

**NORTH CAROLINA DIVISION OF
AIR QUALITY**

Application Review

Issue Date:

Region: Asheville Regional Office
County: Mitchell
NC Facility ID: 6100088
Inspector's Name: Christopher Scott
Date of Last Inspection: 09/24/2020
Compliance Code: 3 / Compliance - inspection

<p style="text-align: center;">Facility Data</p> <p>Applicant (Facility's Name): BRP US, Inc.</p> <p>Facility Address: BRP US, Inc. 1211 Greenwood Road Spruce Pine, NC 28777</p> <p>SIC: 3365 / Aluminum Foundries NAICS: 331524 / Aluminum Foundries (except Die-Casting)</p> <p>Facility Classification: Before: Title V After: Title V Fee Classification: Before: Title V After: Title V</p>	<p style="text-align: center;">Permit Applicability (this application only)</p> <p>SIP: 02D .0503, .0515, .0516, .0521, .0524, .1100, .1111, 1806 NSPS: Dc NESHAP: MMMM, ZZZZ, DDDDD PSD: N/A PSD Avoidance: N/A NC Toxics: 02D .1100, 02Q .0711 112(r): N/A Other: N/A</p>
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Contact Data			Application Data
Facility Contact	Authorized Contact	Technical Contact	<p>Application Number: 6100088.21A Date Received: 01/25/2021 Application Type: Renewal Application Schedule: TV-Renewal Existing Permit Data Existing Permit Number: 05331/T24 Existing Permit Issue Date: 07/05/2016 Existing Permit Expiration Date: 06/30/2021</p>
James Auton EHSS (828) 766-1185 1211 Greenwood Road Spruce Pine, NC 28777	Curtis Taylor Plant Manager (828) 766-1160 1211 Greenwood Road Spruce Pine, NC 28777	James Auton EHSS (828) 766-1185 1211 Greenwood Road Spruce Pine, NC 28777	

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2019	0.0500	9.73	20.67	10.90	7.61	6.69	3.39 [Styrene]
2018	0.0500	7.77	22.64	11.18	5.67	7.12	4.04 [Styrene]
2017	0.0400	7.76	25.86	12.33	5.94	7.82	4.64 [Styrene]
2016	0.0570	9.89	23.63	12.90	6.06	7.27	4.36 [Styrene]
2015	0.0600	10.53	25.41	14.28	6.21	8.53	5.26 [Styrene]

<p>Review Engineer: Eric Crump</p> <p>Review Engineer's Signature: _____ Date: _____</p>	<p style="text-align: center;">Comments / Recommendations:</p> <p>Issue 05331/T25 Permit Issue Date: _____ Permit Expiration Date: _____</p>
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1. Purpose of Application

BRP US, Inc. (hereinafter referred to as “BRP”) is an aluminum foundry located in Spruce Pine, Mitchell County, North Carolina. The facility operates under Title V Permit No. 05331T24 with an expiration date of June 30, 2021. BRP has applied for renewal of their facility’s air quality permit. The renewal application was received on January 25, 2021, less than nine months prior to the expiration date. Therefore, the renewal application was submitted late, and the existing permit shall expire if the renewal permit is not issued by the expiration date. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

Through permit application No. 6100088.21A, BRP included the following changes to the existing permit:

Addition of the following emission sources to the facility:

- I-ES-53, Electric Foam Drying Oven
- I-ES-54, Dehumidifier #1 for the Styrofoam Drying Ovens
- I-ES-55, Dehumidifier #2 for the Styrofoam Drying Ovens
- ES-32-4, Shot Blast Machine No. 4
- ES-32-5, Shot Blast Machine No. 5
- ES-40, Shot Blast Machine No. BCP-2
- ES-45, Shot Blast Machine No. BCP-3
- ES-50, Shot Blast Machine No. 7
- ES-51, Sand Blast Units
- ES-52, Sand Blast Units

Replacement of emission source I-EG-1, an existing diesel-fired emergency generator (285 horsepower) with a new diesel-fired emergency generator (200 horsepower)

Replacement of control device CD-16, an existing bagfilter (4,000 square feet of filter area) – the control device for sources ES-32-4, ES-32-5, ES-40, ES-45, ES-50, ES-51, and ES-52) – with a new bagfilter (12,060 square feet of filter area)

Removal of emission source ES-44, One propane/natural gas-fired boiler No. 2 (14.7 million Btu per hour maximum heat input) [.1109 Case-by-Case MACT]

In addition, through a 502(b)(10) modification (permit application No. 6100088.17A, received August 11, 2017), BRP requested replacement of the silo bin vent filter for ES-20, Fresh Sand Bin No. 2.

2. Facility Description

The BRP facility casts aluminum parts for a variety of products—aluminum blocks and other aluminum parts for Evinrude outboard marine engines, parts for Sea-Doo and Ski-Doo engines (Rotax engine exhaust manifold lower housing), trains, and construction equipment. The primary manufacturing process is called “lost foam” aluminum casting. Part shapes are first manufactured in the form of a polystyrene pattern. The polystyrene pattern is coated with clay-like minerals and placed in a sand matrix contained in a steel flask. Molten aluminum is then poured onto a polystyrene neck, which burns away the polystyrene neck and pattern, leaving an aluminum casting in the form of the polystyrene pattern. The bulk of air emissions from the facility result from the burning out of the polystyrene. BRP also produces foam patterns for a General Motors stainless steel exhaust header, but the headers are actually poured at another facility.

Natural gas is the primary fuel for the facility, with propane serving as a backup fuel. The facility operates four work shifts, seven days per week (the fourth shift is the weekend shift), with approximately 250 employees.

