Pine-Hardwoods	All	22.3
	Oak-Hickory	High	20.7
		Low	1,095.7
	Upland Hardwoods	High	94.3
		Low	4,987.9
Central Interior Broadleaf Forest Eastern Low Plateau	Lowland Hardwoods	All	681.3
	Mixed Upland Hardwoods	High	83.4
	Lowland Hardwoods	Low	4,410.8
	Oak-Hickory	High	36.0
		Low	1,902.5
	Oak-Pine	All	77.7
	Pine	All	2,049.5
TOTAL			15,474.4

## 8. General description of the forest conditions within the Project Area:

### a. Species (tree) composition;

This project meets the natural forest management eligibility requirement of at least 95% native species based on the sum of the carbon in standing live tree carbon stocks, as 100% of the species in the inventory are native.

Species	Frequency (%)
Yellow-poplar	11%
Eastern Redcedar	11%
Red Maple	11%
Sugar Maple	11%
Chestnut Oak	9%
White Oak	7%
Ash species	6%
Hickory species	5%
Northern Red Oak	4%
Sassafrass	3%
Black Oak	2%
American Beech	2%
Chinquapin Oak	2%
Other	17%

**b. Age class distribution;**

Age	Acres	%
<10	920	7.0%
11-20	230	1.7%
21-30	407	3.1%
31-40	230	1.7%
41-50	212	1.6%
51-60	478	3.6%
61-70	620	4.7%
71-80	513	3.9%
81-90	726	5.5%
91-100	620	4.7%
>100	8,214	62.4%

**c. Management history;**

Considering past use of the land in farming, cattle rearing and residential purposes, the region has been managed for timber and fuel with an aggressive harvest plan.

**9. Indicate whether the project will employ a Qualified Conservation Easement.**

No.

## Part VI. Offset Project Eligibility

1. A statement as to whether any GHG reductions or GHG removal enhancements associated with the Project Lands have ever been listed or registered with, or otherwise claimed by, another registry or program, or sold to a third party prior to listing, including:
  - a. Have any lands within the Project Area ever been listed or registered with an offset project registry or program in the past?
  - b. Have greenhouse gas emission reductions or removal enhancements associated with lands within the Project Area been credited or claimed for the purpose of greenhouse gas mitigation or reduction goals, whether in a voluntary or regulatory context?
  - c. If yes, identify the registry or program (include vintages and reporting period).

None of the Project Lands have ever been listed, registered with, or otherwise claimed by, another registry or program. No greenhouse gas emission reductions or removal enhancements associated with lands within the Project Area have ever been credited or claimed for the purpose of greenhouse gas mitigation or reduction goals, whether in a voluntary or regulatory context.

2. A statement as to whether the project is being implemented and conducted as the result of any law, statute, regulation, court order, or other legally binding mandate? If yes, explain.

The project is not being implemented and conducted as the result of any law, statute, regulation, court order, or other legally binding mandate.

3. Declaration that the offset project does *not* employ broadcast fertilization.

The offset project does not employ broadcast fertilization.

4. If the Forest Project is located on public land, a description and copies of the documentation demonstrating explicit approval of the offset project's management activities and baseline including any public vetting processes necessary to evaluate management and policy decisions concerning the offset project.

This project does not occur on public lands, so therefore this section is not applicable.

5. If the Forest Project is located on the following categories of land, a description and copies of documentation demonstrating that the land within the Project Area is owned by a tribe or private entities:

This project does not occur on tribal lands, so therefore this section is not applicable.

6. If commercial harvesting is either planned or ongoing within the Project Area, a description of how the Forest Owner satisfies one of the three requirements for employing and demonstrating sustainable long-term harvesting practices on all of its forest landholdings.

☐ Not applicable; no commercial harvesting is occurring within the Project Area.

☒ Third party certification under the Forest Stewardship Council, Sustainable Forestry Initiative, or Tree Farm System, whose certification standards require adherence to and verification of harvest levels which can be permanently sustained over time.

☐ Adherence to a renewable long-term management plan that demonstrates harvest levels which can be permanently sustained over time and that is sanctioned and monitored by a state or federal agency.

- ☐ Employ uneven-aged silvicultural practices and maintain canopy retention averaging at least 40% across the forest, as measured on any 20 acres within the entire forestland owned by the Forest Owner, including land within and outside of the Project Area (areas impacted by Significant Disturbance may be excluded from this test).

**7. A description of how the offset project meets (or will meet) the definition of “Natural Forest Management”, including:**

**a. Composition of native species;**

The project area naturally consists of a mixed species distribution where no single species’ prevalence (as shown in Part V. Section 8.a. in this listing document), measured as the percent of basal area of all live trees in the Project Area, exceeds the percentage value of standing live carbon shown under the heading ‘Species Diversity Index’ in the Assessment Area Data File.

Supersection	Assessment Area	Site Class	Threshold
Southern Allegheny Plateau	Lowland Hardwoods	All	60%
	Mixed Pine-Hardwoods	All	65%
	Oak-Hickory	High	70%
		Low	70%
	Upland Hardwoods	High	65%
		Low	65%
Central Interior Broadleaf Forest Eastern Low Plateau	Lowland Hardwoods	All	60%
	Mixed Upland Hardwoods	High	70%
		Low	70%
	Oak-Hickory	High	70%
		Low	70%
	Oak-Pine	All	70%
	Pine	All	75%

**b. Distribution of age classes / sustainable management;**

Across the project area, 100% of the project’s forestlands are currently maintained in age classes exceeding 20 years old.

**c. Structural elements (standing and lying dead wood);**

Live C	Dead C	% Standing Dead
35.62	0.20	1%

The quantity of lying dead wood is commensurate with recruitment from standing dead trees and lying dead trees, which are never removed from the project area. The project is working towards an average of 1 metric ton carbon/acre, which is greater than the requirement of 1% standing live C stocks.

**8. All listing information that reference carbon stocks must be submitted with the oversight of a Professional Forester.**

Name of Forester: Brian Kleinhenz

## Part VII. Carbon Stock Inventory

### IFM-1 Standing Live

All live trees will be recorded for species, DBH (to nearest 0.1 inch), % missing/rotten wood (using procedure outlined below), structural loss and decay class (using the Harmon et al. 2011 classification system). If a tree will be snapped, the height as the tree originally stood, as well as the height in the tree's current condition (in feet), will be recorded.

Total height will be measured to the nearest foot for all trees sampled on every plot. Total heights will be recorded for each tree; however, in the instances where heights could not be recorded due to landscape limitations, the missing heights will be regressed by species using all measured total heights.

Missing and cull deductions will be calculated by dividing each damaged tree into thirds (considering the height of the tree as it originally stood, based on the height of similar nearby trees) and estimating the percentage that will be missing or rotten in each third. This percentage figure will be then multiplied by the approximate percentage of tree biomass found in each third of a typical tree (65% in the bottom third, 25% is in the middle third, and 10% is in the top third according to CAR's FPP 3.3 Quantification Guidance document) to get the total deduction percentage.

