

Construction and Operation of a Proposed Wood Biomass to  
Renewable Fuel Oil Biorefinery,  
Ensyn Georgia Biorefinery Project  
Vienna, Georgia

Prepared by  
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**Table of Contents**

<u>Content</u>	<u>Page</u>
I. Proposal Description and Need-----	4
II. Primary Beneficiaries and Related Activities-----	5
III. Description of the Proposal Area-----	5
IV. Environmental Impact-----	6
1. Air Quality-----	6
2. Water Quality and Hydrology-----	10
3. Solid Waste Management and Hazardous Materials-----	12
4. Land Use Geomorphology, Geology, and Soils -----	13
5. Transportation-----	14
6. Natural Environment/Biological Resources -----	15
7. Human Population – Socioeconomic Factors -----	15
8. Construction-----	17
9. Energy Impacts-----	17
10. Noise, Vibrations, Seismic Conditions, Fire-Prone locations, radiation, aesthetic considerations -----	18
11. Safety and Occupational Health-----	18
12. Utility Infrastructure-----	18
13. Feedstock Availability and Proximity-----	20
V. Coastal Zone Management Act-----	23
VI. Compliance with Advisory Council on Historic Preservation’s Regulations-----	23
VII. Compliance with the Wild and Scenic Rivers Act-----	23
VIII. Compliance with the Endangered Species Act-----	24
IX. Compliance with Farmland Protection Policy Act (FPPA) NRCS’s Implementation Rule, and Departmental Regulation 9500-3 Land Use Policy-----	25
X. Compliance with Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands-----	26
XI. Compliance with Coastal Barrier Resources Act-----	26
XII. State Environmental Policy Act-----	26
List of Permits-----	26
XIII. Consultation Requirements of Executive Order 12372, Intergovernmental Review of Federal Programs-----	27
XIV. Environmental Analysis of Participating Federal Agency-----	27
XV. Reaction to the Proposal-----	27
XVI. Cumulative Impacts -----	28
XVII. Adverse Impact-----	28
XVIII. Alternatives-----	29
1. No Action Alternative	

2. Offsite Alternatives	
XIX. Mitigation Measures-----	29
XX. Consistency with Rural Development Environmental Policies-----	31
XXI. Environmental Determinations-----	31

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***LIST OF FIGURES***

---

Figure 1. Project Location Maps
Figure 2. Limits of Disturbance
Figure 3. Railway Map
Figure 4. FEMA Firm Maps
Figure 5. NWI Wetlands Map
Figure 6. NRCS Soils Maps
Figure 7. Utility Location Map

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***LIST OF TABLES***

---

Table 1 – National Ambient Air Quality Standards
Table 2 – Vienna Air Quality and Pollution Index
Table 3 – Project Estimated Emissions Profile of Criteria Pollutants
Table 4 - Water Use and Loss of the Project

---

***APPENDICES***

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Appendix A – Site Preliminary Stormwater Management Map
Appendix B – NPDES Permit
Appendix C – MSDS for filter cake
Appendix D – DOT Letter
Appendix E – Environmental Justice Information
Appendix F – National Historic Preservation Act Information
Appendix G – Endangered Species Act Information
Appendix H – Georgia Environmental Policy Act Checklist
Appendix I – List of Permits
Appendix J – Intergovernmental Review Consultation

## I. Proposal Description and Need

The United States Department of Agriculture, Rural Business Cooperative Service (RBS) is proposing to provide a Loan Note Guarantee to Citibank N.A. for Ensyn Georgia Biorefinery I LLC (“Ensyn”) to construct and operate a new wood biomass to renewable fuel oil biorefinery in Vienna, Georgia. The Ensyn Vienna Biorefinery Proposal (the “Project”) will utilize a patented Rapid Thermal Processing (RTP) unit to produce 21MM gallons of cellulosic Renewable Fuel Oil (RFO<sup>®</sup>) (“RFO”) to be sold to refineries in the region to allow them to meet Renewable Fuel Standard requirements. The RFO can be corefined with Vacuum Gas Oil (VGO) in a refinery’s fluid catalytic cracker (FCC) unit to produce gasoline and diesel products that are derived partially from renewable biomass. The Project will rely on wood waste or forest residuals as its primary source of fuel. The proposed location of the Project would be on 67 acres of leased land within a former (mothballed) particle board facility located in Vienna, GA (Figure 1).

The National Environmental Policy Act (NEPA) of 1969 requires federal agencies to integrate environmental values into their decision making processes by considering the environmental impacts of Proposed Actions. As a result, this proposal has been classified as requiring an Environmental Assessment (EA) in accordance with RBS’s regulations of 7CFR 1940-Subpart G and NEPA 42 U.S.C. §4321. This EA evaluates the potential environmental impacts that could result from the proposed biorefinery.

The purpose of this action is to provide a loan guarantee to assist in the development and construction of a small-scale biorefinery for the development of advanced biofuels. The authority for such loan guarantees is Section 9003 of the Farm Security and Rural Investment Act of 2002 (FSRIA) (as amended by Section 9001 of the Food, Conservation, and Energy Act of 2008 (2008 Farm Bill)) which provides for the financing of commercial-scale biorefineries to produce advanced biofuels. Advanced biofuels are defined under The Energy Independence and Security Act of 2007 which established a national goal of renewable fuel standard production of some 36 billion gallons of renewable fuels by 2022. Ensyn proposes to construct and operate the Project to produce biofuels to help meet that goal.

The proposal will use a Rapid Thermal Processing (“RTP”) conversion process to convert 440 bone dry tons (“BDT”) of biomass per day to approximately 21 million gallons per year of RFO. The RFO will then be used in a commercial refinery coprocessing application in which the biofuel displaces petroleum and is refined into gasoline and diesel at oil refineries, for transportation fuels.

The Project will rely primarily on wood waste or forest residues as well as potentially dedicated energy crops such as *Miscanthus giganteus* sourced within the region. The Project will produce two co-products, a combustible gas and biochar which will both be captured and re-used in the RTP process as fuel. Recycling of the biochar produces two waste products, an ash/sand mix

and a filter cake. The ash/sand mix can be land applied or landfilled, and the cellulosic filter cake can be sold as combustible fuel or could be landfilled.

Approximately 30 acres of the existing site consists of the former particle board facility and is located on disturbed and or concrete surfaces. The remaining approximately 37 acres is in forested or grassland areas that are not proposed for disturbance from the construction and operation of the Project.

All utilities associated with the proposal, including wastewater, water, electric, and natural gas, are existing on the site. There will be no need for any construction outside of the 30 acre portion of the site which was previously disturbed for the Particle Board Facility. All utility connection locations exist already within the 67 acre property. All access roads to the facility already exist.

The Proposal's location was chosen for its proximity to the feedstock supply source, its location within an existing operating industrial site with full access to transportation corridors along Georgia Interstate 75 and the railway, the availability of local laborers, and the availability of other consumables.

Construction of the Project is planned to begin in the Summer of 2015, with an expected life span of 20 years. The term of the lease will be twenty years, with a ten-year renewal option.

## **II. Primary Beneficiaries and Related Activities**

The applicant will be the primary beneficiary through the production and sale of their produced product. The local economy will benefit with the addition of a taxable business and the local employment sector will also benefit through the creation of jobs.

The Project will add value to the agricultural forestry community, through the economic value to forest residues, pre-commercial thinning material, and wood waste. The Project generates multiple environmental benefits, including greenhouse gas ("GHG") reduction and additional benefits related to regional forest management operations and optimization.

This proposal would impart overall environmental benefits related to its reduction in greenhouse gas emissions from a reduction in the burning of fossil fuels.

### **Identify any related activities which are defined as interdependent parts of an FmHA or its successor agency under Public Law 103-354 action.**

Additional second-tier beneficiaries include engineering and design firms, construction companies, industrial service and supply companies, utilities, transporters as well as equipment manufacturers and suppliers.

