



GEORGIA

DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

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NARRATIVE

TO: Hamid Yavari
FROM: Brian Zhong
DATE: October 27, 2016

Facility Name: **South Georgia Cotton Gin LLC**
AIRS No.: 16100016
Location: Hazlehurst, GA (Jeff Davis County)
Application #: 24028
Date of Application: October 20, 2016

Background Information

South Georgia Cotton Gin LLC currently operates a cotton gin located at 438 Broxton Hwy, Hazlehurst, Georgia (Jeff Davis County). The existing cotton gin is regulated by “Permit-By-Rule (PBR)” Air Quality Permit No. 0724-080-8926 issued on January 10, 2005. The new gin is expected to operate approximately 1540 hours per year for an annual throughput of 100,000 bales, which is below the PBR threshold of 120,000 bales per year under Permit-by-Rule 391-3-1-.03(11)(b)6, “Cotton Ginning Operations”.

Purpose of Application

On October 20, 2016, EPD received “Permit-By-Rule” Application No. 24028 submitted for the construction and operation of a new cotton gin by South Georgia Cotton Gin LLC. This new gin will replace an existing cotton gin on site which will be decommissioned after this season. After the proposed construction of the new cotton gin, the facility at this site should still be able to comply with the 120,000 bales per year PBR production limit.

Updated Equipment List

Emission Units			Associated Control Devices	
Source Code	Description	Installation Date	ID No.	Description
F1	Telescope	2017	C11	1D-3D High Efficiency Cyclones
F2	First Stage A Side Cleaning	2017	C21/C22	1D-3D High Efficiency Cyclones
F3	First Stage B Side Cleaning	2017	C31/C32	1D-3D High Efficiency Cyclones
F4	Second Stage A Side Cleaning	2017	C41/C42	1D-3D High Efficiency Cyclones
F5	Second Stage B Side Cleaning	2017	C51/C52	1D-3D High Efficiency Cyclones
F6	#1 Lint Cleaning	2017	C61	1D-3D High Efficiency Cyclones
F7	#2 Lint Cleaning	2017	C71	1D-3D High Efficiency Cyclones
F8	#3 Lint Cleaning	2017	C81	1D-3D High Efficiency Cyclones
F9	Battery Condenser A Side	2017	C91/C92	1D-3D High Efficiency Cyclones
F10	Battery Condenser B Side	2017	C101/C102	1D-3D High Efficiency Cyclones
F11	Lint Cleaner Trash	2017	C111/C112	1D-3D High Efficiency Cyclones
F12	Mote Robber	2017	C121	1D-3D High Efficiency Cyclones
F13	Master Trash System	2017	C131	1D-3D High Efficiency Cyclones

Emission Units			Associated Control Devices	
Source Code	Description	Installation Date	ID No.	Description
B1A	#1A Burner	2017	N/A	N/A
B1B	#1B Burner	2017	N/A	N/A
B2A	#2A Burner	2017	N/A	N/A
B2B	#2B Burner	2017	N/A	N/A
HAB	Hot Air Burner	2017	N/A	N/A
MUB	Moisture Unit Burner	2017	N/A	N/A

Emissions Summary

After the construction of the new cotton gin facility as proposed by the application No. 24028, the site will still comply with the 120,000 bales per year “Permit-by-Rule” production limit in 391-3-1-.03(11)(b)6, “Cotton Ginning Operations”. PM emissions from material handling and ginning process will be abated by a number of high efficiency cyclones (1D-3D design) which are already used by the existing Gin Plant No. 1.

Potential emissions (CO, NO_x, PM, SO₂, and VOC) from fuel combustion sources (natural gas/propane fired burners) after the proposed facility construction were estimated based on appropriate AP-42 emission factors. These emissions were insignificant with potential NO_x and CO emissions being less than 7 tons per year, and PM, SO₂, and VOC were all well below 1 ton per year. PM/PM10 emissions from the cotton ginning processes were estimated using the applicable AP-42 emissions factors.