Additional detail on the measurement of standing live can be found in the Inventory Methodology below.

Biomass will be computed using the component ratio method and coefficients following the procedures and equations outlined in "The Forest Inventory and Analysis Database: Database Description and User's Manual Version 4.0 for Phase 2," and as specifically described in Appendix J Tables 1 through 4. As stated in the June 2015 protocol, biomass equations for the Midwest region directly estimate biomass and carbon and do not require tree volume to be computed prior to converting to biomass and carbon mass estimates.

The belowground portion of live and dead trees is calculated using the method outlined by Cairns, Brown, Helmer, & Baumgardner (1997) at the plot level.

	Weighted Average tCO <sub>2</sub> e/acre	Total tCO <sub>2</sub> e
Start Date Estimate	130.61	2,021,099

Projected Growth: The Central States (CS) Variant of the Forest Vegetation Simulator (Keyser 2010) will be used to model forest growth, mortality and harvest over 100 years. Plot data will be entered into a database readable by FVS, with each plot entered as an individual stand and each tree record multiplied by the appropriate factor to determine trees per acre. After entry into FVS, the "forest" will be grown 100 years and the resulting tree list used to calculate biomass.

In cases where species are not included in biomass equations required by ARB, substitutions will be made based on Forest Inventory and Analysis (FIA) guidance provided by ARB.

Site index will be determined cores collected during the inventory.

Adjustments for Reporting Period Calculations: To determine CO<sub>2</sub> stocks at the end of the reporting period, all trees will be grown forward to the reporting period end date set at the appropriate seasonal rate based on FVS predicted diameter growth rates for each tree (the same method used for the start date calculations). In addition, the mortality that occurred between the inventory and the reporting period will be simulated by decreasing or increasing the trees per acre for each tree record at the appropriate rate based on the FVS predicted mortality rate for each tree. All plots harvested during the reporting period will be re-inventoried so that all harvested trees will be removed from the inventory for the reporting period calculations.

### IFM-3 Standing Dead

All standing dead trees of  $\geq 5$  DBH and  $\geq 15'$  of height will be recorded for species (if possible), height as the tree originally stood, height in the tree's current condition (in feet), DBH (to nearest 0.1 inch), % missing/rotten wood (using procedure outlined above), and decay class (using the Harmon et al. 2011 classification system).

Standing dead wood carbon will be calculated by estimating above and below ground biomass in the same manner it will be for live trees and then converting this figure to CO<sub>2</sub>e. Harmon et al. 2011 will be used to apply Structural Loss Adjustments and Density Reduction Factors for standing dead trees.

The estimates of standing dead wood will be calculated on a per acre basis for each stratum. A project-wide estimate of standing dead wood is calculated using a weighted average with weights assigned based on stratum size.

Estimates of standing dead will be updated in the project scenario every time new inventory data is collected. For the baseline, standing dead is projected to remain constant over the 100 year baseline.

	Weighted Average tCO <sub>2</sub> e/acre	Total tCO <sub>2</sub> e
Start Date Estimate	0.73	11,349

### IFM-6 Soil (if applicable)

Excluded.

### IFM-7 Carbon in in-use forest products

Carbon in in-use forest products will be calculated based on standing tree inventory data. No specific inventory processes apply.

Wood products calculations will be completed using an excel model based on the ACR Forest Project Calculation worksheet. (Provided separately for verification purposes.)

A default regional value will be used for mill efficiency and product mix based on weighted average of relative acreage.

### End of Reporting Period Estimate

Project Harvested Wood Products Summary	Total (tCO <sub>2</sub> e)	tCO <sub>2</sub> e / acre
Total Harvested Wood Products	0	0
Long-term storage in in-use wood products	0	0

### IFM-8 Forest product carbon in landfills

Forest product carbon in landfills will be calculated based on standing tree inventory data. No specific inventory processes apply. Forest product carbon in landfills will be calculated in accordance with the procedures described per Appendix C of the Forest Protocol.

### End of Reporting Period Estimate

Project Harvested Wood Products Summary	Total (tCO <sub>2</sub> e)	tCO <sub>2</sub> e / acre
Long-term storage in wood products in landfills	0	0

### IFM- 9 Biological emissions from site preparation

NA

#### IFM-14 Biological emissions/removals from change in harvesting on forestland outside the Project Area

NA

#### IFM-17 Biological emissions from decomposition of forest products

Biological emissions from decomposition of forest products will be calculated based on standing tree inventory data. No specific inventory processes apply. Biological emissions from decomposition of forest products will be quantified as a component of carbon stored in in-use forest products (IFM-7) and landfills (IFM-8).

#### Inventory Methodology

For all applicable carbon pools, the following inventory methodology will be employed:

Project Boundary: The offset Project Area will be determined using the most recent geospatial file of the of the property. All roads, right-of-ways, major water bodies, and other non-forested areas will be removed from the Project Area. Some forested areas may be removed due to management considerations.

Plot Number and Locations: A systematic grid of permanent inventory plots will be installed across the project area. Using the Fishnet tool in ArcGIS, plots will be selected across the entire project area, placed the plots at least 74.4 feet apart, ensuring no overlapping plot boundaries.

Monumentation: Permanent inventory plot centers will be monumented with a rebar pole pounded into the ground and topped with a small rebar cap flush with the ground.

Sampling Method: Permanent, fixed-radius plots will be established across the property to facilitate precise tracking of individual tree growth and ease of verification. At each plot location, a 1/15th-acre (30.4' radius) fixed-radius plot will be established to measure all trees greater than or equal to 5.0" in diameter at breast height (DBH); and a 1/100th-acre (11.8' radius) sub-plot will be taken to capture woody trees and saplings less than 5" (1.0 to 4.9" DBH). This plot design gave forest managers the opportunity to consistently track the growth and development of specific trees over an extended timeline and will allow for improved ease of plot location during field work and site verifications.

The protocol defines trees as "A woody perennial plant, typically large and with a well-defined stem or stems carrying a more or less definite crown with the capacity to attain a minimum diameter at breast height of 5 inches and a minimum height of 15 feet with no branches within 3 feet from the ground at maturity." As a result, please measure all species  $\geq 1$ " DBH that meet this definition (a master list of FIA species coeds for trees found on the property can be found on the final page of this document).

Statistical Standard: Mean biomass estimates (e.g. above ground carbon per acre) for the ownership will be reported with a minimum statistical precision of  $\pm 5\%$  of the mean at the 95% confidence level. These objectives may be adjusted for more or less precision based on a property-specific analysis of data collection cost relative to return.

Sampling Frequency: Full project-level inventories of the carbon project will be conducted at 6-12 year intervals. Inventories of select portions of the Project Area will be updated periodically in response to natural disturbance or significant forest management activities. Traditional pre-and post-harvest monitoring techniques will be employed to inform land managers of potential needs to implement a more comprehensive monitoring of carbon pools (refer to Pearson, Brown, Birdsey 2007).