No Future Expansion is proposed for this facility

### **III. Description of Proposal Area**

Half of the proposed site for the Project is located within the town of Vienna in Dooly County, and other half is outside of Vienna town limits but still within Dooly County (Figure 1). The site is located along Hwy 41 in Dooly County at 291 Roseburg Road, Vienna, GA 31092. The area of land to be considered the Project site is located on 67 acres as shown on Figure 1. Approximately 30 acres consists of the former particle board facility and is located on disturbed and or concrete surfaces as depicted in Figure 2 and the remaining approximately 37 acres is in forested or grassland areas that are not proposed for disturbance from the construction and operation of the Project (Figure 2).

The site has significant existing infrastructure that will be used by Ensyn, including front-end equipment for feedstock handling and preparation. In addition, the site contains a large concrete fuel yard, truck dumps, rail spurs, roads, a parking lot, a number of outbuildings and storage tanks, and an electrical substation (Appendix A).

The previous and current property owner, Roseburg Forest Products, opened a particle board manufacturing facility in 1970 and operated until 2010. Roseburg Forest Products plans to lease the site to Ensyn for the Project. The adjacent land use includes limited residential developments, a closed chemical plant to the north, open land and timberland to the east, south and west. Roseburg owns rail spurs that connect the site to the adjacent Norfolk Southern and CSX railroads (Figure 1). The land is zoned as Industrial by the local government.

The approximately 30-Acre Particle Board Facility includes a number of existing buildings that are intended to be repurposed for the Project. These include the following:

- 71,000 square foot (“sq ft”) main building intended for storage,
- 17,000 sq ft warehouse intends for installation of the RFO loadout equipment,
- 40,000 sq ft biomass storage building which is to become Green Storage,
- 14,000 sq ft spare parts storage warehouse in which the existing spare parts are stored,
- 1,350 sq ft fabrication shop with existing machining and welding equipment,
- 5,000 sq ft milling and drying building,
- miscellaneous office, restroom, information technology, guard house, and storage buildings.

The Facility Site includes existing concrete paving for traffic and personnel movement as well as chain link security fencing. The City of Vienna boundary runs through the northern portion of the Roseburg Mill Property. The Project will be outside the City boundary in the southern portion of the site, which will be subject to Dooly County permitting regulations

The Project is located 135 miles south of Atlanta along State Highway 41 at 551 Roseburg Road on the southern edge of the Vienna city limits. The location provides excellent rail and road

access and allows flexibility in transport of RFO to markets in the Gulf Coast refining region (Figure 3). Georgia Interstate 75, the main north-south highway artery in the state, is 2 miles from the site.

#### IV. Environmental Impact

##### Air Quality

The federal Clean Air Act (CAA) required the USEPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS include two types of air quality standards. Primary standards protect the public, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards protect the public welfare, with respect to protection against decreased visibility, damage to animals, crops, vegetation, and buildings (USEPA 2010). USEPA has established NAAQS for six principal pollutants, which are called criteria pollutants. They include nitrogen oxides (NO<sub>x</sub>, including nitrogen dioxide [NO<sub>2</sub>]), carbon monoxide (CO), particulate matter (PM), sulfur dioxide (SO<sub>2</sub>), ozone (O<sub>3</sub>), and lead (Pb) (Table 1). Units of measure for the standards are parts per million (ppm) by volume, parts per billion (ppb - 1 part in 1,000,000,000) by volume, milligrams per cubic meter of air (mg/m<sup>3</sup>), and micrograms per cubic meter of air (µg/m<sup>3</sup>).

**Table 1. National Ambient Air Quality Standards**

Pollutant	Primary Standards		Secondary Standards	
	Level	Averaging Time	Level	Averaging Time
Carbon Monoxide (CO)	9 ppm (10 mg/m <sup>3</sup> )	8-hour	None	
	35 ppm (40 mg/m <sup>3</sup> )	1-hour		
Lead (Pb)	0.15 µg/m <sup>3</sup>	Rolling 3-Month Average	Same as Primary	
	1.5 µg/m <sup>3</sup>	Quarterly Average	Same as Primary	
Nitrogen Dioxide (NO <sub>2</sub> )	53 ppb	Annual (Arithmetic Average)	Same as Primary	
	100 ppb	1-hour	None	
Particulate Matter (PM <sub>10</sub> )	150 µg/m <sup>3</sup>	24-hour	Same as Primary	
Particulate Matter (PM <sub>2.5</sub> )	15.0 µg/m <sup>3</sup>	Annual (Arithmetic Average)	Same as Primary	
	35 µg/m <sup>3</sup>	24-hour	Same as Primary	
Ozone (O <sub>3</sub> )	0.075 ppm (2008 std)	8-hour	Same as Primary	
	0.08 ppm (1997 std)	8-hour	Same as Primary	

	0.12 ppm	1-hour	Same as Primary	
Sulfur Dioxide (SO <sub>2</sub> )	0.03 ppm	Annual (Arithmetic Average)	0.5 ppm	3-hour
	0.14 ppm	24-hour		
	75 ppb	1-hour	None	

<http://www.epa.gov/air/criteria.html>

Areas that meet the air quality standards for the criteria pollutants are designated as being in attainment. Areas that do not meet the air quality standard for one or more of the criteria pollutants may be subject to the formal rule-making process and designated as being in nonattainment for that standard. Vienna Georgia is located within an attainment zone for meeting the air quality standards for the criteria pollutants (Table 2).

The air quality in the region is measured by state air quality and pollution quality index. The Vienna, GA air quality index is 13.1% less (better) than the Georgia average, and 2.7% less (better) than the national average (the Vienna, GA air quality index is a median value which considers the most hazardous air pollutants). The Vienna, GA pollution index is 88.9% less (better) than the Georgia average and 95% less (better) than the national average (the Vienna, GA pollution index is the sum of the most hazardous air pollutants displayed in pounds).

**Table 2: Vienna Air Quality and Pollution Index**

Vienna air quality index & pollution index			
Index	Vienna	Georgia	National
Air quality index	36	41	37
Pollution Index	333,601	3,006,613	6,623,939

In the event that the air quality/pollution data was unavailable for this city, estimates based upon nearby cities were used.

[\\* Put this data on your website](#)

The **Vienna, GA air quality index** is a median value which considers the most hazardous air pollutants. The Vienna, GA air quality index is 13.1% less than the Georgia average and 2.7% less than the national average.

The **Vienna, GA pollution index** is the sum of the most hazardous air pollutants displayed in pounds. The Vienna, GA pollution index is 88.9% less than the Georgia average and 95% less than the national average.

Air quality information		Air pollution information	
Measurement	Total	Pollutant	Total
Days measured	237	Arsenic	0.001%
Days with good air quality	205	Benzene	0.010%
Days with moderate air quality	32	Carbon Tetrachloride	0.001%
Days w/ poor A.Q. for sensitive groups	0	Lead	0.000%
Days with unhealthy air quality	0	Mercury	0.000%

Given the lack of large topographical features in the region, it is not anticipated that topographical or meteorological conditions hinder or affect the dispersal of air emissions. Please see Figure 1 for a topographical map.

The Project will employ pollution control equipment in order to operate under Title V thresholds for criteria air pollutants, as defined by the Georgia Air Protection Branch (GAPB). Thus, the Project is expected to meet the EPA requirements for a new minor point source. Flue gas recirculation with after-burning will be employed to reduce dryer PM, CO and VOC emissions. The existing high efficiency cyclones may be supplemented with the addition of a new Wet Electrostatic Precipitator (“WESP”) and Regenerative Thermal Oxidizer (“RTO”) if necessary. The expected and guaranteed stack emissions listed in Table 3 are from Ensyn’s experience of a combined 156,000 commercial plant operating hours, bench scale tests and modeling, API emission factors for rotary dryers, and estimates provided by MEC based on their actual experience. This includes the impact of drying green wood from 45% MC to 6% MC using reheater flue gas (from the combustion of char) and pyrolysis gas (clean, medium Btu fuel) and any additional natural gas firing required after all the pollution control measures. Expected emissions are based on preliminary facility design and may be adjusted as construction-level design is achieved. However, Ensyn expects emissions to remain under Minor Source Limits.

