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## ENVIRONMENTAL PROTECTION DIVISION

**Richard E. Dunn, Director**

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**Air Protection Branch**

4244 International Parkway  
Suite 120  
Atlanta, Georgia 30354  
404-363-7000

### **NARRATIVE**

TO: Jeng-Hon Su  
FROM: Nada Osman  
DATE: May 9<sup>th</sup>, 2022

Facility Name: **SELIT North America, Inc.**  
AIRS No.: 04-13-011-00018  
Location: Commerce, GA (Banks County)  
Application #: 28322  
Date of Application: March 7<sup>th</sup>, 2022

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### **Background Information**

SELIT North America, Inc. (hereinafter, “facility”) is a polystyrene foam underlayment manufacturer located at 112 SELIT Drive, in Commerce, Georgia. The facility is located in Banks County, which is an attainment area for all criteria pollutants. Emission units at the facility include two extruders (ID Nos. EX01 and EX02), two compactors (ID Nos. CM01 and CM02), a recycling extruder (ID No. RE01), and a product storage warehouse (ID No. PS01). The facility also has an emergency generator (ID No. ES01), an emergency fire pump (ID No. ES02), and one storage tank (ID No. ST01) that are exempt from permitting.

The production process involves the injection of a propane/butane blowing agent into one of the extruders in order to expand polystyrene resin. The extruded sheet material (expanded polystyrene) is rolled up, packaged, and stored in the warehouse until the rolls are shipped to customers.

Currently, the facility’s potential-to-emit (PTE) for volatile organic compounds (VOC) could be greater than the 100 ton-per-year (tpy) Title V major source threshold. However, the facility operates with a VOC emission limit of 99 tpy for Title V avoidance and is therefore considered a synthetic minor source. All other criteria air pollutants, single hazardous air pollutants (HAP), and total HAP are below their respective major source thresholds.

The facility currently operates under SIP Air Quality Permit No. 3086-0018-S-01-0, issued on September 24<sup>th</sup>, 2019.

### **Purpose of Application**

On March 7<sup>th</sup>, 2022, the facility submitted Application No. 28322 for the construction and installation of a series of extruders (ID Nos. EX03 – EX05), compactors (ID Nos. CM03 – CM08), machines (ID Nos. CT01 and CT02), and printers (ID Nos. PR01 – PR03). The facility also proposed to install two exempt storage tanks (ID Nos. ST02 and ST03).

Considering all controls and limitations, the facility's proposed modification will result in a VOC PTE above 250 tpy, making the facility potentially a major source for both Title V and Prevention of Significant Deterioration (PSD) regulations. In order to avoid being a major source for PSD, the facility proposed a facility-wide VOC emission limit of 249 tpy. A Public Advisory was issued for this application on March 16, 2022.

### **Updated Equipment List**

**Table 1: Emission Units**

Emission Units			Associated Control Devices	
Source Code	Description	Installation Date	Source Code	Description
EX01	Extruder 1	11/2019	--	--
EX02	Extruder 2	11/2019	--	--
*EX03	Extruder 3	06/2022	--	--
*EX04	Extruder 4	06/2022	--	--
*EX05	Extruder 5	06/2022	--	--
CM01	Compactor 1	11/2019	--	--
CM02	Compactor 2	11/2019	--	--
*CM03	Compactor 3	06/2022	--	--
*CM04	Compactor 4	06/2022	--	--
*CM05	Compactor 5	06/2022	--	--
*CM06	Compactor 6	06/2022	--	--
*CM07	Compactor 7	06/2022	--	--
*CM08	Compactor 8	06/2022	--	--
*PR01	Printer 1	06/2022	--	--
*PR02	Printer 2	06/2022	--	--
*PR03	Printer 3	06/2022	--	--
*CT01	Machine	06/2022	--	--
*CT02	Machine	06/2022	--	--
RE01	Recycling Extruder 1	11/2019	--	--
PS01	Product Storage	11/2019	--	--