3. Application Chronology

July 5, 2016	Division of Air Quality (DAQ) issues Permit No. 05331T24 to BRP as a Title V renewal.
August 11, 2017	DAQ receives 502(b)(10) notification form from BRP to replace the silo bin vent filter for source ID No. ES-20, Fresh Sand Bin No. 2 (Cast Line #2).
August 31, 2017	Mike Parkin and Brendan Davery, Ashville Regional Office (ARO) conduct facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
March 22, 2018	Mike Parkin and Chris Scott (ARO) conduct facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
March 13, 2019	ARO issues Notice of Deficiency (NOD) to BRP for failure to submit a annual compliance certification report by the due date required in the permit.
March 19, 2019	BRP sends letter to DAQ requesting an applicability determination for the installation of two new dehumidifiers: Dehumidifier #1, (ID No. I-ES-54, to be associated with Cluster Drying Ovens #1 (I-ES-8) and #2 (I-ES-19)), and Dehumidifier #2 (ID No. I-ES-55, to be associated with the Pattern Drying Oven (ES-4)).
March 20, 2019	BRP responds to the aforementioned NOD in writing, noting steps they have taken to ensure the annual compliance report is submitted by the required dates.
April 23, 2019	DAQ issues Permit Applicability Determination No. 3401 to BRP, concurring that the installation and operation of these Dehumidifiers qualify as off permit changes pursuant to 15A NCAC 02Q .0523(b) and therefore does not require a permit modification.
September 10, 2019	Chris Scott (ARO) conducts facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
September 24, 2020	Chris Scott (ARO) conducts facility compliance inspection. Facility appeared to be operating in compliance with all permit requirements.
January 26, 2021	DAQ receives application No. 6100088.21A from BRP for a Title V permit renewal.
xxx	DAQ sends draft permit to BRP and Regional Office for review and comment.
xxx	DAQ receives comments on draft permit from BRP.
xxx	DAQ receives comments on draft permit from Regional Office.

xxx Permit renewal notice published, 30-day public notice and comment period begins, and 45-day EPA comment period begins.

xxx 30-day public notice and comment period ends.

xxx 45-day EPA comment period ends.

4. Permit Modifications and Title V Equipment Editor (TVEE) Discussion

The following table summarizes changes to the BRP permit resulting from the permit renewal:

Page No.	Section	Description of Changes
Cover and throughout	---	Updated all dates and permit revision numbers
Insignificant Activities List	Attachment	Added sources I-ES-32-4, I-ES-32-5, I-ES-40, I-ES-45, I-ES-50 through I-ES-55
3	1	Removed “Shot blasting operations equipment” and related sources (ES-32-4, ES-32-5, ES-40, ES-45, ES-50 through ES-55), and Boiler No. 2 (ES-44) from the permitted emission sources table
5	2.1 A.4 2.1 A.5	Updated section to reflect the most current stipulations for 15A NCAC 02D .0524 (New Source Performance Standards) <ul style="list-style-type: none"> Removed 112(j) Case-by-Case MACT for Boilers and Process Heaters (02D .1109) provisions from the permit Renumbered Section 2.1 A.6 (02D .1111: Maximum Achievable Control Technology) as Section 2.1 A.5
5-7	2.1 A 5	Updated section to reflect the most current stipulations for 15A NCAC 02D .1111 (Maximum Achievable Control Technology (40 CFR 63, Subpart DDDDD))
8	2.1 B	<ul style="list-style-type: none"> Removed Shot blast machines Nos. 4, 5, 6,7, BCP-2, BCP-3 with associated bagfilter (CD-16) from list of sources Updated summary of particulate matter standard in limits/standards summary table
9	2.1 B.1	<ul style="list-style-type: none"> Removed sources ES-32-4, ES-32-5, ES-40, ES-45, and ES-50 from listings of sources Updated section to reflect the most current stipulations for 15A NCAC 02D .0515 (Particulates from Miscellaneous Industrial Processes)

Page No.	Section	Description of Changes
10	2.1 B.2 2.1 B.2.c	<ul style="list-style-type: none"> Removed sources ES-32-4, ES-32-5, ES-40, ES-45, and ES-50 from listings of sources Updated section to reflect the most current stipulations for 15A NCAC 02D .0521 (Control of Visible Emissions) <p>Added requirement to establish “normal” status for Fresh sand bin No. 2 (ID No. ES-20) with regard to visibility</p>
11	2.1 B.3	Added new section for 15A NCAC 02D .0614: Compliance Assurance Monitoring
12	2.1 C 2.1 C 1	<p>Updated summary of particulate matter standard in limits/standards summary table</p> <p>Updated section to reflect the most current stipulations for 15A NCAC 02D .0515 (Particulates from Miscellaneous Industrial Processes)</p>
13-24	2.1 C.3	Updated section to reflect the most current stipulations and revisions for 40 CFR 63, Subpart M as amended (85 FR 41141, July 8, 2020). Made minor formatting and /paragraph numbering corrections throughout.
14	2.1 C.3.d.i(A)	Added date Permittee satisfied initial compliance demonstration requirements.
19	2.1 C.3.d.ii(B)(5)(a)	Defined acronym “TSDF” as “treatment, storage and disposal facility”
22	2.1 C.3.g	Added date Permittee submitted notification of compliance status. requirements.
24	2.1 D	Deleted permit requirements for sand blast units (ES-51 and ES-52).
25	2.2 A.1 2.2 A.1.c.i 2.2 A.1.c.iii	<p>Updated section to reflect the most current stipulations for 15A NCAC 02D .1100 (Control of Air Toxics). As a result, new paragraphs a and b were added, and former paragraphs a, b, and c were renumbered c, d, and e.</p> <p>Deleted emission source ES-36.</p> <p>Defined acronym “RTO” to mean “regenerative thermal oxidizer”.</p>