Harvest Re-Measurement: If a plot is harvested, the plot will be re-measured within 6 months of yarding to assess which trees will be taken out so that the inventory can be updated for the current reporting period. Bluesource will work with Great Mountain Forest to determine which plots have been harvested during the reporting period.

Data Collection Materials: Data will be collected on hand held electronic data recorders. If data recorders are not available, field data can be collected on paper tally sheets and manually entered into a computer for data analysis. All data sheets will be scanned and sent to Bluesource.

QA/QC Field Procedures: At least 5% of the plots will be checked by a different forester than cruised the plot, preferably by someone senior to the field crew. This will involve full plot measurement to identify any problems with determining in/out trees, species calls, defect measurements, DBH measurements, and height measurements. Any consistent height, species, DBH, or defect errors will be resolved by talking with the foresters.

QA/QC Desk Procedures: The following QA/QC approach is designed to ensure that field data, once input, is appropriately managed and maintained, and that subsequent calculations using that data to determine onsite carbon stocks and associated ARBOC issuance are correctly implemented. A three-stage QA/QC process with a defined review group for the project will be established, engaging both personnel intimately familiar with all project files and documentation, as well as independent reviewers are able to bring “fresh eyes” to key outputs.

Independent Forester Review: The project implementation team (Bluesource) has a team of foresters with intimate knowledge of the files, models and documents. The development of quantitative components, such as Access databases, FVS model runs and Excel workbooks, are led by one of these foresters. Prior to finalization, a second forester who did not lead development of that component is tasked with a QA/QC review including random examinations and data checks to identify and fix any errors.

Technical Review: Once quantitative outputs are finalized, exported from Access/FVS to Excel, and are ready to be transferred into the Offset Project Data Report (OPDR) and other project documents, an independent manager reviewed these outputs. This individual performs data checks by tracing key outputs back from final ARBOC calculations through the chain of Excel documents to the underlying Access/FVS database.

Senior Management Review: Once outputs have been transferred from Excel to the OPDR and other project documents, a senior manager reviews these documents and checks that all quantitative elements have been correctly exported from the underlying workbook. At this stage, the senior manager (or other individual not involved in document preparation) also reviews text, grammar and formatting for presentation and accuracy.

Data Processing and Storage: Manually and electronically filed data are stored and archived. Backup copies of all electronically stored data -are maintained in a separate data center with scheduled archiving to assure data protection. Future revisions to project documents after initial verification and registration will be clearly identified by saving them as separate files and including the date of revision in any modified documents. All data will be stored on Dropbox or similar online cloud storage service as well as on an external hard drive and kept by Bluesource for a minimum of 15 years.

#### Inventory Confidence Statistics- Estimate

Total	n	StdError	Bound	Sampling Error
1,729,790	250	51,294	84,378	4.88%

The inventory sampling error is calculated as follows:

- 1)  $51,294 * 1.645 = 84,378$
- 2)  $(84,378 / 1,729,790) * 100 = 4.88\%$

The estimated sampling error of 4.88% is below 5.1%, so no confidence deduction should be applied to the inventory results.

#### Reversal Risk Rating- Estimate

Reversal Risk Rating will be calculated using the following formula:

Reversal Risk= 100% - (1-Financial Failure) x (1-Illegal Forest Biomass Removal) x (1-Conversion) x (1-Over Harvesting) x (1-Social Risk) x (1-Wildfire) x (1-Disease/Insect Outbreak) x (1-Other Catastrophic Events)

$$= 1 - (1-0.05) * (1-0.0) * (1-0.02) * (1-0.02) * (1-0.00) * (1-(0.04)) * (1-0.03) * (1-0.03)$$

=17.6%

## Part VIII. Offset Project Baseline

1. The aboveground Common Practice (CP) value is 77.6 mtCO<sub>2</sub>e/acre with a live value of 93.0 mtCO<sub>2</sub>e/acre. The project's ICS live carbon stocks of 130.61 mtCO<sub>2</sub>e/acre is above the CP value.

Supersection	Assessment Area	Site Class	CP	Acres
Southern Allegheny Plateau	Lowland Hardwoods	All	<b>71.85</b>	12.2
	Mixed Pine-Hardwoods	All	<b>73.68</b>	22.3
	Oak-Hickory	High	<b>119.13</b>	20.7
		Low	<b>112.48</b>	1,095.7
	Upland Hardwoods	High	<b>96.54</b>	94.3
Central Interior Broadleaf Forest Eastern Low Plateau	Upland Hardwoods	Low	<b>81.10</b>	4,987.9
	Lowland Hardwoods	All	<b>101.18</b>	681.3
	Mixed Upland Hardwoods	High	<b>87.68</b>	83.4
	Lowland Hardwoods	Low	<b>64.41</b>	4,410.8
	Oak-Hickory	High	<b>121.65</b>	36.0
		Low	<b>101.60</b>	1,902.5
	Oak-Pine	All	<b>47.55</b>	77.7
	Pine	All	<b>47.56</b>	2,049.5
	Total		<b>77.6</b>	15,474.4

2. **Baseline Carbon Stocks**

Aboveground (mtCO <sub>2</sub> e/acre)	Belowground (mtCO <sub>2</sub> e/acre)	Live (mtCO <sub>2</sub> e/acre)	Dead (mtCO <sub>2</sub> e/acre)	Standing (mtCO <sub>2</sub> e/acre)
77.6	15.4	93.0	0.73	93.73

3. **Minimum Baseline Level for above-ground standing live tree carbon stocks (MBL)**

There is only one LMUS across the Project Area. The LMU is the same as the Project Area, thus the WCS is equal to the ICS. Because the ICS is above the CP, we use the equation  $MBL = \text{MAX}(CP, \text{MIN}(ICS, CP + ICS - WCS))$  for calculating the MBL. In this case, the MBL is the ICS (initial above-ground standing live tree carbon stock per acre within the project area), or 93.0 (mtCO<sub>2</sub>e/acre).

4. **If the Forest Project's initial standing live carbon stocks are below Common Practice, a determination of the "High Stocking Reference" for the Project Area.**

Because the project's initial standing live carbon stocks are above common practice, this section is non-applicable.

5. **Estimated Baseline Wood Products**

<b>Baseline Harvested Wood Products Summary</b>	<b>Total (tCO<sub>2</sub>e)</b>	<b>tCO<sub>2</sub>e / acre</b>
Baseline Carbon Harvested for Wood Products (tonnes CO <sub>2</sub> e)	40,422.06	2.61
Baseline Carbon Delivered to Mill (tonnes CO <sub>2</sub> e)	21,423.69	1.39

## 6. Baseline Modeling

All legal constraints that could affect the baseline growth and harvesting must be incorporated. Thus, all legal constraints (detailed in Attachment I) will be modeled into the baseline. Site index for each plot will be measured as outlined in Part VII IFM-1. FVS will be calibrated as described in Part VII IFM-1.