\*proposed within current application

**Table 2: Fuel-Burning Equipment**

Source Code	Input Heat Capacity (MMBtu/hr)	Description	Installation Date	Construction Date
ES01	1	Emergency Generator – 80.5Hp	11/2019	11/2019
ES02	2.4	Fire Pump Engine – 332Hp	11/2019	11/2019

## **Emissions Summary**

In order to be considered a minor source under the PSD regulation, the facility has requested an emission limit of 249 tpy for VOC. The majority of VOC emissions from the facility are produced from the polystyrene resin extrusion process, which, for the purpose of the application, also includes emissions from the compactors (ID Nos. CM01 – CM08), recycling extruder (ID No. RE01), and product storage (ID No. PS01). The blowing agent in the polystyrene foam will gradually be replaced by air, and therefore be released into the atmosphere and become VOC emissions. The facility calculates extrusion VOC emission rates by subtracting the amount of VOC retained in the foam when it is shipped offsite from the amount of VOC injected into the foam.

VOC are also emitted from the printing process. Potential VOC emissions from the printers were calculated using mass balance, and by assuming maximum hourly production rate.

According to the narrative accompanying SIP Permit No. 3086-011-0018-S-01-0, VOC emissions from the emergency generator (ID No. ES01) and fire pump engine (ID No. ES02) are 0.0278 tpy and 0.0208 tpy, respectively.

Note that the storage tanks (ID Nos. ST01 – ST03) are sealed and pressurized. Therefore, no emissions are expected, and the tanks are exempt from permitting and modeling.

All potential annual VOC emissions are calculated based on 8,760 hours per year of operation.

**Table 3: Potential Facility-Wide VOC Emissions from Manufacturing**

Process	VOC Emissions (lb/hr)	VOC Emissions (lb/yr)	VOC Emissions (tons/year)
Polystyrene Extrusion	123.04	1,077,835	538.92
Printing	5.71	50,011	25.01

As shown in Table 3 above, VOC PTE for the extrusion and printing processes (564 tpy) are greater than the PSD major source threshold of 250 tpy. The Division agrees with the facility to cap the facility-wide VOC emissions below 249 tpy so that the facility will be a minor source under PSD; this limit accounts for less than 1 tpy of VOC emissions from the engines, which the facility will not be required to track. The facility will only be required to track VOC emissions from the extrusion and printing processes.

**Table 4: Facility-Wide Emissions (tpy)**

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	0.0297	0.0297	0	0.0297	0.0297	0
NO <sub>x</sub>	0.993	0.993	0	0.993	0.993	0
SO <sub>2</sub>	0.170	0.170	0	0.170	0.170	0
CO	0.551	0.551	0	0.551	0.551	0
VOC	<99	<249	150	71.7	<249	177.3

Pollutant	Potential Emissions			Actual Emissions		
	Before Mod.	After Mod.	Emissions Change	Before Mod.	After Mod.	Emissions Change
Max. Individual HAP	1.50	2.60	1.1	1.50	2.49	0.99
Total HAP	1.51	2.60	1.09	1.51	2.49	0.98
Total GHG (if applicable)	115	115	0	115	115	0

As required by Existing Condition 6.2, the facility conducted one performance test from April 8, 2020 through May 29, 2020, and another performance test from August 16, 2021 through September 22, 2021. The facility used the test results and developed two VOC retention equations that can be used to estimate the amount of VOC retained in the foam after X days of storage. One equation is for water-based products, while the other equation is for non-water-based products. The equations are included in Condition 7.3a. of the Permit for the facility to use in order to track VOC emissions from the extrusion processes.

In order to make the equations work for all kinds of extrusion products (products with different initial VOC percentage), the facility used the test results and estimated roughly 15% of the blown agent/VOC is being emitted into the atmosphere before the product reaches the warehouse for storage. This has been incorporated into the equations in Condition 7.3a.

