Department of Environmental Quality
Division of Water Resources
Fact Sheet for NPDES Permit NC0000272

Facility Information

Applicant/Facility Name:	Blue Ridge Paper Products Inc. dba Evergreen Packaging
Applicant Address:	P.O. Box 4000
Facility Address:	175 Main Street
Permitted Flow:	34.0 MGD
Type of Waste:	Industrial, domestic, stormwater, and landfill leachate
Facility/Permit Status:	Renewal
County:	Haywood

Miscellaneous

Receiving Stream:	Pigeon River
Stream Classification:	C
303(d) Listed?:	Yes. Biological impairment.
Subbasin:	04-03-05
Drainage Area (mi2): [calculated]	130 mi^2
Summer 7Q10 (cfs):	52 cfs at Canton and 120 cfs at Hepco
Winter 7Q10 (cfs):	63 cfs at Canton and 183 cfs at Hepco
30Q2	89.9 cfs at Canton
Average Flow (cfs):	325 cfs at Canton and 677 cfs at Hepco
IWC (%):	100% (See Text Below)
Primary SIC Code:	2621
Regional Office:	Asheville
USGS Topo Quad:	Canton (E 7 SE – State Grid)
Permit Writer:	Sergei Chernikov, Ph.D.
Date:	June 14, 2019

SUMMARY

Blue Ridge Paper Products Inc. has requested renewal of their National Pollutant Discharge Elimination System (NPDES) discharge permit NC0000272 allowing discharge of industrial, stormwater, municipal and landfill leachate wastewaters to waters of the state. This fact sheet summarizes the rationale used to develop the limits and monitoring conditions for the draft permit. North Carolina Division of Water Resources (Division) also recommends renewal of the temperature variance and deletion of the color variance.

BACKGROUND

The facility was established in 1908 to produce pulp for the Champion paper mill in Hamilton, Ohio. Blue Ridge paper acquired ownership of the mill in May of 1999 from Champion International. In 2007, the facility was purchased by the Rank Group and now operates as a subsidiary of Evergreen Packaging. The company currently employs about 1,500 people in North Carolina.

Blue Ridge Paper is an integrated, elemental chlorine free (ECF) bleached kraft pulp and paper mill with oxygen delignification, and bleach filtrate recycle in Canton, North Carolina. Processes at the mill include a pine bleach line; hardwood bleach line, paperboard and fine paper production lines. Pine and hardwood

chips are transported to the site via rail or truck and subsequently processed into pulp for paper or paperboard production.

In 1990, Champion International Corporation initiated a $300 million dollar modernization project termed the Canton Modernization Project (CMP). This project eliminated the use of elemental chlorine and implemented significant changes to both the pine and hardwood bleaching lines.

The mill upgrade included two changes that significantly improved the mill's environmental performance. The first major change was the use of oxygen delignification. This process is utilized to separate the lignin from the fiber. This resulted in significant improvement in the mills environmental performance. The second major change was the implementation of full-scale bleach filtrate recycle (BFR) on the pine bleach line and caustic extraction stage (E_o) filtrate recycle (~20%) on the hardwood bleach line. For a more detailed description of the mill improvements, refer to the Canton Modernization Project Section.

The Canton Modernization Project greatly reduced the wastewater generated and eventually discharged to the Pigeon River. Even with these improvements, significant quantities of wastewater are generated in the production of pulp and paper and proper treatment prior to discharge is required.

Wastewater generated by the Canton Mill, along with the Town of Canton's domestic wastewater, is treated at Blue Ridge Paper's Wastewater Treatment Plant. The treatment plant is a 29.9 MGD wastewater treatment system consisting of the following unit processes:

- Grit Chamber
- Bar screens
- Lift pumps
- Polymer addition
- pH control (CO_2 injection or H_2SO_4 backup)
- Three primary clarifiers (one normally off-line)
- Nutrient feed
- Aeration basins
- Three secondary clarifiers
- Residual belt presses
- Effluent flow measurement
- Cascade aeration (with oxygen injection)
- Oxygen injection facilities

Solids at this facility are deposited into a dedicated landfill. A portion of the energy at the facility is generated by burning coal. Coal ash is landfilled into a double-lined landfill, which is equipped with leachate collection. Leachate is treated at the wastewater treatment system.