**Table 3: Project Estimated Emissions Profile of Criteria Pollutants**

<b>Pollutant</b>	<b>Expected<sup>1</sup>, tpy</b>	<b>Guaranteed<sup>2</sup>, tpy</b>	<b>EPA Minor Source Limit</b>
PM	6	99	100
SOx	1.4	99	100
NOx	78	99	100
CO	8	99	100
VOC	31	99	100
HAPs	0.5	9.9	10/25 (single/aggregate)
GHG (CO2e)	99,000	99,999	100,000

<sup>1</sup> – Includes 22 tpy associated with natural gas firing in the RTO, if the heat balance is such that the RTP pyrolysis gas (process gas) can be used instead then the number would be lower by that much

<sup>2</sup> – Guaranteed not-to-exceed tpy

The Project requires 440 BDT of biomass per day in order to generate the anticipated 21 MM gallons per year of Renewable Fuel Oil production. It is estimated that truck traffic into the site will be approximately 40 trucks per day. For comparison purposes, this amount is about half of the truck traffic at the site when the Mill was operating at capacity, which was approximately 80 trucks per day (pre-2010). Truck traffic will have limited air quality impacts.

Renewable Fuel Oil will be shipped off site to regional refineries via rail. The mill site was originally selected in the 1970’s in part due to its strategic location in relation to rail transport. The Vienna Mill property is bounded by two major rail lines and spurs from both lines enter the property directly (Figure 3). The CSX Line bounds the West side of the property. The Norfolk Southern line bounds the East side of the property. It is estimated that approximately 30 rail cars

(30,000 gallon tanker cars) will leave the site every two weeks. The effects on air quality due to trains entering the site are negligible.

Based on the estimated Project emissions shown in Table 3, the Project will qualify for a new Synthetic Minor Source Air Permit for the site.

The construction and operation of the Project is not expected to have a significant adverse effect on air quality based on the fact that the Project is expected to adhere to all federal, state and local emission standards and permit requirements. There will be localized, temporary impacts to air quality during construction due to dust, increased vehicular traffic from construction workers, increased trucks due to transport, and general construction activities. These impacts will only be evident in the immediate vicinity of the Project and will be short-term.

The proposed facility emissions will not result in significant adverse environmental impacts to air quality because the proposed emissions from the facility are in keeping with GAPB air quality permit requirements and as such are not expected to have significant adverse effects. Consultation with GAPB has already begun as part of the preparation of the Synthetic Minor Source Air Permit.

## 2. Water Quality and Hydrology

There is currently no wastewater treatment system at the current site. The Project will utilize City of Vienna wastewater treatment facilities for the Project’s limited wastewater treatment needs. There is an existing sewer system connected to the City of Vienna’s wastewater treatment system installed at the site.

The primary wastewater discharge from the site is cooling water blow down from the 8,000-10,000 gpm re-circulating cooling tower cells, demisters, and WESP (Table 4). Because blow down water is “non-contact” water; no foreign pollutants are added to the water prior to its return to the City’s infrastructure. Periodically, process water and sanitary water loads will be sent to the Vienna Wastewater Plant, as well.

**Table 4: Water Use and Loss of the Project**

WATER BALANCE	Units	Average	Design	Notes
<b>Water Uses</b>				
Process Water	gpm	Periodic	25	Periodic; includes wash down
Potable Water	gpm	Periodic	25	Periodic; includes eye-wash & emergency shower
Hot Water Make-Up	gpm	5	30	Continuous; RTP pyrolysis gas demister
Cooling Tower Make-Up	gpm	50	65	Seasonal
WESP Make-Up	gpm	30	50	Continuous; includes

				cooling tower blow down, hot water system, and other non-contact process waters
Total Water Uses	gpm	70	150	Does not include hot water of cooling tower blow down to WESP
<b>Water Losses</b>				
Process Water	gpm	Periodic	25	Periodic; includes wash down & WESP
Potable Water	gpm		25	Periodic; sanitary waste
Hot Water Blow Down	gpm	5	30	Continuous; discharge to WESP
Cooling Tower Drift and Evaporation Losses	gpm	40	50	Seasonal
Cooling Tower Blow Down	gpm	10	15	Continuous; discharge to WESP
WESP Evaporative and Drift Losses	gpm	25	40	Continuous
WESP Blow Down	gpm	5	10	Continuous
Total Water Losses	gpm	70	150	Does not include hot water and cooling tower blow down to WESP

The Vienna Wastewater Treatment Plant is a secondary treatment facility with a settling pond. Treated water is discharged into the local watershed via a surface water discharge permit. The City has indicated they have the capacity to handle up to 150 gallons per minute from the site, which is twice the anticipated discharge from the Project. The Project is expected to have no or limited adverse effect on the local water quality.

There are no sole source aquifers located within the state of Georgia. This Project is expected to have no adverse impact on aquifer recharge in the region because it doesn't increase impervious surfaces and the amount of water withdrawal from the City of Vienna is readily available for the facility.

City of Vienna Municipal Water System will be the supplier of raw water to the Project. The city has historically served the water demands of the Roseburg Mill site. The Project has entered into discussions with the City and it indicated there is sufficient supply to serve the Project. The water supply to the Vienna Mill is an 8-inch main operating at 51 to 55 psig and capable of delivery 500 gallons per minute (gpm), well more than the Project demand. The mill is fed from well number 3 at a nearby industrial park. That pump is capable of 750 gpm and is associated with a 250,000-gallon storage tank. The City water system is a series of 6 groundwater wells and several storage tanks that are all looped together throughout the City. The Project does not anticipate any surface water consumption for this plant or the Project.

Enslyn consulted with the City of Vienna Public Works Superintendent, Nathan Jordan, and Paul

Rakel, the consulting engineer for the city water and sewer systems (Sowega Engineering LLC out of Dawson GA), for this proposal. The City will use a technique called “level control” of the tank to optimize costs of supply of water supply. The existing plant site has 300,000 and 100,000-gallon water storage tanks on site.

Storm water runoff from the site does not flow into the City sewer. Rather, a series of ditches across the property transports storm water into a concrete lined drain and evaporation canal running the length of the northern end of the property parallel the road tracks (Appendix A). Much of the property is vegetated which will eliminate or greatly reduce surface storm water runoff. Water that is not absorbed into the ground flows mainly from the concrete fuel yard, roads, parking lot and building roofs on the site, and is captured in lined ditches and collected around the perimeter of the property. As a result, there is not major surface storm water runoff from the site. The site holds a National Pollution Discharge Elimination System (NPDES) permit for storm water discharges associated with industrial activity from the Georgia Department of Natural Resources, General Permit No. GAR050000 (Appendix B)

### **3. Solid Waste Management and Hazardous Materials**

The Project has limited solid waste by-products associated with the production of the approximately 21 million gallons of RFO annually. There are two primary solid wastes created in the RTP process: 1) an inert ash/sand mix created when the biochar is combined with silica (sand), re-circulated in the RTP system, and combusted to maintain temperature in the RTP reactor and 2) a sand/mix cellulosic filter cake that is created with the removal of fine char and sand particles from the RFO at the end of the process in order to achieve the highest quality liquid.

Ash/Sand Mix: The RTP process creates an inert ash/sand mix when the biochar is combined with silica (sand), re-circulated in the RTP system, and combusted to maintain temperature in the RTP reactor. Approximately two tons per day of the inert ash/sand mix exits the system as waste in need of offsite disposal - a volume of approximately two cubic meters. There are two options for disposal of the ash/sand mix. The preferred approach is agricultural land application as a natural soil amendment, or other beneficial agricultural use. The ash is high in minerals like potassium, calcium, aluminum, yet devoid of carbon. This makes the material an excellent natural fertilizer. If properly applied, there should be no air or water quality impacts from this disposal methodology given the inert nature of the waste product. The development team is currently seeking out landowners and farmers in rural Dooly County who may benefit from land application of up to 600 tons per year of the mineral-rich ash/sand soil amendment. The second option for disposal is to divert the ash/sand mix to the local landfill for disposal. There are no land-disturbing, air or water quality impacts using a landfill disposal methodology.

Filter Cake: The final step in the production of high-quality RFO for use in Refinery Coprocessing is the removal of fine solid particles that are not captured by the cyclonic separators and therefore entrained in the RFO as it flows out of the system. These solid particles are primarily made up of biochar and can also contain a small amount of sand. These particles are removed from RFO prior to onsite storage and transport in order to prevent any possible

negative impact on the FCC catalyst during Refinery Coprocessing.