### **Regulatory Applicability**

#### 40 CFR 60 Subpart III – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Because it is a stationary compression ignition internal combustion engine (CI ICE), and it was constructed after July 11<sup>th</sup>, 2005, the diesel fire pump engine (ES02) is subject to 40 CFR 60 Subpart III, per 60.4200(a)(2)(ii). According to 40 CFR 60.4205(c) and Table 4 to the subpart, the fire pump engine must meet the following emissions standards:

Maximum Engine Capacity	NMHC + NO <sub>x</sub>	CO	PM
225 ≤ kW < 450 (300 ≤ Hp < 600)	3.0 g/HP-hr	2.6 g/HP-hr	0.15 g/HP-hr

40 CFR 60.4211(c) requires the facility to comply with the above emissions standards by purchasing and installing a CI ICE that is certified to operate with those emission standards, and 40 CFR 60.4206 requires the facility to maintain the engine at those emission standards for the full duration of its life. The facility is required by 40 CFR 60.4211(a) to comply with the emission standards by operating and maintaining the engine according to the manufacturer's emission-related instructions, changing only those emission-related settings that are permitted by the manufacturer, and meeting all applicable requirements of 40 CFR Subparts 89, 94, and/or 1068. Per 40 CFR 60.4207(b), diesel fuel fired in the engine must meet the following per-gallon standards:

1. Maximum sulfur content of 15 ppm
2. Cetane index or aromatic content, as follows:
  - a. A minimum cetane index of 40; or

b. A maximum aromatic content of 35 volume percent

Per 40 CFR 60.4209(a) and 40 CFR 60.4209(b), respectively, the facility must install a non-resettable hour meter on the engine and must use the hour meter to maintain records of the operation of the engine in emergency and non-emergency service. There is no time limit on the use of the engine in emergency situations according to 40 CFR 60.4211(f)(1)—however, 40 CFR 60.4211(f)(2) limits the operation of the engine for maintenance checks and testing to a maximum of 100 hours per calendar year.

Note that the definition of an emergency engine in the GA Rules for Quality Control limits the engine's operation to 500 hours per year.

40 CFR 60 Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Internal Combustion Engines

Because it was installed after January 1<sup>st</sup>, 2009 and has a maximum engine power greater than 25 horsepower (Hp) the emergency generator (ES01) is subject to 40 CFR 60 Subpart JJJJ. Per 40 CFR 60.4233(d), the facility must comply with the following emission standards in Table 1 to 40 CFR 60 Subpart JJJJ:

Maximum Engine Capacity	NOx	CO
(25 < Hp < 130)	10 g/Hp-hr	387 g/Hp-hr

40 CFR 60.4234 requires that the facility operate and maintain stationary SI ICE that achieve the emission standards as required in 40 CFR 60.4233 over the entire life of the engine.

40 CFR 60.4237(c) requires that the facility install a non-resettable hour meter on the engine. The facility must follow the requirements specified in 40 CFR 60.4243(d) in order to keep ES01 as an emergency engine under the rule. Note that the definition of an emergency engine in the GA Rules for Quality Control limits the engine's operation to 500 hours per year.

In order to demonstrate compliance with these emission standards, 40 CFR 60.4243(b) requires that the facility either purchase a certified engine or demonstrate compliance according to all applicable requirements specified in 40 CFR 60.4244.

The facility must comply with the notification, reporting, and record keeping requirements specified in 40 CFR 60.4245(a). Per 40 CFR 60.4245(b), the facility must also keep records of the hours of operation in emergency and non-emergency service.

Note that the definition of an emergency engine in the GA Rules for Quality Control limits the engine's operation to 500 hours per year.

40 CFR 63 Subpart JJJ - National Emission Standards for Hazardous Air Pollutant Emissions: Group IV Polymers and Resins

Thermoplastic product processing units (TPPU) are potentially subject to the standards of 40 CFR 63 Subpart JJJ. The processing equipment at the facility meet the definition of TPPU as defined by the subpart. However, the facility is not a major source of HAP emissions according to Table 4 of this Narrative and is therefore not subject to Subpart JJJ.