Page No.	Section	Description of Changes
27	2.2 B.1	Updated section to reflect the most current stipulations for 15A NCAC 02Q .0711 (Emission Rates Requiring a Permit)
	2.2 B.2	
28-37	3	Updated General Conditions to Version 5.5 dated August 25, 2020

The following changes were made to the Title V Equipment Editor (TVEE):

Sources added:

- I-ES-53, Electric Foam Drying Oven
- I-ES-54, Dehumidifier #1 for the Styrofoam Drying Ovens
- I-ES-55, Dehumidifier #2 for the Styrofoam Drying Ovens
- I-ES-32-4, Shot Blast Machine No. 4
- I-ES-32-5, Shot Blast Machine No. 5
- I-ES-40, Shot Blast Machine No. BCP-2
- I-ES-45, Shot Blast Machine No. BCP-3
- I-ES-50, Shot Blast Machine No. 7
- I-ES-51, Sand Blast Units
- I-ES-52, Sand Blast Units

Sources replaced:

- Replacement of emission source I-EG-1, diesel-fired emergency generator (285 horsepower)[MACT Subpart ZZZZ] with a diesel-fired emergency generator (200 horsepower)[MACT Subpart ZZZZ]
- Replacement of control device CD-16, One bagfilter (4,000 square feet of filter area) – the control device for sources I-ES-32-4, I-ES-32-5, I-ES-40, I-ES-45, I-ES-50, I-ES-51, and ES-52) – with One bagfilter (12,060 square feet of filter area)
- Silo bin vent filter for ES-20, Fresh Sand Bin No. 2 (Cast Line #2).

Source removed:

ES-44, One propane/natural gas-fired boiler No. 2 (14.7 million Btu per hour maximum heat input) [1109 Case-by-Case MACT]

5. Description of Changes and Estimated Emissions

A. Addition of Insignificant Sources:

- I-ES-53, Electric Foam Drying Oven
- I-ES-54, Dehumidifier #1 for the Styrofoam Drying Ovens
- I-ES-55, Dehumidifier #2 for the Styrofoam Drying Ovens

The electric foam drying oven (I-ES-53) is not a combustion device, as it powered by electricity. The only emissions from this source would be the volatile organic compound (VOC) pentane emitted from the drying of coated and uncoated foam blocks used in the lost foam casting process.

Pentane comprises 6-7.5% of raw polystyrene beads by weight.¹ If it is conservatively assumed that during the drying process 15% of the total VOC (pentane) from the beads is emitted, $(0.075)(.15) = 0.011$ pounds (lb) of VOC would be emitted for each pound of foam processed.

BRP notes in the permit application that at maximum rate of production, the oven would be used to dry 12 blocks of foam per hour, each block weighing 1350 grams (g). If the facility were to operate 24 hours (hr) per day, 365 days per year (yr), the total amount of emissions from the oven would be:

$$\frac{8760 \text{ hr}}{\text{yr}} \times \frac{12 \text{ blocks}}{\text{hr}} \times \frac{1350 \text{ g}}{\text{block}} \times \frac{1 \text{ lb}}{453.6 \text{ g}} \times \frac{0.011 \text{ lb VOC}}{\text{lb foam}} \times \frac{1 \text{ ton}}{2000 \text{ lb}} = 1.72 \text{ tons VOC/yr}$$

The electric foam drying oven would therefore be considered an insignificant activity under 15A NCAC 02Q .0503(8) because emissions from this source would not violate any applicable emissions standard, its potential uncontrolled criteria pollutant emissions would not exceed five tons per year (tpy), and its potential uncontrolled HAP emissions would be less than 1000 pounds per year (lb/yr). For this reason, the oven is an insignificant activity and will not be subject to any permit conditions.

The dehumidifiers for the styrofoam drying ovens (I-ES-53 and I-ES-54) are natural gas-fired units, with maximum firing capacities of 0.5 and 0.999 MMBtu/hr, respectively. Emissions for I-ES-54, the larger of the two ovens, were estimated using NC DEQ's natural gas combustion emissions calculator (Revision N, 1/05/2017), and are summarized below. Assuming emissions from I-ES-53 would be less than those for I-ES-54 due to its lesser firing capacity, on the basis of the estimate for I-ES-54, both dehumidifiers can be considered insignificant activities under 15A NCAC 02Q .0503(8) and will not be subject to any permit conditions.

Pollutant	Potential Emissions	
	lb/hr	ton/yr
Nitrogen Oxides (NO _x)	0.10	0.43
Carbon Monoxide (CO)	0.08	0.36
VOC	0.01	0.02
Total Hazardous Air Pollutants (HAPs)	0.00184	0.0081
Highest Single HAP (hexane)	0.00176	0.0077

B. Addition of Shot Blast Machines and Sand Blast Units

- ES-32-4, Shot Blast Machine No. 4
- ES-32-5, Shot Blast Machine No. 5
- ES-40, Shot Blast Machine No. BCP-2
- ES-45, Shot Blast Machine No. BCP-3
- ES-50, Shot Blast Machine No. 7
- ES-51, Sand Blast Units
- ES-52, Sand Blast Units

¹ U.S. Environmental Protection Agency. August 1990. Control of VOC Emissions from Polystyrene Foam Manufacturing, EPA-450/3-90.020, pg. 5-2

BRP cleans aluminum castings by blasting them with steel shot from the shot blast machines, or sand from the sand blast units. This abrasive blasting generates particulate matter (PM) emissions. PM with a diameter of 10 microns or less (PM₁₀) and 2.5 microns or less (PM_{2.5}) are criteria pollutants regulated by National Ambient Air Quality Standards (NAAQS).