All FVS (NE variant) defaults for the will be used besides the following calibration components:

- The location code
- Age of the stands
- Site index values derived from a site index tree at each plot
- Minimum acceptable harvest volume of 3000 cubic feet per acre
- Minimum DBH for all harvests is 10" for sawtimber trees
- Trees less than 10" DBH will be harvested for pre-commercial thins and during the clearcuts

## Part IX. Attestations and OPO Signature

I certify under penalty of perjury under the laws of the State of California the GHG reductions and/or GHG removal enhancements for Bluesource – Edge of Appalachia Improved Forest Management Project from 11/06/2018 to 11/05/2043 will be measured in accordance with the Compliance Offset Protocol U.S. Forest Projects, June 25, 2015, and all information required to be submitted to ARB is true, accurate, and complete.

Initial: *ZT*

I understand I am voluntarily participating in the California Greenhouse Gas Cap-and-Trade Program under title 17, article 5, and by doing so, I am now subject to all regulatory requirements and enforcement mechanisms of this program and subject myself to the jurisdiction of California as the exclusive venue to resolve any and all disputes arising from the enforcement provisions in this article.

Initial: *ZT*

I understand that the offset project activity and implementation of the offset project must be in accordance with all applicable local, regional, and national environmental and health and safety laws and regulation that apply to the offset project location. I understand that offset projects are not eligible to receive ARB or registry offset credits for GHG reductions and GHG removal enhancements that are not in compliance with the requirements of the cap-and-trade program.

Initial: *ZT*

In signing this form, I certify under penalty of perjury of the laws of California that the information contained in this form is true, accurate, and complete. I further certify that I am an Account Representative of the Offset Project Operator (OPO).

Signature: *Zsuzsanna Turanyi*

Printed Name: Zsuzsanna Turanyi

Title: Operations Manager, The Nature Conservancy

Date: 11/06/2018

## Part X. Attachments

### Attachment A: Forest Owner

Please see corresponding folder containing all deed, provided separately for verification purposes.