40 CFR 63 Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Both emergency engines ES01 and ES02 are subject to 40 CFR 63 Subpart ZZZZ because they were installed after June 12<sup>th</sup>, 2006 and are located at an area source of HAP. Because Emergency Generator ES01 and Emergency Fire Pump Engine ES02 meet the aforementioned criteria specified in 63.6590(c)(1), they are only required to comply with Subpart ZZZZ by demonstrating compliance with 40 CFR 60 Subpart IIII and 40 CFR 60 Subpart JJJJ, respectively. No other requirements under this subpart apply to the units.

Georgia Rule 391-3-1-.02(2)(b), Visible Emissions

Georgia Rule (b) limits the visible emissions from all manufacturing processes not to exceed 40% opacity. PM emissions from all facility processes are negligible and will therefore comply with Georgia Rule (b) limits.

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

Georgia Rule (e) limits particulate matter emissions based on process input weight rate. No manufacturing equipment at the facility produces PM emissions, and the facility is therefore expected to comply with Georgia Rule (e) PM limits.

Georgia Rule 391-3-1-.02(2)(g), Sulfur Dioxide

Georgia Rule (g) limits all fuel burning sources with a heat input capacity below 100 MMBtu/hr to burn only fuel containing no more than 2.5% sulfur, by weight. Emergency Generator ES01 combusts natural gas and Emergency Fire Pump ES02 combusts distillate diesel fuel with a sulfur weight content of 0.0015%. Because both fuel-burning sources are always expected to comply with sulfur limit of Georgia Rule (g), the rule is not included in the permit.

Georgia Rule 391-3-1-.02(2)(tt), VOC Emissions from Major Sources

SELIT is located in Banks County, which is not one of the named counties subject to the VOC limitations of Georgia Rule (tt). Therefore, the rule does not apply.

Georgia Rule 391-3-1-.02(2)(eee), VOC Emissions from Expanded Polystyrene Products Manufacturing

Banks County is not one of the named counties subject to the VOC limitations of Georgia Rule (eee), and the facility is therefore not subject to its requirements.

Georgia Rule 391-3-1-.02(2)(mmm), NOx Emissions from Stationary Gas Turbines and Stationary Engines Used to Generate Electricity

Emergency Generator ES01 is a spark ignition internal combustion engine and Emergency Fire Pump ES02 is a compression ignition internal combustion engine, and therefore, both units meet the definition of “stationary engines” as defined in Georgia Rule (mmm). Because they operate only when electric power is not available, for a total of less than 200 hours per year, both units meet the definition of “emergency standby stationary engines” as defined by the rule and are therefore both exempt from its requirements.

Georgia Rule 391-3-1-.02(2)(qqq), VOC Emissions from Extruded Polystyrene Products Manufacturing Utilizing a Blowing Agent

Banks County is not one of the named counties subject to the VOC emission limitations of Georgia Rule (qqq). Therefore, the rule does not apply to the facility.

**Permit Conditions**

Note that emergency generators and storage tanks are exempt from permitting. Therefore, they are not included in the proposed permit.

Condition 2.1 restricts the facility (extrusion and printing processes) to emitting less than 249 tpy of VOC, for avoidance of a PSD review.

Condition 2.2 restricts the visible emissions of all equipment subject to GA Rule (b) to an opacity level of less than 40%.

Condition 2.3 limits PM emissions from all manufacturing processes based on process input weight rate, per GA Rule (e).

Condition 2.4 requires the facility to keep the overhead garage door closed at all times, except when loading and unloading, in order to minimize emission loss through the door.

Existing Condition 7.1 was removed from the permit because the facility provided notification of startup to the Division on July 29<sup>th</sup>, 2020. New Condition 7.1 requires the facility to maintain monthly usage records of all VOC-containing materials at the facility, expressed as a weight percentage.

Condition 7.2 lists the records required to be maintained by the facility for each roll of product produced.

Condition 7.3 specifies the equations that the facility will use to calculate actual monthly VOC emissions from the extrusion and printing processes. The facility must notify the Division if the total exceeds 20.75 tons during any calendar month.

Condition 7.4 requires the facility to use the equations from Condition 7.3 to calculate the 12-month rolling total of VOC emissions from the facility, and to notify the Division if the total exceeds 249 tons during any 12 consecutive months.