Emissions for ES-40, Shot Blast Machine No. BCP-2 will be estimated in this review, since it has the largest potential for emissions of the blasting devices at the facility, based on shot usage rates submitted by BCP in the renewal application. These usage rates are summarized below.

Shot Blast Machine	Actual Shot/Sand Usage		Potential Shot/Sand Usage	
	lbs/hr	lbs/yr	lbs/hr	lbs/yr
ES-32-4 (No. 4)	3.52		10.9	95,371
ES-32-5 (No. 5)	3.52		10.9	95,371
ES-40 (No. BCP-2)	3.52		18.1	158,951.6
ES-45 (No. BCP-3)	3.52		18.1	158,951.6
ES-50 (No. 7)	3.52		14.6	127,532.3
ES-51 (Rotax)	1.8		9.88	
ES-52 (Parker)	0.08		9.88	

PM emission factors used to estimate emissions are from U.S. EPA's AP-42, Table 13.2.6-1.

Pollutant	PM Emission Factor (lb/1000 lb shot/sand)
PM	91
PM-10	13.1
PM-2.5	1.3

Actual shot usage (3.52 lb/hr) was determined by dividing the actual shot usage (24,000 lb/yr, based on one ton of shot delivered per month) by the actual hours of shot blasting per year (6,800 hr/yr). Post-control PM emissions were estimated assuming the control device (bagfilter CD-16, discussed below) achieves a control efficiency of 99%.

Potential emissions are based assuming around-the-clock blasting during the year (8,760 hours). Emissions were then estimated using the following formulas:

Post-Control PM Emissions (lbs/hr) = Hourly Shot Usage (lbs/hr) × Emission Factor (lb/1000 lb shot)

Pre-Control PM Emissions (lbs/hr) = Post-Control PM Emissions (lbs/hr) ÷ (1 - Control Efficiency)

Annual emissions were then calculated by multiplying the PM emissions (lbs/hr) by the number of hours in a year (using 6,800 hours for actual emissions; 8,760 hours for potential emissions) and converting pounds to tons (1 ton/2000 lbs).

Pollutant	Pre-control Emissions				Post-control Emissions			
	Actual Emissions		Potential Emissions		Actual Emissions		Potential Emissions	
	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr	lb/hr	ton/yr

PM	0.243	0.828	0.567	2.48	0.0024	0.0083	0.00567	0.0248
PM-10	0.046	0.156	0.108	0.473	0.00046	0.00156	0.00108	0.00473
PM-2.5	0.0046	0.0156	0.00108	0.0473	0.000046	0.000156	0.000108	0.000473

As shown above, potential PM emissions from ES-40 before air pollution control are estimated to be less than five tpy— and would be significantly less after control. Therefore, each of the shot and sand blast units at the BRP facility can be considered insignificant activities under 15A NCAC 02Q .0503(8) and will not be subject to any permit conditions. Accordingly, the sources will be renumbered as follows:

- I-ES-32-4, Shot Blast Machine No. 4
- I-ES-32-5, Shot Blast Machine No. 5
- I-ES-40, Shot Blast Machine No. BCP-2
- I-ES-45, Shot Blast Machine No. BCP-3
- I-ES-50, Shot Blast Machine No. 7
- I-ES-51, Sand Blast Units
- I-ES-52, Sand Blast Units

C. Replacement of emission source I-EG-1, diesel-fired emergency generator (285 horsepower)[MACT Subpart ZZZZ] with a diesel-fired emergency generator (200 horsepower)[MACT Subpart ZZZZ]

The pre-existing diesel-fired emergency generator I-EG-1 had already been classified as an insignificant activity. It is being replaced by a generator with less horsepower, which should result in even lower emissions than before. Using the NC DEQ emission estimation spreadsheet for internal combustion (small gasoline and diesel engines, Revision S, 6/22/2015), the following emission estimates are provided for the new 200 hp emergency generator, assuming 500 hours per year of operation.

Air Pollutant Emitted	Potential Emissions			
	Before Control		After Control	
	lb/hr	ton/yr	lb/hr	ton/yr
PM	0.44	1.93	0.44	0.11
PM-10	0.44	1.93	0.44	0.11
PM-2.5	0.44	1.93	0.44	0.11
Sulfur Dioxide (SO ₂)	0.24	1.06	0.24	0.06
Nitrogen Oxides (NO _x)	6.20	27.16	6.20	1.55
Carbon Monoxide (CO)	1.34	5.85	1.34	0.33
VOC	0.50	2.20	0.50	0.13

Total potential HAP emissions per year are estimated to be 47.1 lb/yr, with the largest individual HAP emitted being formaldehyde, with estimated potential emissions of 0.83 lb/yr. These emission estimates confirm that the emergency generator should continue to be an insignificant activity as defined in 15A NCAC 02Q .0503(8).

D. Replacement of control device CD-16, one bagfilter (4,000 square feet of filter area) – the control device for sources ES-32-4, ES-32-5, ES-40, ES-45, ES-50, ES-51, and ES-52) – with one bagfilter (12,060 square feet of filter area)

BRP has replaced the existing bagfilter CD-16 with a bagfilter three times the filter area as the previous filter, but with the same removal efficiency (99%). The bagfilter size was increased in order to reduce dust concentrations to meet OSHA standards at the facility. No air emission standards violations from the

bagfilter have been observed or reported to date. It should be noted that the sources controlled by this bagfilter (shot blast and sand blast machines) will be moved to the insignificant activities permit with this permit renewal, as explained in Section 5B above. Continued compliance is expected.

E. Removal of emission source ES-44, one propane/natural gas-fired boiler No. 2 (14.7 million Btu per hour maximum heat input) [.1109 Case-by-Case MACT]

This boiler was removed from the BRP facility in midyear 2020. Using the NC DEQ natural gas combustion emissions calculator (Revision N, 1/05/2017), the table below shows the estimated emissions that the boiler formerly produced. These emissions are no longer part of BRP's total emissions.