### Attachment B: Public Projects

N/A

### Attachment C: Qualified Conservation Easement

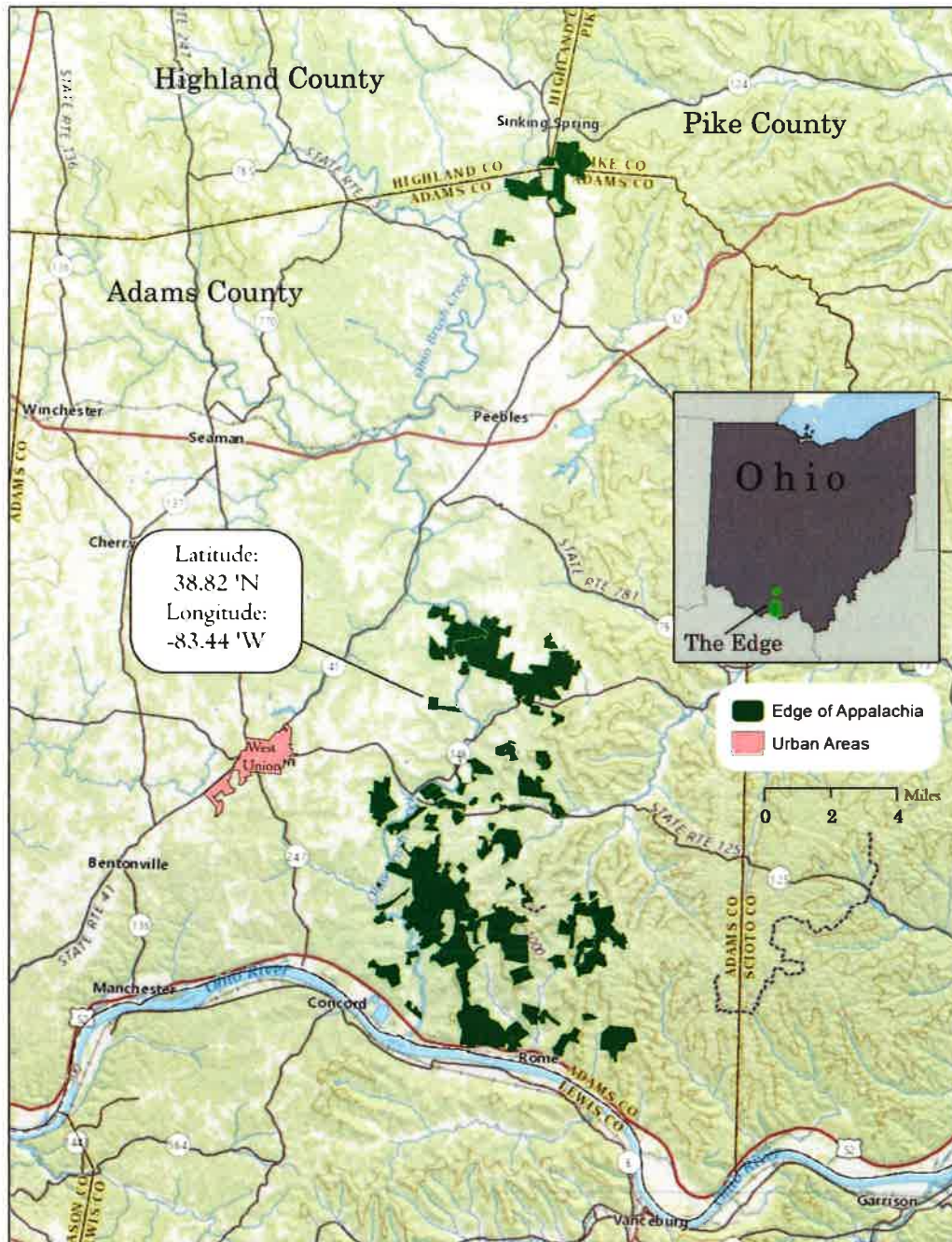
N/A

### Attachment D: Tribal Projects

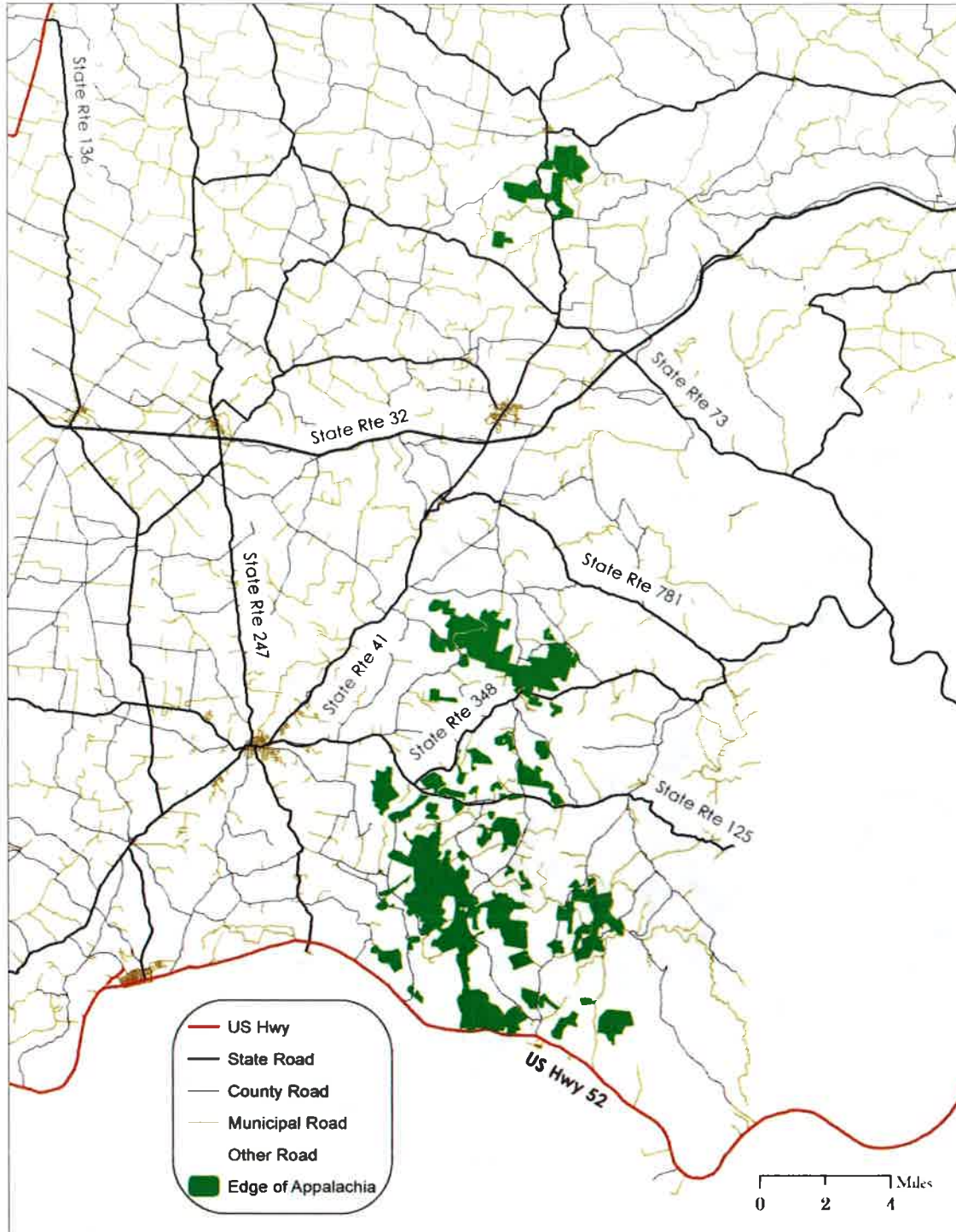
N/A

## Attachment E: Project Maps

### 1. Governing jurisdictions, and latitude/longitude coordinates



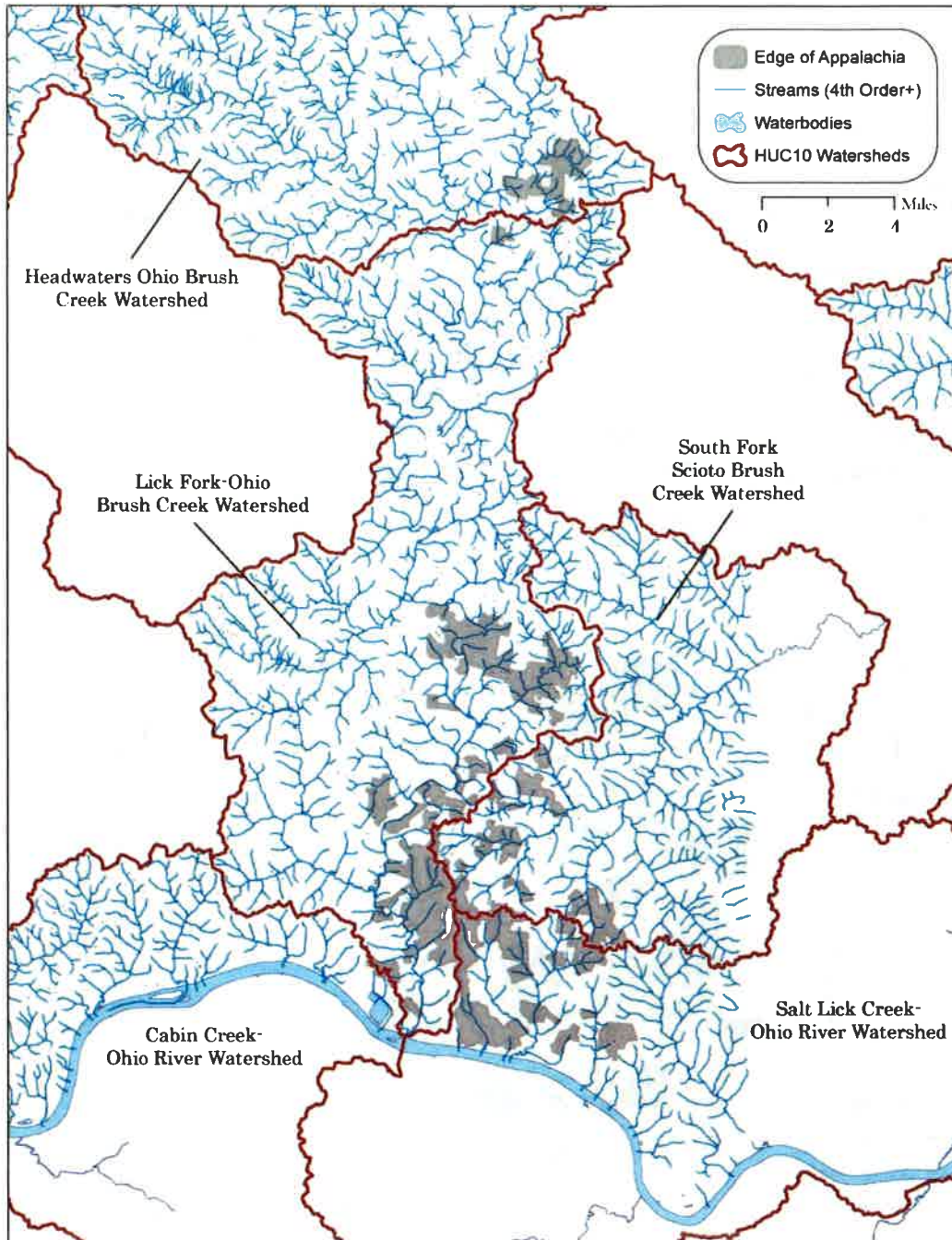
2. Public and private roads (map)