## Toxic Impact Assessment

The facility emits seven Georgia Toxic Air Pollutants (TAP) – propane, carbon black, styrene, ethanol, 1-methoxy-2-propanol, ethyl acetate, and propan-2-ol. Styrene is the only TAP that is also a federal HAP. Because the facility’s emission points are not vertical point sources, the minimum emission rate (MER) method cannot be used to determine whether the TAPs require modeling. The maximum ground-level concentration (MGLC) for each TAP was modeled in AERMOD and compared to its corresponding acceptable ambient concentration (AAC). AAC values for each TAP were referenced from Appendix A of the Summary of Ambient Impact Assessment of Toxic Air Pollutant Emissions (2018), with the exception of propane. The Division approved the facility’s request to use an alternative 24-hour AAC for propane. Propane and carbon black are the only TAP whose MGLCs exceeded their respective AACs, as shown in Table 5.

**Table 5: AERMOD MGLC vs. AAC**

Pollutant	CAS	Averaging Period	AAC ( $\mu\text{g}/\text{m}^3$ )	Max Modeled Concentration (MGLC)	MGLC < AAC?
Propane	74-98-6	24-hr	<b>6,000*</b>	<b>10,819.64</b>	<b>NO</b>
Carbon Black	1333-86-4	24-hr	<b>8.3</b>	<b>11.62</b>	<b>NO</b>
Styrene	100-42-5	15-min	85,200	7.77	YES
		Annual	1,000	1.19	YES
Ethanol	64-17-5	24-hr	4,500	106.32	YES
1-methoxy-2-propanol	107-98-2	15-min	54,000	449.7	YES
		Annual	2,000	8.48	YES
Ethyl acetate	141-78-6	24-hr	3,330	14.50	YES
Propan-2-ol	67-63-0	15-min	98,000	122.64	YES
		24-hr	2,330	14.50	YES

\* Alternative 24-hr propane AAC requested by applicant and approved by the Division

To demonstrate compliance with the “Guideline for Ambient Impact Assessment of Toxic Air Pollutant Emissions (2017),” a site-specific risk assessment (SSRA) was required to be performed for propane and carbon black using AERMOD dispersion modeling. A business area risk assessment was performed by modeling the MGLC of each pollutant at three nearby businesses; since the facility operates for 24 hours a day, the modeled concentrations were compared to alternative 24-hour AAC values for each TAP (derived from the OSHA 8-hour permissible exposure limit (PEL)). The results are shown in Table 6.