The equipment used to remove the fine particles from RFO is standard solids removal equipment that has been adapted for this particular application. As is common in this type of equipment, the cellulosic filter cake that is produced will contain between 30% and 50% solids matter, with the remainder being entrained liquid RFO product. The composition of RFO can be found in the Material Safety Data Sheet (Appendix C). The Project is budgeted to produce 420 lb/hr (or 5 tons per day) of filter cake. Due to its composition, the filter cake has an excellent heating value and therefore is a high value fuel that can be used in any combustion system that is capable of handling solid or slurry fuels, including cement kilns, asphalt plants, hog fuel boilers or coal power plants. For example, there is an asphalt plant that serves the I-75 Corridor construction project near the Project site. If necessary, landfill disposal is an option for the disposition of the filter cake.

#### **4. Land Use, Geomorphology, Geology, Soils**

There is no change in historical land use at the Project site that will impact surrounding land uses or populations in the surrounding area. For 40 years, the Roseburg Vienna Mill, an industrial site, received sized, dried and processed biomass. With the development of the Project, this activity will continue - though the final product will differ (particleboard vs. Renewable Fuel Oil).

**Particularly address the potential impacts to those unique or sensitive areas discussed under Section III, Description of Project Area, which are not covered by the specific analyses required in Sections V–XI.**

The Project is sited within the 67-acre site of the mothballed Roseburg Particleboard Mill. The Mill operated from 1970 to 2010 and is zoned industrial (Figure 1). There are no sensitive areas within the property boundary.

- The site is not located within a floodplain as determined by FEMA Flood Insurance Rate Map (Figure 4). The nearest floodplain is 100 meters to the North and operations on this site will have no impact to floodplain habitats.
- The site does not contain or sit adjacent to wetlands defined by the National Wetland Inventory (Figure 5). Operations on this site will have no impact outside of the developed 30 acre existing facility property and therefore will have no impact on any areas including potential wetland habitat located within the undisturbed 37 acres if present.
- The proposal will have no impact to endangered and threatened species. Refer to Section VIII. Compliance With the Endangered Species Act for full discussion.

**Describe the existing land use plan and zoning restrictions for the project area.**

The site is zoned I3 Industrial according to the Dooly County Assessor's Office. This is consistent with the Long Range Transportation Study that Dooly County conducted in October

2010, which shows the current Mill site and nearby adjacent undeveloped sites are intended to be used for industrial purposes. The new Project fits within the industrial classification of the site.

## **5. Transportation.**

The Vienna Mill is located 130 miles south of Atlanta along State Highway 41 on the southern edge of the Vienna, GA city limits. The location provides excellent rail and road access and allows flexibility in transport of RFO to market in the Gulf Coast refining region.

The Project will result in increased traffic on local roads above current levels. Trucks will deliver the needed 145,000 BDT of biomass annually. It is estimated that approximately 40 trucks per day will enter and leave the Project site over each 16-hour period.

However, while the anticipated level of traffic to support the completed Project is above current levels (given that the Vienna Mill is currently idled), the anticipated truck traffic levels for when the Project is operational are below the levels of the Vienna Particleboard Mill when it was operating at capacity – approximately 80 trucks per day (pre-2010) over a 24 hour period.

The traffic patterns associated with the Project – primarily as a result of trucks delivering biomass from logging operations within a 75-road mile radius - will not significantly affect the land uses in the region. Land uses are primarily agricultural in Dooly and surrounding counties. The City of Vienna, 1.3 miles to the north of the Project Site, could be impacted by logging trucks moving through the town center. However, the road network and Project location will allow trucks carrying biomass to the site the ability to avoid the major road through the City of Vienna. The Project has solicited assistance from the City of Vienna to complete the Project's feedstock management plan, which includes truck routes to the site.

The Project is consistent with the Georgia Department of Transportation's construction plans. The DOT indicated that the "*project is considered to be consistent with those state plans with which this organization is concerned*" (Appendix D).

The Project property is bounded to the east and west by two major rail lines (Figure 3). The CSX Line bounds the west side of the property. The line is one of the largest in the State - 63 million tons of gross freight passes by the Project site every year. The Norfolk Southern line bounds the east side of the property. The Norfolk Southern line is a mid-sized line and carries 30 million tons of freight a year past the Project site. Spurs from both lines enter the site and will require some refurbishment.

The Project is located in central Georgia, not in close proximity to deep water ports (Figure 1). Therefore, Ensyn does not currently contemplate that barge transport will be used, or needed, to transport RFO, given the access to rail to the refineries that the Project will serve. In the future, if barge transport becomes more economically or logistically feasible, RFO could be trucked or railed to the following ports: Columbus public barge dock (65 miles) or the Brunswick Seaport (165 miles).

## **6. Natural Environment/Biological Resources**

The Roseburg Vienna Mill has a 40-year operational history on the property. The site continues to be an existing Particleboard mill that is maintained by Roseburg Forest Products, though it is idled. As a result, construction of the Project on previously disturbed areas of the site will not impact wildlife habitat or unique natural features (Figure 2).

The Georgia DNR, Wildlife Resources Division commented on this proposal and stated the Project is in close proximity to a tributary of Pennahatchee Creek. They recommended that in order to protect aquatic habitats and water quality in this stream, the proposal should make use of stringent erosion control practices during construction and re-establishment of vegetation on disturbed areas as quickly as possible following construction. Silt fences and other erosion control devices should be inspected and maintained until soil is stabilized by vegetation. These measures will be employed through implementation of the SWMPP and City of Vienna construction plan requirements (Appendix B).

Please refer to Section VIII. Compliance With the Endangered Species Act for a summary of the consultation with the US Fish and Wildlife Service which was completed on this proposal.

## **7. Human Population: Socioeconomic Factors**

The proposal is estimated to lead to the direct employment of 138 individuals. Approximately 68 of the 138 direct jobs will be permanent to the region after construction is complete. Thirty-two individuals will be directly employed by the Project and be responsible for operations at the site. Another 36 direct jobs will be created in the forestry industry in order to meet the Project's demand of 440 BDT per day of biomass. The remaining 70 direct jobs will be associated with the construction and commissioning of the Project over the course of the approximately 21-month construction period.

None of the human population in the Vienna area would be expected to need to relocate due to this Project.

**Discuss how impacts resulting from the project such as changes in land use, transportation changes, air emissions, noise, odor, etc. will affect nearby residents and users of the project area and surrounding areas.**

Nearby residents will not be significantly impacted by plant operation. The closest residential property is located more than 1,000 feet to the north. The primary source of potential fugitive emissions from the Project will be from the fuel yard operation, however, levels of emissions are projected to be well within State of Georgia thresholds for the air quality permit.

**Discuss whether the proposal will accommodate any population increases and, if so, describe the potential impacts of these increases on the area's public and community services such as schools, health care, social services, and fire protection. Cite contacts with appropriate experts.**

There will not be a major increase in population in the region (Dooly county and surrounding area). It is anticipated that the Project will hire primarily local residents to supply goods and services to the Project. When the Vienna Mill closed in 2010, 128 direct employees lost their jobs. Today, Dooly County has a 13.1% unemployment rate and employment rate in adjacent counties ranges from 7.6% to 14.7%. Combined there are over 10,000 unemployed individuals in the region, many of whom may possess relevant skills sets and may be willing to re-enter the work force.

**Near-by populations (including minority and low-income):**

As of the census of 2000, there were 2,973 people, 1,068 households, and 761 families residing in the city of Vienna. The population density was 566.2 people per square mile (218.6/km<sup>2</sup>). There were 1,180 housing units at an average density of 224.7 per square mile (86.8/km<sup>2</sup>). The racial makeup of the city was 27.68% White, 66.87% African American, 0.20% Native American, 0.40% Asian, 0.44% Pacific Islander, 3.77% from other races, and 0.64% from two or more races. Hispanic or Latino of any race were 5.58% of the population.