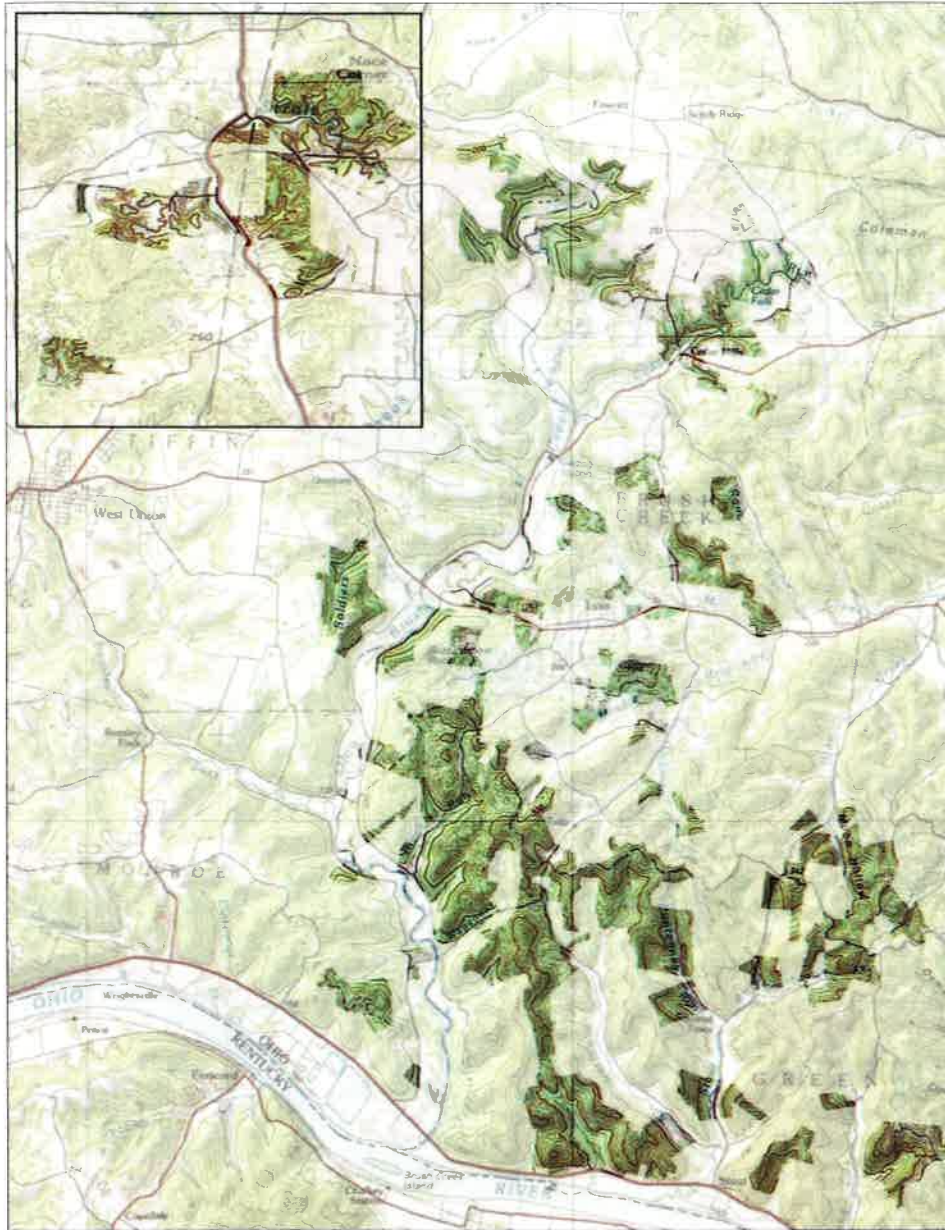
3. Towns (map)

See map 1 for towns and urban areas.

4. Major watercourses (4th order or greater), water bodies, and watershed description (map)

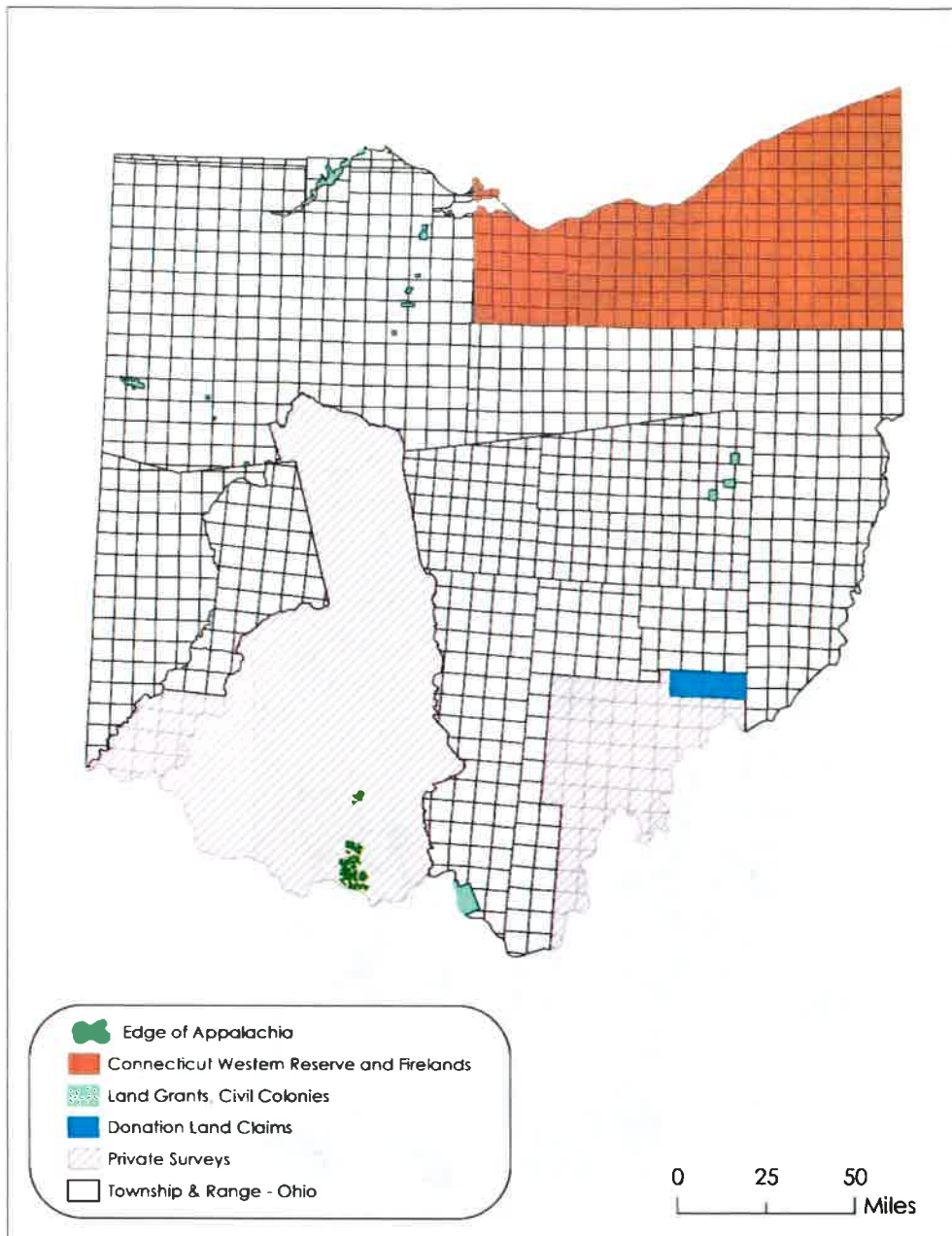


**5. Topography (map)**



**6. Townships, ranges, and sections (map)**

The State of Ohio is part of the USGS Public Land Survey System, however a large portion of the state does not have PLSS information and land parcels were determined by private survey. Location information is provided in map.