Air Pollutant Emitted	Actual Emissions (after controls / limits)		Potential Emissions			
			(before controls / limits)		(after controls / limits)	
	lb/hr	tons/yr	lb/hr	tons/yr	lb/hr	tons/yr
Particulate Matter (Total)	0.01	0.01	0.01	0.03	0.01	0.03
Particulate Matter (Filterable)	0.00	0.01	0.00	0.01	0.00	0.01
Particulate Matter (Condensable)	0.00	0.01	0.00	0.02	0.00	0.02
PM 2.5 (Total)	0.01	0.01	0.01	0.03	0.01	0.03
PM 2.5 (Filterable)	0.00	0.00	0.00	0.01	0.00	0.01
Sulfur Dioxide (SO ₂)	0.01	0.02	0.01	0.04	0.01	0.04
Nitrogen Oxides (NO _x)	1.46	2.50	1.46	6.40	1.46	6.40
Carbon Monoxide (CO)	1.23	2.10	1.23	5.37	1.23	5.37
Volatile Organic Compounds (VOC)	0.08	0.14	0.08	0.35	0.08	0.35
Total Hazardous Air Pollutants (HAPs)	0.028	0.12	0.028	0.12	0.028	0.12
Highest Individual HAP (hexane)	0.026	0.12	0.026	0.12	0.026	0.12

F. Replacement of silo bin vent filter (ID No. CD-2) for ES-20, Fresh Sand Bin No. 2

BRP is replacing an existing filter for Fresh Sand Bin No. 2 that has reached the end of its useful life. The filter collects dust generated when silos are refilled from tankers. The filter replacement was a Section 502(b)(10) change made under the authority of 15A NCAC 02Q .0523, Changes Not Requiring Permit Revisions. The new filter maintains the 99% removal efficiency of the previous filter and will be subject to the same permit requirements as before.

Using facility records BRP determined a sand usage rate of 1,100 lb/hr. Using a PM emission factor of 0.010 lb PM/lb of fresh sand², and assuming 8,760 hours of operation per year, potential uncontrolled PM emissions from Fresh Sand Bin No. 2 would be

$$1,100 \text{ lb/hr} \times 0.010 \text{ lb PM/lb} \times 8,760 \text{ hr/yr} \div 2000 \text{ lb} = 48.8 \text{ ton/yr}$$

² This emissions factor provided in the BRP renewal application is "based on engineering judgement used in previous permit applications." It is significantly higher than the AP-42 emission factor for sand transfer (0.0021 lb of PM per ton of sand loaded, from AP-42 Section 11.2 (Concrete Batching), Table 11.12-2).

With a 99% filter removal efficiency, potential controlled PM emissions would be 0.49 ton/yr. Continued compliance is expected.

6. Regulatory Review

The BRP facility has been subject to the following state regulations under 15A NCAC:

- 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers
- 02D .0515, Particulates from Miscellaneous Industrial Processes
- 02D .0516, Sulfur Dioxide Emissions from Combustion Sources
- 02D .0521, Control of Visible Emissions
- 02D .0524, New Source Performance Standards
- 02D .0958, Work Practices for Sources of Volatile Organic Compounds
- 02D .1100, Control of Toxic Air Pollutants
- 02D .1109, 112(j) Case-by-Case Maximum Achievable Control Technology
- 02D .1110, National Emission Standards for Hazardous Air Pollutant
- 02D .1111, Maximum Achievable Control Technology
- 02D .1112, 112(g) Case by Case Maximum Achievable Control Technology
- 02D .1806, Control and Prohibition of Odorous Emissions
- 02Q .0711, Emission Rates Requiring a Permit
- 02Q .0317, Avoidance Conditions

The permit has been updated to reflect the most current stipulations for all applicable regulations. No additional state regulations are being added or removed from the permit as a result of this permit renewal. However, the following should be noted:

- Boiler ES-44, which was subject to 02D .0503, has been removed from the facility. The remaining boiler ES-37 will continue to have the same PM limits under 02D .0503 as before this renewal.
- Because the bagfilter for Fresh Sand Bin No. 2 (ES-20) is being replaced, the permit conditions for 02D .0521 have been modified to require that BRP re-establish what is considered “normal” visible emissions for ES-20.
- On November 1, 2016, amendments to 15A NCAC 02D .0902 for VOC emissions were finalized to narrow applicability of work practice standards in 15A NCAC 02D .0958 from statewide to the maintenance area for the 1997 8-hour ozone standard. This change is being made primarily because the abundance of biogenic VOC emissions in North Carolina results in ozone formation being limited by the amount of available NOx emissions. Clean Air Act provisions require VOC requirements previously implemented in an ozone nonattainment area prior to redesignation to remain in place. However, facilities outside the maintenance area counties for the 1997 8-hour ozone standard would no longer be required to comply with the work practice standards in 15A NCAC 02D .0958. Because BRP is located outside the maintenance area, these work practice standards will be removed in this permit renewal.

7. National Emission Standards for Hazardous Air Pollutants (NESHAPS): Maximum and/or Generally Achievable Control Technology (MACT/GACT)

BRP is subject to the following NESHAPS:

A. 40 CFR 63, Subpart MMMM, National Emission Standards for Hazardous Air Pollutants for Surface Coating of Miscellaneous Metal Parts and Products

On March 11, 2020, the U.S. Environmental Protection Agency (EPA) finalized amendments to the 2004 National Emission Standards for Hazardous Air Pollutants (NESHAP) for three source categories, including Surface Coating of Miscellaneous Metal Parts and Products (Subpart MMMM). Following a residual risk and technology review (RTR) conducted under the Clean Air Act (CAA), EPA determined that risks from the source categories are acceptable and that no new cost-effective controls are available. While EPA made no changes to Subpart MMMM as a result of the RTR, EPA is making the following revisions:

- revised requirements for periods of startup, shutdown and malfunction to be consistent with recent court decisions;
- requiring electronic reporting of performance test results;
- requiring 5-year testing for facilities with add-on controls; and
- technical corrections to rule text.