The median income for a household in the city was \$24,276, and the median income for a family was \$30,574. Males had a median income of \$24,063 versus \$17,664 for females. The per capita income for the city was \$12,419. About 24.5% of families and 29.0% of the population were below the poverty line, including 34.1% of those under age 18 and 31.2% of those age 65 or over.

According to the 2010 census, for the proposal area (census tract 13093970300(1135)) as determined on the Environmental Protection Agencies NEPAAssist website, the percent minority for the industrial park was 81 percent minority. This can be compared to the City of Vienna's percent minority which is recorded as being 56 percent minority according to the 2010 census. However, the areas surrounding the Project Site as well as the City of Vienna both have a varying degree of percent minority in the population, with the percent minority recorded as 10 to 20 percent, and 20 to 30 percent, as shown in Appendix E. This indicates that minority populations are typical and variable within the City of Vienna as well as directly adjacent to the Project Site. According to the 2010 census, for the proposal area (census tract 13093970300(1135) , the percent below poverty was 27 percent of the population for both the immediate area surrounding the Project Site as well as the surrounding county and adjacent counties.

For these reasons, the proposal is not anticipated to have a disproportionate adverse effect on any minority or low-income populations. Please refer to Appendix E to review Rural Development Form 2006-38, Rural Development Environmental Justice and Civil Rights Impact Analysis and accompanying figures. To the contrary, the proposal is expected to have several beneficial effects to the communities.

## **8. Construction.**

Runoff from construction activities, or storm water, can have a significant impact on water quality if proper storm water erosion and sediment control plans are not implemented and maintained. Polluted storm water runoff can harm or kill fish and other wildlife or interfere with existing wastewater treatment infrastructure. Storm water runoff mitigation steps for this proposal are included in the construction plan as required by the City of Vienna construction codes.

The Project proposes to disturb more than 1 acre of the existing site; therefore, the Project will be required to obtain a National Pollution Discharge Elimination System (NPDES) General Construction Permit from the Georgia Environmental Protection Division (Appendix B). The NPDES storm water program defines how construction site operators engaged in clearing, grading, and excavating activities in order to ensure storm water discharges don't impact local waterways and storm sewer systems. The Project will comply with all state and local Air Pollution Control Agency Regulations and follow best management practices to minimize fugitive dust emissions.

Noise levels from site construction are not expected to be of concern given the lack of proximity of human population. Fugitive dust from construction projects has the potential to impact local air quality if proper best management practices are not followed. Fugitive dust can be created from the activities involved in construction, such as moving soils or demolishing structures or by disturbing residual soils or materials that have been left behind by construction activities. Fugitive dust mitigation steps are included in the construction plan, as required by the City of Vienna construction codes and the NPDES permit.

## **9. Energy Impacts**

The Project will utilize the existing energy infrastructure historically used by the closed Particleboard Facility as shown in Figure 7. Georgia Power provides the line capacity and interconnection for electricity. Historically, both the particle board and the adjacent chemical plant facilities were served from an onsite substation with a 5,000 kv capacity. On the other side of the fence there is ability for Georgia Power to deliver up to 20,000kv if the Project were to install a new transformer. However, it is estimated that the Project will require an average load of 3.6 MW for continuous operation, thus the existing electrical infrastructure will meet the Project's demand.

The Project requires natural gas for start-up of the RTP unit. Start-ups are planned after maintenance events once a quarter and require an uninterrupted gas supply for 18 hours at 27mmBtu/hour. The Project also uses a small amount of natural gas for operation of the regenerative thermal oxidizer ("RTO"), which is part of the pollution control system.

The Vienna Particleboard Mill used natural gas for a variety of applications on the site, principally the operation of two package boilers with capacities of 27 mmBtu/hour and 37 mmBtu/hour. There is sufficient capacity already on the site to meet the RTP unit's 18-hour gas demand four times per year.

The Project has a relatively small electrical load for a typical industrial facility of its size (average load demand of 3.6MW). The small load is primarily due to the fact that waste char and gas from the process are combusted and used to maintain the pyrolysis inside the reactor process. Waste heat and gas is fed into the dryer to dry the feedstock to 6% moisture content, thus no other energy sources is needed to support the drying of the biomass material.

#### **10. Noise, Vibrations, Seismic Conditions, Fire-Prone locations, radiation, aesthetic considerations.**

Given the Project's location within an existing industrial facility/zone area, the Project will not have a significant impact on existing noise, vibration, seismic, radiation, safety or aesthetic considerations, or fire hazards. The Project will comply with the City of Vienna's requirements for construction and building permits and standards for noise and other controls. The site is served by the City of Vienna Fire Department.

#### **11. Safety and Occupational Health**

Site safety will be managed by strict adherence to U.S. OSHA requirements.

The existing facility has been evaluated for the presence of existing hazardous chemical spills that could adversely affect those who construct and operate the Project as well as the financial liability of the owner. A Phase I Environmental Site Assessment was completed on the 67-acre site. Existing conditions at the site are not expected to have an adverse effect to those who construct or operate the Project.

#### **12. Utility Infrastructure**

##### **Electrical Service**

The Project will utilize the existing energy infrastructure historically used by the closed Particleboard Facility as shown on Figure 7. Georgia Power provides the line capacity and interconnection for electricity. Historically, both facilities were served from an onsite substation with a 5,000 kv capacity. On the other side of the fence there is ability for Georgia Power to deliver up to 20,000kV if the Project were to install a new transformer. However, it is estimated that the Project will require an average load of 3.6 MW for continuous operation; thus, the existing electrical infrastructure will meet the Project's demand.

## **Natural Gas**

The Project requires natural gas for start-up of the RTP unit. Start-ups are planned after maintenance events once a quarter and require an uninterrupted gas supply for 18 hours at 27mmBtu/hour. The Project also uses a small amount of natural gas for operation of the RTO.

The Vienna Particleboard Mill used natural gas for a variety of applications on the site, principally the operation of two package boilers with capacities of 27 mmBtu/hour and 37 mmBtu/hour. There is sufficient capacity already on the site to meet the RTP unit's 18-hour gas demand four times per year.

The gas interconnection enters the site on the eastern side of the property and runs underground into the dryer building adjacent to building housing the future RTP unit (building labeled "NG") (Figure 7). The gas line running adjacent to the site is owned by Georgia Gas.

## **Water**

The Project's primary water demand is the "makeup water" for the cooling tower and the WESP. There will be periodic increases over the average from process water (e.g., truck washing) and sanitary water demands on the site. However, total average levelized water demand is approximately 70 gallons per minute ("gpm").

The City of Vienna municipal water system will be the supplier of raw water to the Project. The Project site has been historically served by the City. The City has indicated that there is sufficient supply to serve the Project. The water supply to the Vienna Mill is an 8-inch main (Figure 7 – adjacent to water tank) operating at 51 to 55 gallons per square inch (psig) and capable of delivery 500 gallons per minute (gpm), much more than the Project demands. The mill is fed from well number 3 of a nearby industrial park. That pump is capable of 750 gpm and is associated with a 250,000 gallon storage tank. The system was built to serve the Mill and chemical plant and since those facilities have closed, the system is underutilized. The City will use a technique called "level control" of the tank to optimize costs of supply of water supply.

## **Wastewater**

There is currently no wastewater treatment system at the Project site. The Project will utilize City of Vienna wastewater treatment facilities for the Project's limited wastewater treatment needs. The Project proposes to use the existing Main Sewer line located adjacent to the oil/water separator (Figure 7 - labeled manhole). The primary wastewater discharge from the site is cooling water blow down from the 8000-10,000 gpm re-circulating cooling tower cells and related equipment. Periodically, process water and sanitary water loads will be sent to the Vienna Wastewater Plant, as well. The Vienna plant is a secondary treatment facility with a settling pond. Treated water is discharged into the local watershed via a surface water discharge permit. The City has indicated they have the capacity to handle up to 150 gpm from the site, which is twice the anticipated discharge from the Project.

Stormwater runoff from the site does not flow into the City sewer. Rather, a series of ditches across the property transports stormwater into a concrete lined drain and evaporation canal running the length of the northern end of the property parallel the road tracks (Appendix A).