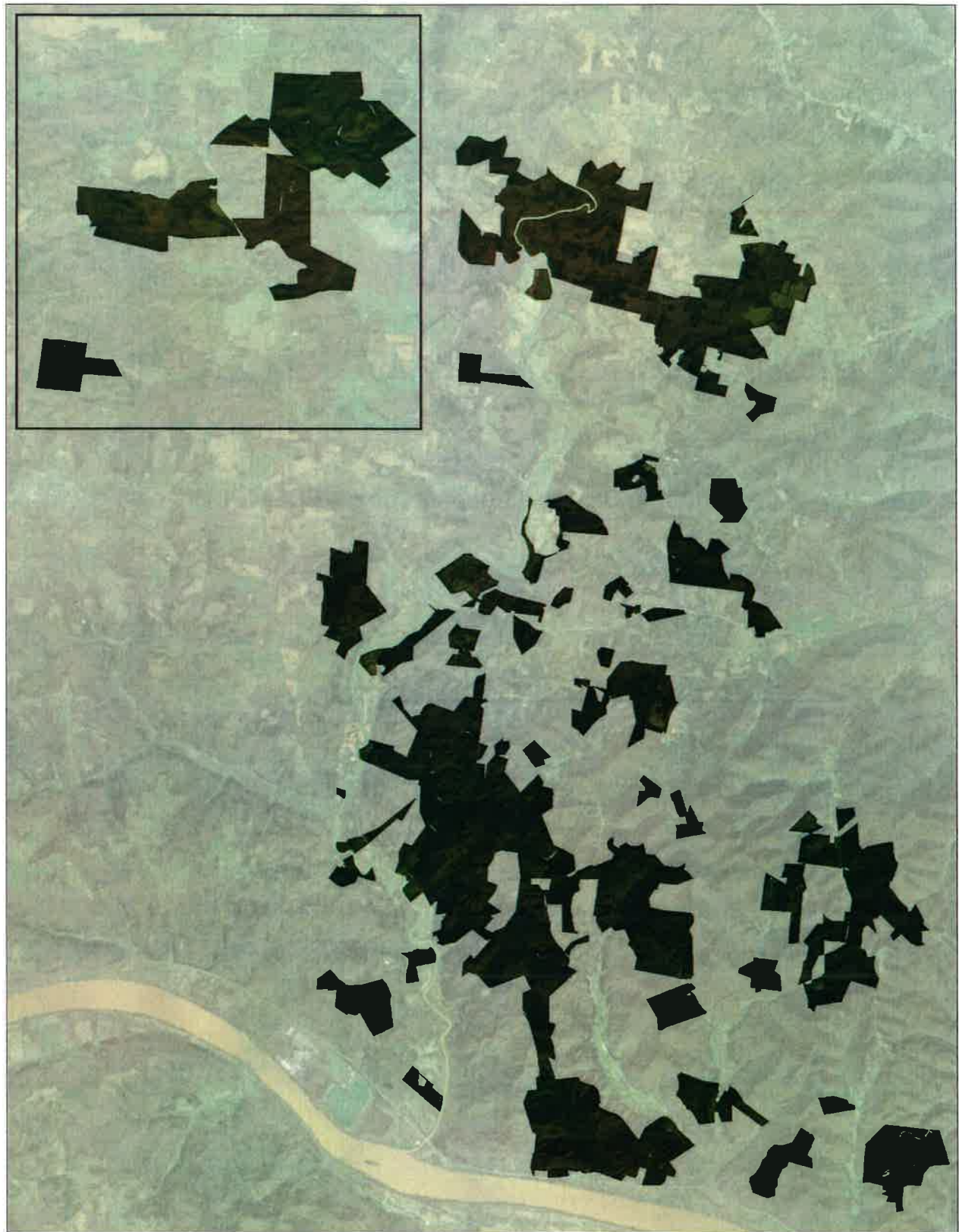


**7. Georeferenced shape file**

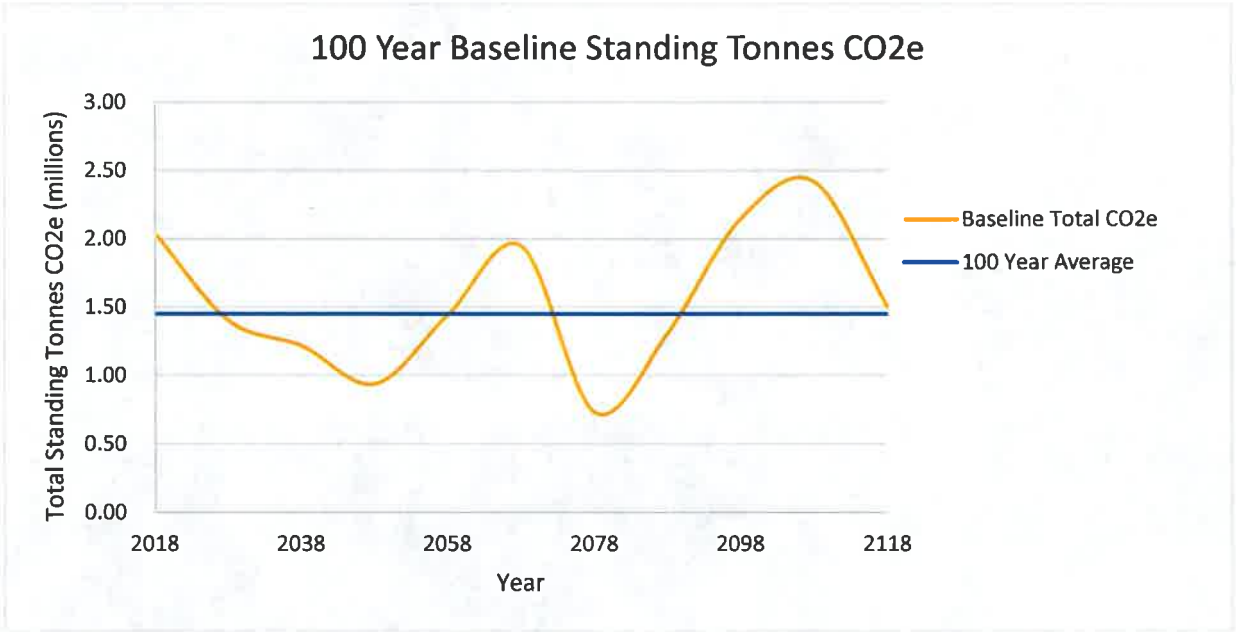
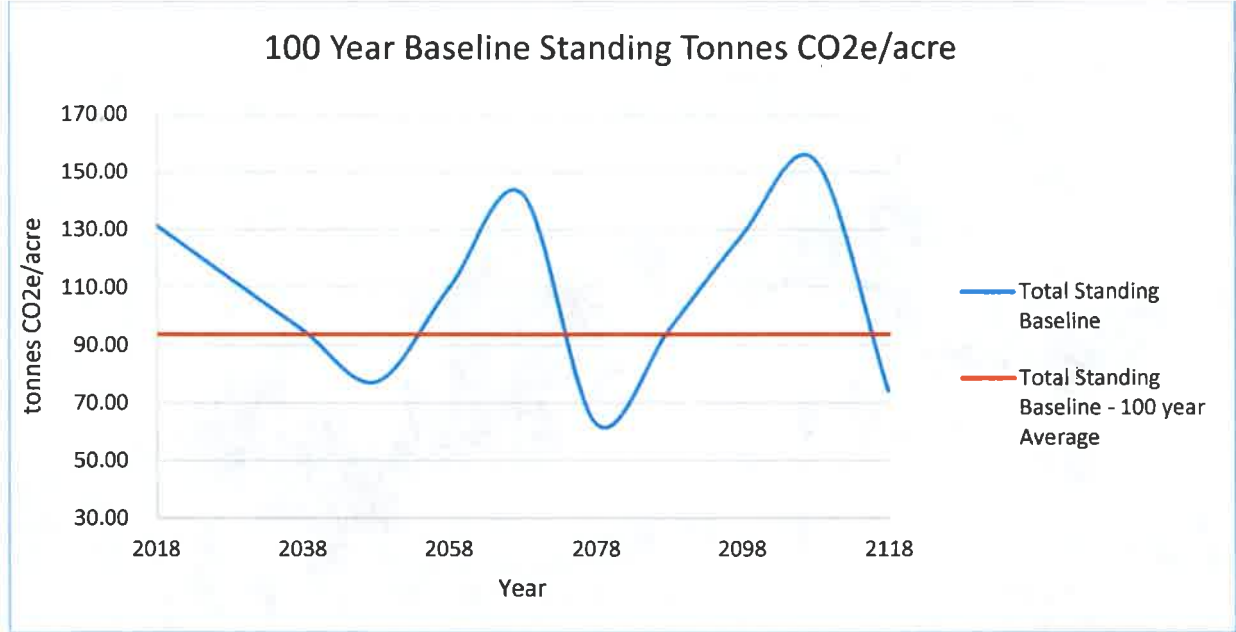
Please see provided georeferenced shapefile.

Attachment F: Canopy Cover

As evidence by recent aerial imagery, the Project Area contains greater than 10% canopy cover.



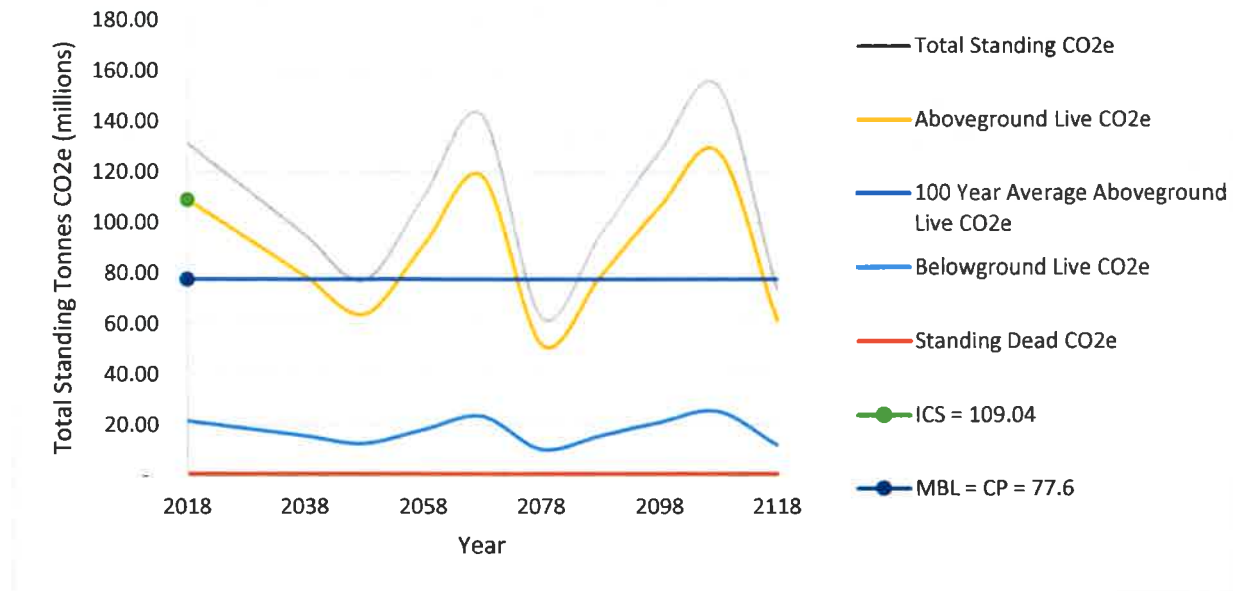
Attachment G: 100-year Baseline



\*Diagrams are an estimate of baseline and will be revised upon completion of final verified baseline model.

## Attachment H: Baseline Onsite Carbon Stocks

### 100 Year Baseline Standing Tonnes CO<sub>2</sub>e



\*Diagram is an estimate of baseline and will be revised upon completion of final verified baseline model.

Overall, the management objective in the baseline is focused on early reductions in carbon stocks to maximize net present timber revenue, with a secondary pulpwood harvest 30 years following the initial baseline treatments. Over 100 years, this will cause the project area to reach the average common practice baseline in the region.

**Attachment I: Legal Constraints**

The Project baseline must consider the Ohio Best Management Practices. The Edge of Appalachia project will follow the below constraints:

- 25-foot wide shade strips (also referred to as Streamside Management Zones or SMZs) with no cut or light cutting only.

**Attachment J: Financial Feasibility**

A financial analysis (Forest Protocol section 5.2.1(e)(2)(A))) of the baseline growth and harvest regime reveals that the activities represented in baseline scenario are clearly feasible. Refer to attachment for details on financial analysis.