The dry filter-type paint spray booth and its associated direct natural gas/propane-fired bake oven (ID No. ES-47) is subject to subpart MMMM. The rule establishes organic HAP emission limits in kilograms of organic HAP per liter (and pound per gallon) for each variety of coating affected source. The rule provides formulas to be used for determining compliance based on the quantities and physical/chemical characteristics of the types of coatings used by BRP during the calendar year, along with recordkeeping and reporting requirements.

The stipulations in the permit regarding compliant material option (permit condition 2.1 C.3.d.i), the emission rate with add-on controls option (permit condition 2.1 C.3.d.ii), and the reporting of deviations from emission limitations (permit conditions 2.1 C.3.h.x and 2.1 C.3.i.ix through x) were revised in accordance with the amendments to the NESHAP at 85 FR 41141, July 8, 2020.

B. 40 CFR 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

Natural gas/propane-fired Boiler No. 1 (**ID No. ES-37**) is subject to subpart DDDDD. Under Subpart DDDDD, BRP is required to conduct annual boiler tune-ups to demonstrate continuous compliance with the rule and maintain the required records and submit required reports throughout the year.

No amendments have been made to Subpart DDDDD since November 20, 2015—prior to the last renewal of this permit—when minor changes were made to the definitions of startup and shutdown and work practices during these periods, along with a number of technical corrections and clarifications of the rule. On July 8, 2020, the U.S. EPA proposed amendments to this subpart to address three remands issued by the D.C. Circuit Court, two in 2016 in *U.S. Sugar Corp. v. EPA* and one in 2018 in *Sierra Club, et al. v. EPA*. These proposed amendments have not been finalized at this time. The permit conditions for Subpart DDDDD will need to be reviewed and possibly revised at the next opportunity when these amendments are finalized.

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

A 177-HP fire pump (I-FP-1) and a 200 HP emergency generator (I-EG-1)—both diesel-fired—are subject to Subpart ZZZZ. However, because these sources are considered insignificant activities per 15A NCAC 02Q .0503(8), they are not included on the permit and do not have associated permit conditions.

D. 112(j) Case-by-Case MACT for Boilers and Process Heaters (02D .1109)

Boiler No. 2 (**ID No. ES-44**) had been subject to 112(j) Case-by-Case MACT for Boilers and Process Heaters (02D .1109) until May 19, 2019, after which Subpart DDDDD supersedes the case-by-case MACT. However, this boiler has been removed from the facility.

Continued compliance with these MACT standards is expected.

8. New Source Performance Standards (NSPS)

The remaining natural gas/propane-fired boiler on site—Boiler No. 1 (**ID No. ES-37**)—continues to be subject to 40 CFR 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Under this NSPS, BRP is required to maintain records of the amount of each fuel combusted during each operating day (with the option of recording/maintaining records of the amount of each of these fuels combusted during each calendar month) for a period of two years. Continued compliance is expected.

9. New Source Review (NSR)/Prevention of Significant Deterioration (PSD)

BRP is located in Mitchell County, which is in attainment of the NAAQS for all criteria pollutants, so NSR does not apply. The BRP facility emits less than 250 tpy and is a minor source with regard to PSD.

10. Risk Management Plan Requirements

40 CFR Part 68 requires stationary sources storing more than threshold quantities of regulated substances to develop a risk management plan (RMP), in accordance with Section 112(r) of the Clean Air Act. The RMP lists the potential effects of a chemical accident at the facility, steps the facility is taking to prevent an accident, and emergency response procedures to be followed if an accident should occur.

BRP is not subject to Section 112(r) of the Clean Air Act requirements because it does not store regulated substances in quantities above the thresholds in the Rule. This permit renewal does not affect the 112(r) status of the facility.

10. Compliance Assurance Monitoring (CAM)

Under 40 CFR Part 64, a facility must develop a continuous CAM plan for any pollutant specific unit meeting all of the following criteria:

- It is located at a major source required to obtain a 40 CFR Part 70 or Part 71 permit;
- It is subject to an emission limitation or standard for a regulated air pollutant (and that standard is not exempt under 40 CFR 64.2(a)(1)(b));
- It uses an active control device to comply with that emission limitation or standard; and

- It has a potential pre-control emission rate that equals or exceeds the major source threshold for criteria pollutants or HAPs.

BRP was determined in a preceding permit review (M. Cuilla, September 23, 2011) to not be subject to CAM because potential pre-controlled emissions (particulate) were less than the major source thresholds for criteria pollutants or HAP. With the changes to the permit since that time, a review of the CAM status for the facility is provided here. The following table lists all permitted emission sources and associated air pollution control devices, the specific permit conditions for each source/control device arrangement and whether the control device is installed to comply with that requirement. Note that standards for visibility (02D .0521), odor (02D .1806), and state toxic air pollutants (02D .1100, 02Q .0711) are not listed below, as these pollutant limits are not subject to CAM analysis. The shot blast (ES-32-4, ES-32-5, ES-50, ES-40, and ES-45) and sand blast machines (ES-51 and ES-52) are also not subject to CAM analysis, since they are being designated insignificant activities in this permit renewal.