### **Product Market Proximity**

The Project will sell the majority of its RFO production to one or more refineries under medium- to long-term contracts. The refiners will use the RFO for Refinery Coprocessing into transportation fuels. Ensyn has established strategic relationships and is in the process of negotiating contractual relationships with refining entities for offtake from the Project.

### **13. Feedstock Availability and Proximity**

Roseburg continued to operate this site for three years as a particleboard facility after purchasing it from Georgia Pacific in 2006, purchasing 720 BDT of feedstock consisting of wood wastes and forest residues, every day from local sources. Roseburg will now redirect its experience to sourcing 440 BDT per day or approximately 145,000 BDT per year of logging residues and thinnings as a contractor for the Project. Feedstock for the Project is expected to consist primarily of Loblolly Pine, which dominates the region's plantations.

#### *Alternative Feedstock Not Previously Used in Biofuels Production*

Ensyn and Roseburg are planning to utilize feedstocks not previously used in biofuels production at the site location. The feedstocks are energy crops, typically grasses that have been specifically developed to produce fuel not food. They are high yielding perennials that produce large volumes of clean biomass feedstock with a low environmental footprint. The production of this feedstock can occur on lower quality or surplus land and consequently would not necessarily impact food production. In particular, the Project is pursuing the use of *Miscanthus giganteus*; a feedstock Ensyn has already tested in its RTP units, to diversify the Project's biomass supply with a low cost, fixed-priced feedstock contract.

Ensyn has successfully produced RFO from a wide range of non-food cellulosic biomass feedstocks including white wood, bark, hardwood, softwood, mill residues, forest residues (slash, pre-commercial thinnings), *Miscanthus giganteus* and various agri-residues such as sugar cane bagasse and palm industry byproducts.

The Project will purchase biomass from Roseburg (who will source from a 75 road-mile radius), process the feedstock into RFO and sell the RFO to refineries. If *Miscanthus giganteus* is used, there will be a need for Roseburg, or any other energy feedstock providers for the facility, to employ agreements with all producers that include control of *Miscanthus giganteus*. Therefore this proposal will employ the mitigation measures for invasive species control as outlined in "Section XIX. Mitigation" of this Environmental Assessment. These conditions will be

referenced in the Finding of No Significant Impact (FONSI) and conditional commitment for financial assistance.

### **Invasive Species Concerns**

*Miscanthus giganteus* is not listed as an invasive species within Georgia; however, with introduction into larger crop areas, efforts should be taken to ensure the crop doesn't reproduce undesirably as have other varieties of *Miscanthus*, such as *Miscanthus sinensis* or *Miscanthus sacchariflorus*, in other States, such as Tennessee, Texas, and California.

Concerns have been raised about the potential for unwanted spreading of rhizomes to other fields or to water bodies with potential downstream establishment, particularly in wetlands. To reduce the potential for any unwanted propagation, best management practices will be required for all producer feedstock agreements to include mandatory consultation by producers with local NRCS agents, and adoption of specific NRCS BMPs as listed in Section XIX. Mitigation Measures of this Environmental Assessment.

### **Feedstock Availability and Proximity**

The Project is located in a biomass rich region of the Southeastern U.S. Demand associated with the Project's 145,000 BDT per year need represents only 3.4 percent of the total estimated volume that is potentially available in the wood basket. The region affords the Project with the ability to utilize a number of different feedstock options including:

1. Logging Residues (in-woods or forest residuals): Logging residues are the unused portions of stock trees left as residue following completion of logging operations. These residues consist largely of limbs and tree-tops that are not collected during the harvest operation. The amount of residues left after harvesting varies among logging crews, which have different merchandising strategies and levels of effectiveness.

2. Thinning: The thinning opportunities for energy biomass can be broken down into two categories:

- **Unmerchantable or Precommercial thinning** – removal of stems less than 5.0 inches in dbh (diameter at breast height, 4.5 feet above ground). Unmerchantable or precommercial thinning is one of the largest expenses in the management and improvement of tree plantations and timber stands that growers encounter in the course of a rotation. A precommercial thinning involves removing a high percentage of saplings from a stand to provide room for the remaining stems to grow. Such thinning may be done in pine and hardwood stands.

- **Commercial thinning** – removal of stems that are 5.0-8.9 inches in dbh. Commercial thinning involves the selective removal of more mature trees. Growers undertake commercial thinning to sell to the pulpwood market and improve the health of the stand. But the pulpwood market,

especially for softwood, is saturated because of the effects of, for example, the southern pine beetle epidemic, imports from Canada, or competition from offshore pulp mills.

Ensyn believes that the Project will rely on wood waste or forest residuals as its primary source of fuel with secondary fuel sources of smaller portions of mill residues, purpose grown energy crops (*Miscanthus giganteus*), and commercial pulp timber (as needed).

Within the supply region, exists a feedstock-rich wood basin that is dominated by plantation pine owned by non-industrial private landowners. There is approximately 78.6 million tons of inventory on plantations in the supply region. On an annual basis, approximately 5.8 million tons of pine pulpwood is removed from the local forest and delivered to area pulp mills or chipped through chipmills. Working from the current plantation inventory, including annual plantation excess growth, there is currently 82.9 million tons of qualified material in the supply region.

## **V. Coastal Zone Management Act**

The Project is located within Dooly County, which is not within a Coastal Zone Management Program Area as defined by the Coastal Zone Management Act (16 U.S.C. part 1451 et seq.). The Georgia Coastal Management Program includes the following eleven counties: Brantley, Bryan, Camden, Charlton, Chatham, Effingham, Glynn, Liberty, Long, McIntosh, and Wayne.

## **VI. Compliance with Advisory Council on Historic Preservation's Regulations**

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended, requires federal agencies to take into account the effect of undertakings on historic properties (archaeological sites and historic buildings, sites, landmarks and districts) that are eligible for and/or listed on the National Register of Historic Places (NRHP). This consideration must be made in consultation with the Georgia State Historical Preservation Office (GASHPO).

According to the NHPA, Indian tribes must also be consulted regarding any potential impact the proposal may have on tribal cultural and/or historical resources.

RBS made a determination of no effect to historic properties for the proposal on April 3, 2014 (Appendix F). GASHPO concurred with this determination on April 9, 2014 (Appendix F). The Project is being developed on an existing industrial site that was formally a particleboard mill. This is not an historic property. The Vienna Mill, which was commissioned in 1970, is currently owned by Roseburg Forest Products. The Mill was closed in 2010. There are eight locations in Dooly County on the National Register of Historic Places (Appendix F). According to the National Register of Historic Places, none of the registered historic sites are located near the Project site.

## VII. Compliance with the Wild and Scenic Rivers Act

There is one river in the state of Georgia with the Wild and Scenic River designation – the Chattanooga River. The river is in the northern portion of the State and the Project will have no impact on this River.

Vienna does not have any rivers that are listed on the Nationwide Rivers Inventory (NRI). No Inventory River will be adversely impacted by this development.

## VIII. Compliance With the Endangered Species Act

RBS requested a letter of concurrence from the USFWS with respect to a determination of “**may affect/not likely to affect**” for the Endangered Candidate Species the Gopher tortoise and a “**no effect**” determination for 8 other Endangered species (5 mussel and 3 plant species listed below) identified in the region of the proposed Project site in Vienna, GA. This determination was based in large part on the biological survey completed on the site (Appendix G). This request is made under the requirements of Section 7 of the Endangered Species Act.

### Listed Endangered Species

Fat three-ridge (mussel)	no effect
Gulf moccasinshell (mussel)	no effect
Oval pigtoe (mussel)	no effect
Purple backclimber (mussel)	no effect
Shinyrayed pocketbook (mussel)	no effect
Canby’s dropwort (plant)	no effect
Harperella (plant)	no effect
Relict trillium (plant)	no effect

### RBS Determination

### Listed Endangered Candidate Species

Gopher tortoise	may affect/not likely to affect
-----------------	---------------------------------

### RBS Determination

Based on a review of the existing conditions at the site, the proposed construction and operation activities, a site survey conducted by the applicant’s consultants on March 28, 2014, and a database survey, RBS determined that the proposal **may affect but is not likely to affect** the Endangered Gopher tortoise (Appendix G).