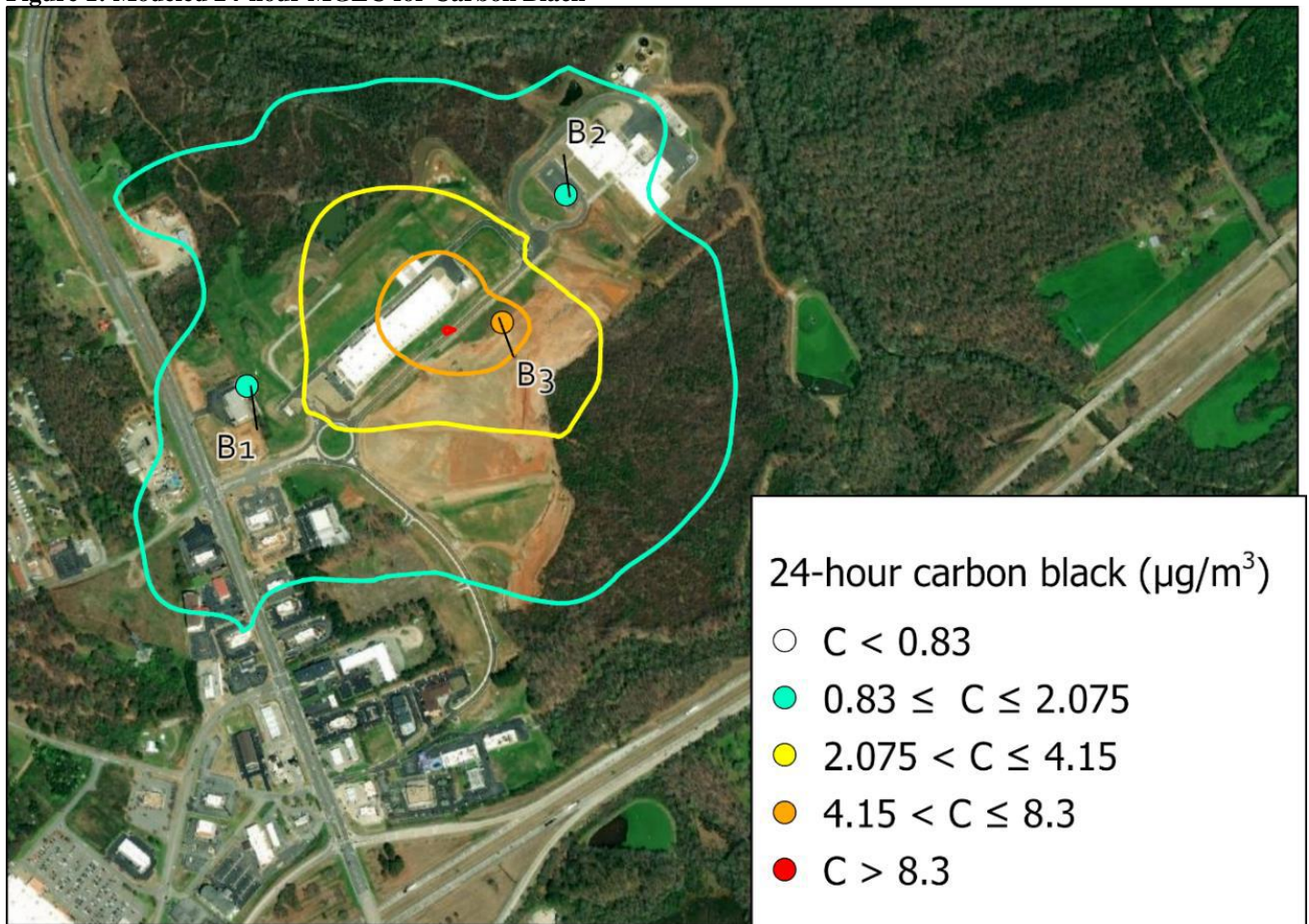
An SSRA also typically requires a residential risk analysis to be performed on the nearest residential area; however, for residential risk analyses, the modeled concentrations are compared to each pollutant’s annual AAC value. Propane and carbon black do not have annual AAC values for which to compare the air dispersion modeling results, and therefore, a residential risk analysis was not required.