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description	Were Controls Installed to Comply with a non-exempt standard?
One polystyrene molded pattern manufacturing process including the following equipment				
ES-1	Pre-Expansion Room for polystyrene storage and expansion	NA	NA	No
ES-4	One electrically heated Pattern Curing Oven for polystyrene molded patterns	NA	NA	No
Two aluminum casting lines (Casting Line Nos. 1 and 2) including the following equipment				
ES-10	Fresh Sand Bin No. 1	CD-1	Bagfilter (6,096 square feet of filter area)	No - only bagfilter for state PM standard (02D .0515) and RTO for state air toxics (02D .1100)
ES-10a	Sand Storage Silo – Castline No. 1			
ES-11	Sand Recirculation System Castline No. 1			
ES-20	Fresh Sand Bin No. 2	CD-2	Bagfilter (9,986 square feet of filter area)	
ES-22	Sand Recirculation System Castline No. 2			
ES-12	Pour Station Castline No. 1	CD-3	Bagfilter (14,726 square feet of filter area) in series with One natural gas/propane-fired regenerative thermal oxidizer (16.0 million Btu/hr heat input rate)	
ES-23	Pour Station Castline No. 2			
ES-13	Cooling Tunnel Castline No. 1			
ES-24	Cooling Tunnel Castline No. 2			
ES-14	Shakeout Castline No. 1			
ES-25	Shakeout Castline No. 2			
ES-15	Quench Station Castline No. 1			
ES-26	Quench Station Castline No. 2			
ES-34	One direct propane/natural gas-fired sand reclamation system No. 2 (2.6 million Btu per hour maximum heat input)	CD-13	Bagfilter (1,272 square feet of filter area)	No, only for state PM (02D .0515) standard
ES-21-1	One direct propane/natural gas-fired aluminum melt furnace (5.2 million Btu per hour maximum heat input) installed one each on Castlines No. 1	NA	NA	No

Emission Source ID No.	Emission Source Description	Control Device ID No.	Control Device Description	Were Controls Installed to Comply with a non-exempt standard?
ES-21-2	One direct propane/natural gas - fired aluminum melt furnace (5.2 million Btu per hour maximum heat input) installed one each on Castlines No. 2	NA	NA	
ES-36	One direct propane/natural gas - fired dry hearth reverberatory aluminum re-melt furnace (4.37 million Btu per hour heat input)	NA	NA	
Boilers				
ES-37	One natural gas/propane-fired boiler No. 1 (20.4 million Btu per hour maximum heat input)	NA	NA	Subject to NSPS Subpart Dc, but no controls required.
Other sources				
ES-47	One dry filter-type paint spray booth and associated direct natural gas/propane-fired bake oven (3.0 million Btu per hour heat input rate)	NA	NA	No controls required (subject to MACT Subpart MMMM (in addition to state standard for PM (02D .0515))

As shown in the table above, the process units associated with the two aluminum casting lines have control devices—bagfilters—in order to comply with 02D .0515, Particulates from Miscellaneous Industrial Processes, a state emissions standard which is not exempt under 40 CFR 64.2(a)(1)(b). Therefore, CAM would apply to the BRP facility if the potential emissions for any process unit equals or exceeds the major source threshold for PM. 02D .0515(b) also states:

*(b) Process rate means the **total weight of all materials** introduced into any specific process that may cause any emission of particulate matter. (emphasis added)*

The following table summarizes potential PM emissions for the process units in Casting Line Nos. 1 and 2 and totals potential PM emissions vented to each PM control device.

ID No.	Description	Control	Potential PM10 Emissions, tpy	Potential PM2.5 Emissions, tpy	Potential PM Emissions for Control Device, tpy
ES-10	Fresh Sand Bin No. 1	Bagfilter CD-1	48.2	48.2	150.979
ES-10a	Sand Storage Silo – Castline No. 1		52.01	52.01	
ES-11	Sand Recirculation System Castline No. 1		50.769	50.769	
ES-20	Fresh Sand Bin No. 2	Bagfilter CD-2	48.2	48.2	98.969
ES-22	Sand Recirculation System Castline No. 2		50.769	50.769	

ES-12	Pour Station Castline No. 1	Bagfilter CD-15 in series with Regenerative Thermal Oxidizer CD-3	0.0122	0.0122	3.6454
ES-23	Pour Station Castline No. 2		0.0122	0.0122	
ES-13	Cooling Tunnel Castline No. 1		0.0245	0.0245	
ES-24	Cooling Tunnel Castline No. 2		0.0245	0.0245	
ES-14	Shakeout Castline No. 1		1.632	1.632	
ES-25	Shakeout Castline No. 2		1.632	1.632	
ES-15	Quench Station Castline No. 1		0.154	0.154	
ES-26	Quench Station Castline No. 2		0.154	0.154	
ES-34	One direct propane/natural gas-fired sand reclamation system No. 2 (2.6 million Btu per hour maximum heat input)	Bagfilter CD-13	83.22	83.22	83.22
ES-21-1	One direct propane/natural gas-fired aluminum melt furnace (5.2 million Btu per hour maximum heat input) installed one each on Castline No. 1	NA	0.355	0.355	0.355
ES-21-2	One direct propane/natural gas-fired aluminum melt furnace (5.2 million Btu per hour maximum heat input) installed one each on Castline No. 2	NA			

As shown, the PTE for the units venting to bagfilter CD-1 (ES-10, ES-10a, and ES-11) exceeds the major source threshold for PM (100 tpy). Therefore, daily observations of visible emissions from bagfilter CD-1 using EPA Reference Method 22-like procedures will be added to the permit as CAM for particulate matter. The PTE for the units venting to bagfilter CD-2 (ES-20 and ES-22) is very close to the major source threshold for PM; potential emissions from these sources should continue to be monitored to determine whether CAM should apply to bagfilter CD-2 at some point in the future.