As discussed in the Biological report (Appendix G) Gopher tortoises are typically found in habitats that contain well-drained sandy substrate, sufficient amounts of herbaceous vegetation for food, and sunlit areas for nesting. These conditions are often met in the following habitat types: pine-turkey oak sandhill; sand pine scrub; xeric hammock-pine flatwoods; dry prairie-coastal grasslands and dunes, and mixed hardwood-pine communities. The tortoise excavates deep burrows that provide shelter from climatic extremes and refuge from predation. It does not persist in areas with densely canopied areas and is frequently found in disturbed areas such as roadsides, fence-rows, old fields, and the edges of overgrown uplands.

Potential habitat exists within the undeveloped wooded portions and adjacent open areas of the property located east and west of the existing facility. The site assessment included multiple transects with special attention paid to the habitat transition zones that existed between the wooded and open herbaceous areas. According to the biologists, based on site conditions those areas appeared to be the most appealing area for gopher tortoises to locate their burrows. No tortoise burrows or tracks were observed during the survey.

All process waters would be leaving the site via conveyance to existing City of Vienna sewer facilities at an existing onsite sewer (Figure 7). The Project does not propose discharge to water bodies. Since the proposal does not propose water dependent construction and no discharge or outflow to adjacent water bodies or tributaries, RBS has determined that the proposal would have **“no effect”** on the following five (5) species of mussels.

<b><u>Listed Endangered Species</u></b>	<b><u>RBS Determination</u></b>
Fat three-ridge (mussel)	no effect
Gulf moccasinshell (mussel)	no effect
Oval pigtoe (mussel)	no effect
Purple backclimber (mussel)	no effect
Shinyrayed pocketbook (mussel)	no effect

Since the biological survey did not find suitable habitat for the three listed plant species below on the property, RBS has determined that the proposal would have **“no effect”** on the following three (3) species of plants.

<b><u>Listed Endangered Species</u></b>	<b><u>RBS Determination</u></b>
Canby’s dropwort (plant)	no effect
Harperella (plant)	no effect
Relict trillium (plant)	no effect

RBS made a determination of **“may affect/not likely to affect”** for the Endangered Candidate Species the Gopher tortoise and a **“no effect”** determination for 8 other Endangered species (5 mussel and 3 plant species listed above) on April 8, 2014, and forwarded a copy of this determination to the appropriate USFWS field office in accordance with Section 7 of the Endangered Species Act. USFWS concurred in a letter dated April 10, 2014 (Appendix G).

Consultation with the State’s Georgia Department of Natural Resources, Wildlife Resources Division indicated that this Project is in close proximity to a tributary of Pennahatchee Creek (Appendix G). They recommended to protect aquatic habitats and water quality in this stream, the applicant make use of stringent erosion control practices during construction and re-establishment of vegetation on disturbed areas as quickly as possible following construction and other erosion control measures. RBS will not make this a requirement since the applicant is required to comply with the NPDES permits for storm water erosion and sediment control.

## **IX. Compliance With Farmland Protection Policy Act and Departmental Regulation 9500-3, Land Use Policy**

Pursuant to the Farmland Protection Policy Act (FPPA), the Project site was evaluated to document the presence or absence of important farmland (including prime farmland, farmland of statewide importance, unique farmland, or farmland of local importance). Five designated soil units are mapped by the NRCS on the 67 acre property (Figure 6a). Dothan loam sand and Tifton Loamy Sand are designated as prime farmland. Ardilla loamy Sand is designated as farmland of statewide importance. However, regardless of their classification, the soils on the site would not be considered prime farmland for FPPA purposes since they have already been committed to urban use based on their location within an existing industrial site/industrial area.

## **X. Compliance with Executive Order 11988, Floodplain Management, and Executive Order 11990, Protection of Wetlands**

The current effective FEMA FIRM map for this property, dated September 11, 2009 (Map Panel Number 13093C0310D), indicates the site is located within a Zone X (unshaded) which is outside of both the 100-year or 500-year floodplain (Figure 4).

Based on the NRCS mapping, portions of the non-developed portions of the existing 67 acre site are mapped as hydric soils (Figure 6b). However, since no construction is proposed for outside of the existing concrete footprint of the Particle Board Facility, the proposal will not have any impact to wetlands. If construction outside of the existing footprint of the disturbed/concrete/gravel road areas (Figure 2) is proposed, consultation with the U.S. Army Corps of Engineers would be required to obtain a jurisdictional determination and/or permit for potential impact to waters of the U.S. including wetlands, as appropriate.

## **XI. Compliance with Coastal Barrier Resources Act**

The Project is not located within areas protected by the Coastal Barrier Resources Act of 1972 (16 U.S. C part 3501 et. seq.).

## **XII. State Environmental Policy Act**

The State of Georgia does not have an Environmental Act equivalent to NEPA. However, this development will not produce any contaminants, which would be harmful to the environment. The 1991 Session of the Georgia Legislature passed Senate Bill 97, as amended, which was signed into law by Governor Miller on April 23, 1991. The new statute (OCGA 12-16-1), known as the Georgia Environmental Policy Act (“GEPA”), principally provides for the disclosure of the environmental effects of proposed projects in the State.

Under the GEPA, an evaluation of a proposed project will conclude whether or not the project area is affected by the project, and if that effect is minor, medium or major. An analysis of the

proposal concluded that of the 25 categories, the development, construction, and operation of the Project will affect two categories - Air Quality and Solid Waste. The effect was classified as “minor” for both categories. A full discussion can be found in Appendix H.

### **List of Permits**

Ensyn developed a preliminary permitting plan based on the completed conceptual Project design and current permits at the Roseburg Mill. The table in Appendix I serves as a summary of the permits and authorization which are planned to be obtained to develop, build, commission and operate the Project. The summary is organized by Federal, State and Local requirements. It incorporates 1) the relevant agency, 2) the anticipated timing for the receipt of permits from the time of application and 3) the estimated cost to be incurred for preparation and submittal for each permit/requirement.

The site has an existing water supply agreement with the City of Vienna, Public Works Department, as well as a Discharged Permit with City of Vienna (Permit No. WQ0010186-001).

### **XIII. Consultation Requirements of Executive Order 12372, Intergovernmental Review of Federal Programs**

Although the Intergovernmental Review process was suspended recently in the State of Georgia, consultation was conducted with all of the required agencies as shown in the list of Appendices. There was no opposition to the proposal from any of these agencies.

### **XIV. Environmental Analysis of Participating Federal Agency**

There are no participating Federal Agency’s for this Environmental Assessment (EA).

### **XV. Reaction to Proposal**

No negative comments or public views have been expressed regarding the Project. No public hearing or public information meetings have been held.

Although no public hearing or meeting has yet been held, RBS has notified and received feedback from both the City of Vienna and the Dooly County Economic Development Council (Appendix J). Both parties have expressed support of the Project and its potential to positively impact the region. The Project will comply with all local, county, and state regulations and codes for public comment and review.

A public notice of the Finding of No Significant Impact (FONSI) will be published in Vienna’s News Observer and The Cordele Dispatch, the two local newspapers, as well as in other nearby papers including The Houston Journal and Citizen Georgian, between August 20<sup>th</sup> through August 29<sup>th</sup>, 2014.

### **XVI. Cumulative Impacts**

No significant cumulative impacts are anticipated for this proposal based on the location within an existing industrial site, incorporated pollution control strategies and best management practices discussed in this EA. The Project is not expected to have an impact on public health through emissions since all of the emissions from the plant are quite low and within permitted limits. There are no plans for future expansion of the Project.

The proposal is expected to have a net positive cumulative impact on the human environment because the plant would produce low carbon fuels that would help Georgia meet their greenhouse gas reduction goals, diversify their transportation fuel supply and develop markets for Georgia's biomass resources. Wood biomass grows abundantly in this area and replenishes quickly and easily even in poor quality soil.

## **XVII. Adverse Impact**

As previously discussed, this proposal includes the construction of the Project within 67 acres of the former Particle Board Facility in Vienna, GA. As indicated above, no wetlands, floodplains, historic properties or endangered or threatened species will be impacted as a result of this proposal.