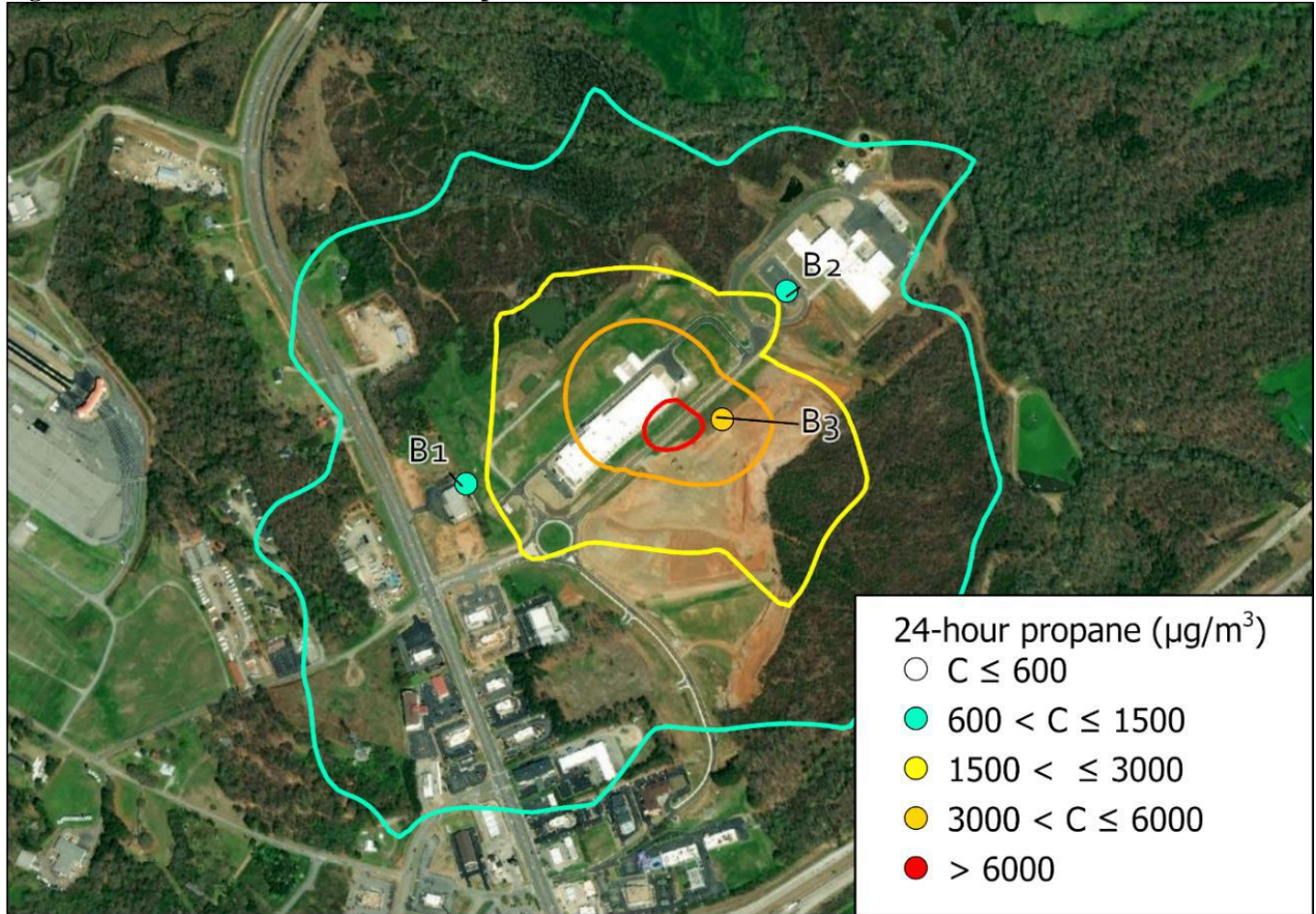
**Table 6: TAP Business Risk Assessment**

Pollutant	Averaging Period	AAC ( $\mu\text{g}/\text{m}^3$ )	MGLC ( $\mu\text{g}/\text{m}^3$ )	Business Receptor ID	MGLC < AAC?
Carbon Black	24-hour	8.3	1.37	B1	YES
			1.53	B2	
			5.71	B3	
Propane	24-hour	6,000	1,270.15	B1	YES
			1,427.65	B2	
			5,313.70	B3	

At each of the businesses, the highest modeled concentration of each pollutant was below its associated 24-hour AAC. Therefore, both pollutants comply with the Georgia Toxics Guidelines and no additional dispersion modeling is required. Visual representations of the modeled MGLCs for each pollutant are shown in Figures 1 and 2, overlaid on a satellite image of the facility and the surrounding area.

**Figure 1: Modeled 24-hour MGLC for Carbon Black**



**Figure 2: Modeled 24-Hour MGLC for Propane**

### **Summary & Recommendations**

SELIT North America, Inc. is a polystyrene foam underlayment manufacturer located in Commerce, Georgia. The facility is currently a synthetic minor source but will be a Title V major source post-modification, operating with a 249 tpy limit on VOC emissions for avoidance of PSD review. The Stationary Source Compliance Program (SSCP) will continue to be responsible for compliance and inspection of this facility.

I recommend that Permit No. 3086-011-0018-E-02-0 be issued to SELIT North America, Inc. A Public Advisory was issued for this application and expired on April 15<sup>th</sup>, 2022. No comments were received.