11. Facility-wide Toxics Review

The BRP sources shown in the table below are subject to the toxic air pollutant (TAP) emission limits shown, in accordance with 15A NCAC 02D .1100, "Control of Toxic Air Pollutants".

Source ID No.	Source Description	Toxic Air Pollutant(s)	Emission Limit(s)
ES-11 through ES-15	Sand Recirculation System Castline No. 1 Pour Station Castline No. 1 Cooling Tunnel Castline No. 1 Shakeout Castline No. 1 Quench Station Castline No. 1	Styrene Benzene	148.64 pounds per hour 1,986.0 pounds per year
ES-22 through ES-26	Sand Recirculation System Castline No. 2 Pour Station Castline No. 2 Cooling Tunnel Castline No. 2 Shakeout Castline No. 2 Quench Station Castline No. 2		
ES-34	One direct propane/natural gas-fired sand reclamation system No. 2 (2.6 million Btu per hour maximum heat input)		

Source ID No.	Source Description	Toxic Air Pollutant(s)	Emission Limit(s)
ES-21-1	One direct propane/natural gas-fired aluminum melt furnace (5.2 million Btu per hour maximum heat input) installed one each on Castlines No. 1	Hydrogen fluoride	2.31 pounds per hour 6.85 pounds per day
ES-21-2	One direct propane/natural gas-fired aluminum melt furnace (5.2 million Btu per hour maximum heat input) installed one each on Castlines No. 2	Fluorides	1.66 pounds per hour 4.94 pounds per day
ES-36	One direct propane/natural gas-fired dry hearth reverberatory aluminum re-melt furnace (4.37 million Btu per hour heat input)		

These emission limits were established as a facility-wide worst-case single stack modeling demonstration. To ensure compliance with these limits, BRP is required to ensure the aluminum pour rate at the facility will not exceed 40,000,000 pounds per year, and to control emissions using the regenerative thermal oxidizer (ID No. CD-3). The permit includes specific emission factors for use in calculating emissions for styrene and benzene. Although no factors are included for calculating emissions for hydrogen fluoride (HF) and fluorides, a review of recent emission inventories indicates that emissions of HF and fluorides are well below the emission limits. For example, emissions of 6.85 lb/day of HF would amount to 2500.25 lb/yr, based on 365 days of emissions per year. In their 2019 emissions inventory, BRP reported total HF emissions of 21.22 lb. Similarly, 4.94 lb/day of fluorides would amount to 1803.1 lb/yr. In their 2019 emissions inventory, BRP reported total fluorides emissions of 21.72 lb. Therefore, exceedances of the permit limits for HF and fluorides appear to be highly unlikely.

The permit lists several NC toxic air pollutants (TAPs) and their respective toxic permit emission rates (TPERs) as established in 15A NCAC 02Q .0711, "Emission Rates Requiring a Permit".

Pollutant (CAS Number)	TPERs Limitation			
	Carcinogens (lb/yr)	Chronic Toxicants (lb/day)	Acute Systemic Toxicants (lb/hr)	Acute Irritants (lb/hr)
1,3 Butadiene (106-99-0)	11.0	--	--	--
Chlorine (7782-50-5)	--	0.79	--	0.23
Hydrogen chloride (7647-01-0)	--	--	--	0.18
Toluene (108-88-3)	--	98	--	14.4
Xylene (1330-20-7)	--	57	--	16.4

BRP has made a demonstration that its facility-wide actual emissions do not exceed the TPERs. The permit requires BRP to operate and maintain the facility so that emissions of any listed TAPs from the facility, including fugitive emissions, will not exceed the TPERs; and to maintain records that demonstrate compliance with each TPER. Based on the most recent inspection, BRP has been complying with this regulation. Continued compliance will be determined during subsequent inspections.

12. Facility Emissions Review

None of the changes to the permit discussed in Section 5 of this review result in an increase in the potential to emit for the BRP facility. In fact, the removal of propane/natural gas-fired boiler No. 2 (ES-44) will result in a reduction in potential emissions at the facility.

The table in the header page of this review summarizes emissions BRP has reported in the annual emissions inventories after application of required emission controls. During the years 2015-2019, BRP experienced a general reduction in emissions of most criteria pollutants (except for a slight increase in PM emissions) and HAP. Continued compliance is expected.

13. Compliance Status

The facility was last inspected on September 24, 2020 by Chris Scott of the ARO. The company appeared to be in compliance with all applicable requirements at that time.

On March 13, 2019, the ARO issued an NOD to BRP for failure to submit an annual compliance certification report by the due date required in the permit. BRP responded to the NOD on March 20, 2019, noting the actions they took to ensure annual compliance reports will be submitted when due in the future.

14. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 02Q .0521 above.

Tennessee and South Carolina are affected states within 50 miles of the facility, and the Western NC Regional Air Quality Agency is an affected local program.

Notice of the DRAFT Title V Permit to Affected States ran from XXXX YY, 2021, to XXXX YY, 2021. **No comments from Affected States were received.**

Public Notice of the DRAFT Title V Permit ran from XXXX YY, 2021, to XXXX YY, 2021. **No public comments were received.**

EPA's 45-day review period ran concurrent with the 30-day Public Notice, from XXXX YY, 2021, to XXXX YY, 2021. **No comments from EPA and U.S. EPA Region 4 were received regarding the DRAFT Title V Permit.**

15. Other Regulatory Considerations

The following items were not required in Permit Application No. 6100088.21A:

- Professional Engineer's seal
- Zoning consistency determination
- Permit fee.

16. Recommendations

DAQ has reviewed the permit applications for BRP, Inc. located in Spruce Pine, Mitchell County, North Carolina to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. DAQ recommends the issuance of Air Permit No. 05331T25.