Facility-Wide Emissions (in tons per year)

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
PM	N/A	42.68	N/A	N/A	29.93	N/A
PM ₁₀	N/A	19.78	N/A	N/A	13.13	N/A
PM _{2.5}	N/A	3.79	N/A	N/A	2.10	N/A
NO _x	N/A	3.86	N/A	N/A	0.98	N/A
SO ₂	N/A	0.05	N/A	N/A	0.01	N/A
CO	N/A	6.49	N/A	N/A	1.65	N/A
VOC	N/A	0.43	N/A	N/A	0.11	N/A
Max. Individual HAP	N/A	N/A	N/A	N/A	N/A	N/A
Total HAP	N/A	N/A	N/A	N/A	N/A	N/A
Total GHG (if applicable)	N/A	9275.29	N/A	N/A	2352.94	N/A

Regulatory Applicability**Georgia Rule 391-3-1-.02(2)(b) - Visible Emissions**

This regulation limits opacity to less than forty percent, except as may be provided in other more restrictive or specific rules or subdivisions of Georgia Rule 391-3-1-.02(2). This limitation applies to direct sources of emissions such as stationary structures, equipment, machinery, stacks, flues, pipes, exhausts, vents, tubes, chimneys or similar structures. This regulation is applicable to the cotton ginning operations and other supporting equipment with the capability of emitting particulates.

Georgia Rule 391-3-1-.02(2)(e) - Particulate Emissions from Manufacturing Processes

This regulation limits particulate emissions from manufacturing processes as follows:

$E = 4.1 P^{0.67}$; for process input weight rate up to and including 30 tons per hour.

$E = 55 P^{0.11} - 40$; for process input weight rate above 30 tons per hour.

This regulation is applicable to the cotton ginning operations and other supporting equipment with the capability of emitting particulates.

Georgia Rule 391-3-1-.02(2)(q) - Particulate Emissions from Cotton Gins

This regulation limits particulate emissions from cotton ginning processes as follows:

$$E = 7B^{0.5}$$

Where E is the allowable particulate matter emission rate in pounds per hour and B is the number of standard bales per hour.

Permit Conditions**Section 1.0: General Requirements**

Conditions 1.1 thru 1.5 were standard permit conditions.

Section 2.0: Allowable Emissions

Permit Condition 2.1 – General applicability of Georgia Rule 391-3-1-.02(2)(b) to applicable equipment, regarding to the visible emissions.

Permit Condition 2.2 – General applicability of Georgia Rule 391-3-1-.02(2)(q) to applicable equipment, regarding to the PM emissions from the cotton gin.

Section 3.0: Fugitive Emissions

Permit Condition 3.1 – General applicability of Georgia Rule 391-3-1-.02(2)(n) to applicable equipment, regarding to the prevention and/or reduction of fugitive emissions.

Section 4.0: Requirements for Control Equipment

Permit Condition 4.1 – Requires routine maintenance to be performed on all control equipment.

Permit Condition 4.2 – Requires the use of high efficiency cyclones on all high pressure exhausts from the cotton gin to control PM emissions.

Permit Condition 4.3 – Requires operation of control equipment whenever the cotton ginning process equipment is operating and per manufacturer's requirements.

Section 5.0: Monitoring

Permit Condition 5.1 – Requires weekly operation and maintenance checks for the cyclones.

Section 6.0: Performance Testing

Permit Condition 6.1 – States the standard performance testing requirements.

Section 7.0: Notification, Reporting and Record Keeping

Permit Condition 7.1 – Requires the Permittee to record the number of bales produced each calendar month.

Section 8.0: Special Conditions

Permit Condition 8.1 – Explains the Division's authority to determine additional control of emissions and to revise the permit for such additional control.

Permit Condition 8.2 – Requires the Permittee to keep a copy of the permit on site.

Permit Condition 8.3 – Revokes the current permit in its entirety.

Permit Condition 8.4 – Decommissions the old cotton gin plant.

Toxic Impact Assessment

Based on the natural gas fuel usage of the facility after the construction, the potential toxic emissions from the natural gas combustion are considered negligible. Therefore, no toxic impact assessment was necessary.

Summary & Recommendations

I recommend that Permit Amendment No. 0724-161-0016-R-01-0 be issued to South Georgia Cotton Gin LLC for its cotton gin facility located in Hazlehurst, Georgia. A public advisory was issued for the permit application No. 24028 and it will expire on December 9, 2016.