The proposal's construction activities would result in disturbance of previously disturbed ground and concrete and would temporarily produce dust and localized noise. The proposal would result in a minor adverse effect to local fauna and water quality due to construction and operation of the Project; however, the Project would be operated in accordance with applicable water quality permits.

A moderate increase in the amount of truck and car transportation would result from the proposal, however, access to and from the site should not change appreciably.

Indirect impacts would consist of an increase in air emissions in the area resulting from Project operations. Air emissions would be monitored, and the Project would be operated in accordance with applicable air quality permits.

Implementation of this Proposal would not result in any significant adverse environmental impacts as defined Section 1508.27 of the Council on Environmental Quality (CEQ) regulations or in RD Instruction 1940.314(b). The proposal would have minor adverse effects to air quality, water quality, and local wildlife however it does not pose significant adverse effects to the natural or human environment.

## **XVIII. Alternatives**

### **No Action Alternative**

The no action alternative was considered, but due to the economic and regulatory benefits of the proposal it was rejected. Ensyn would be able to provide a higher value margin for the cellulosic

materials proposed for use and achieve environmental benefits related to a reduction in GHG emissions from a reduction in the burning of fossil fuels.

### **Off-site Alternatives**

Other industrial park locations in Georgia and other states were considered, but no other alternatives provide the combined benefits of the proposed site. The proposed site is uniquely located at an existing particle board facility and railway which will facilitate shipment of feedstocks and off take for the proposal. In addition, the proposed site contains the existing infrastructure and utilities required for the proposal and does not propose any site specific impacts to environmental resources.

### **XIX. Mitigation Measures**

This environmental assessment identified potential adverse effects associated with the use of the invasive species *Miscanthus giganteus* as a feedstock. To ensure that there are no impacts to the natural environment from the spread of *Miscanthus giganteus*, or other invasive species if proposed, RBS will condition the loan guarantee to include the following required consultation with NRCS and minimum BMPs when such potentially invasive species are proposed for use in feedstock agreements.

#### **ENVIRONMENTAL CONDITIONS:**

Mitigation measures/Conditions which must be employed for this Project include the following:

To reduce the risk of the spread of invasive species as part of the production of feedstocks (using varieties of perennial grasses proposed, namely *Miscanthus giganteus*, or other invasive species) for the Ensyn Proposal the Borrower will draft and provide a template for Lender and Agency review and approval, that will incorporate into all agreements with Feedstock Agricultural Producer (referred to hereafter as Producer), the following action items, unless the Lender acknowledges that the Producer has an approved Conservation Plan with the Natural Resources Conservation Service (NRCS) (evidence of which must be provided to the Lender and Agency):

- a. New Producer orientation to discuss production methods, management activities, potential for spread of *Miscanthus giganteus* (common name giant miscanthus) and/or other invasive species, treatment methods, and responsibilities, pest/disease identification, treatment methods, and responsibilities, eradication methods, if necessary, and reporting requirements.
- b. Site-specific best management practices (BMPs), which could include, but not be limited to, NRCS Conservation Practice Standards (CPS) for soil erosion, pesticide use and application, fertilizer use and application, and other relevant areas for each specific site.
- c. Setbacks/buffers to manage the giant miscanthus stand and to prevent unintentional spread of the giant miscanthus shall follow all local, State, or Federal regulations for containment of Biomass plantings in existence at the time of the development of the Producer's Conservation Plan or through an amendment of the Conservation Plan

- initiated by the Producer and approved by the Agency and NRCS, if determined appropriate for the site-specific conditions. If no such guidance exists, minimum procedures to prevent unintentional spread of giant miscanthus shall include:
- i. Establish or maintain a minimum 25 feet of setback/border around a giant miscanthus stand, unless the field is adjacent to existing cropland or actively managed pasture of the same Producer.
  - ii. Setback/border areas may be planted to an annual row crop such as corn or soybeans; may be planted to a site-adapted, perennial cool-season or warm season forage or turf grass; may be kept in existing vegetation; or kept clear by disking, rotating, or treating with a non-selective burn down herbicide at least once a year. The method used may be dependent on slope and the potential for erosion.
- d. The use of only those known sterile varieties of giant miscanthus cultivars by Producers within those feedstock production areas to be utilized for this Project. All clone cultivars must be approved for planting under a recognized Quality Assurance program.
  - e. The initiation of a seed sampling program to determine the on-going sterility of seeds produced from the feedstock production areas to be utilized for this Project. The seed sampling program will include recommended actions, including eradication, if a seed sample returns viable seed.
  - f. Exclusion of planting giant miscanthus on certain acreage within approximately 1,300 Feet from any known *Miscanthus sinensis* or *Miscanthus sacchariflorus* to limit the potential for cross-pollination resulting in viable seed.
  - g. Exclusion of planting giant miscanthus on certain acreage within the feedstock production areas utilized for this Project, depending upon certain site-specific conditions, like those lands subject to frequent flooding events.
  - h. Monitoring program developed to identify (1) spread of giant miscanthus outside of planted fields with notification provided to both the Agency and the Producer, producer association or cooperative (if applicable) as soon as possible after identification of the issue, (2) identification of diseases and pests with notification provided to the Producer, producer association or cooperative (if applicable) as soon as possible after identification of the issue; an Agency representative will conduct an annual field visit to monitor the site and to look for potential spread of giant miscanthus beyond the site; the Agency will work with local weed control districts to provide additional monitoring/evaluation of these sites as appropriate.
  - i. Annual producer reporting, which will include land use tracking with the average and total size of enrolled fields; prior land use; rationale for land use change; spread of giant miscanthus outside of planted fields; any pests/diseases identification; the use of pesticides/herbicides to control unwanted spread of giant miscanthus or pests/diseases; BMP and CPS incorporated into field management, such as erosion control structures or materials, vegetative barriers, etc.; fertilizer usage and application methods; and cost data.

## **XX. Consistency With Rural Development Environmental Policies**

This Proposal is consistent with the RBS's environmental policies, the State Office's Natural Resource Management Guide and Federal and State environmental policies.

**XXI. Environmental Determinations**

The following recommendations shall be completed:

A. Based on an examination and review of the foregoing information and such supplemental information attached hereto, I recommend that the approving official determine that this proposal will have ( ) a significant effect on the quality of the human environment and an Environmental Impact Statement must be prepared; will not have (X) a significant effect on the quality of the human environment.

B. I recommend that the approving official make the following compliance determinations for the below-listed environmental requirements.

Not in compliance		In compliance		
			X	Clean Air Act.
			X	Federal Water Pollution Control Act.
			X	Safe Drinking Water Act—Section 1424(e).
			X	Endangered Species Act.
			X	Coastal Barrier Resources Act.
			X	Coastal Zone Management Act—Section 307(c) (1) and (2).
			X	Wild and Scenic Rivers Act.
			X	National Historic Preservation Act.
			X	Archeological and Historic Preservation Act.
			X	Subpart B, Highly Erodible Land Conservation
			X	Subpart C, Wetland Conservation, of the Food Security Act.
			X	Executive Order 11988, Floodplain Management.
			X	Executive Order 11990, Protection of

				Wetlands.
			X	Farmland Protection Policy Act.
			X	Departmental Regulation 9500-3, Land Use Policy.
			X	State Office Natural Resource Management Guide.

C. I have reviewed and considered the types and degrees of adverse environmental impacts identified by this assessment. I have also analyzed the proposal for its consistency with Rural Development under Public Law 103-354 environmental policies, particularly those related to important farmland protection, and have considered the potential benefits of the proposal. Based upon a consideration and balancing of these factors, I recommend from an environmental standpoint that the proposal

X be approved.

     not be approved because of the attached reasons.

Prepared by:

 8/15/14  
 JULIET C. BOCHICCHIO Date  
 Environmental Protection Specialist, Program Support Staff

Recommended:

 8/15/14  
 ED DUVAL Date  
 Acting Director, Program Support Staff

Recommended:

 08-24-14  
 MARK BRODZISKI Date  
 Director, Energy Division, Rural Business-Cooperative Service

Approved:

 9/24/14  
 LILLIAN SALERNO Date  
 Administrator, Rural Business-Cooperative Service

[49 FR 3727, Jan. 30, 1984, as amended at 53 FR 36266, Sept. 19, 1988]