The history of this mill has been controversial. Under Champion Paper, the environmental impacts of the Canton Mill were noted by concerned citizens, environmental groups, the State of Tennessee, State of North Carolina, and the United States Environmental Protection Agency (EPA). The issues raised by these individuals and groups contributed to the Canton Mill's improved environmental performance and resulted in a settlement agreement issued January 8, 1998. All the conditions in the settlement agreement have been met.

This permit has centered around four main issues associated with the mill's discharge: color, temperature, oxygen consuming waste and dioxin, and a brief synopsis follows.

Color

On July 13, 1988, Champion Paper was granted a variance from North Carolina's narrative water quality standard for color, which the EPA interpreted to be 50 color units. The EPA subsequently issued a NPDES permit to Champion Paper facility.

In 1994, the EPA returned NPDES permitting authority for the Canton Mill back to North Carolina's Division of Water Resources. During the permit renewal the original color variance was modified, and both the permit and the variance were issued in December 1996. As outlined above, over the course of this variance the mill has initiated significant color improvements, which have markedly reduced the color loading and other effluent characteristics.

The original comprehensive mill performance evaluation was conducted by an independent consultant Dr. Norm Liebergott in 2001 and was co-sponsored by Blue Ridge Paper and several environmental groups. The latest report of Dr. Liebergott was issued on July 7, 2006 and sponsored by Blue Ridge Paper. In addition to identifying areas for improvement and available technologies, Dr. Liebergott compared the Canton mill to 76 similar mills around the world. Dr. Liebergott concluded that the Canton mill's environmental performance is among the best in the world.

Temperature

The facility first requested and received a 316 (a) variance (approved by EPA) for temperature on August 6, 1985. This determination demonstrated that the effluent limitations relating to the thermal component of the Champion discharge were more stringent than necessary to assure protection and propagation of a balanced indigenous population of shellfish, fish, and wildlife in the Pigeon River. Therefore, the 316(a) temperature variance was approved based on protection of the appropriate use classification of the Pigeon River. The temperature variance was reviewed and renewed as part of the Triennial Review in 1997.

Blue Ridge Paper submitted a Balanced and Indigenous Species Study on the Pigeon River in January of 2014. The study was conducted by the University of Tennessee. DWR scientists have reviewed the report and concluded that continuance of the temperature variance is appropriate. Therefore, the Division of Water Resources is recommending continuation of the temperature variance with reporting requirements consistent with the previous permits.

During the last permit renewal, the variance requirements were changed and the temperature difference between upstream and downstream monitoring locations (ΔT) was reduced from 13.9^0C to 8.5^0C despite the fact that BIP [balanced, indigenous population] study results were approved.

Oxygen Consuming Waste

An EPA approved model predicted that even with a BOD_5 loading of 1209 lb/day (5.0 mg/L at 29 MGD) that the dissolved oxygen in the Pigeon River would not be protected. Since Blue Ridge Paper cannot comply with such stringent effluent limitations, an instream oxygen augmentation method was implemented to protect the dissolved oxygen in the receiving stream. For further discussion on this subject refer to the Oxygen Consuming Waste Pollutants section.

Dioxins

Elevated levels of dioxins were found in fish tissue in the Pigeon River (around the late 1980s). Subsequently, a fish consumption advisory was issued for sport fish, catfish, and carp. The Canton Mill has not discharged any detectable levels of 2,3,7,8 TCDD to the Pigeon River (since 1989) and dioxin in fish tissue continues to decline.

Most fish consumption advisories in North Carolina and Tennessee were removed in 1998 and 2002. The last fish advisory for Common Carp in Waterville Lake was removed on January 7, 2007. There are no fish advisories in the Pigeon River at this time.

The May 2010 NPDES Permit (the last permit issued) for the Blue Ridge Canton Mill required three (3) additional years of fish tissue sampling and surveillance. During the sampling years between 2008-2013 the concentrations in fish tissue fillets were below the NC DHHS 4 ppt TEQ [toxic equivalency] action level for

fish consumption advisory. In 2014, TEQ values were below detection for channel catfish for both sampling Stations; however, in common carp, TEQ values were 9.619 ppt for Station 4A and 2.928 for Station 4B. The TEQ results for common carp fillets in 2014 and 2007 could be anomalies, or could indicate that some fish are present in the population with relatively higher TEQ values.

EPA conducted a High Volume dioxin sampling in the Pigeon River in 2014 and concluded that "the most potent of congeners in the series, 2,3,7,8 – TCDD, was not detected in dissolved samples at the reporting limit of 0.0012 parts per quadrillion at any station".

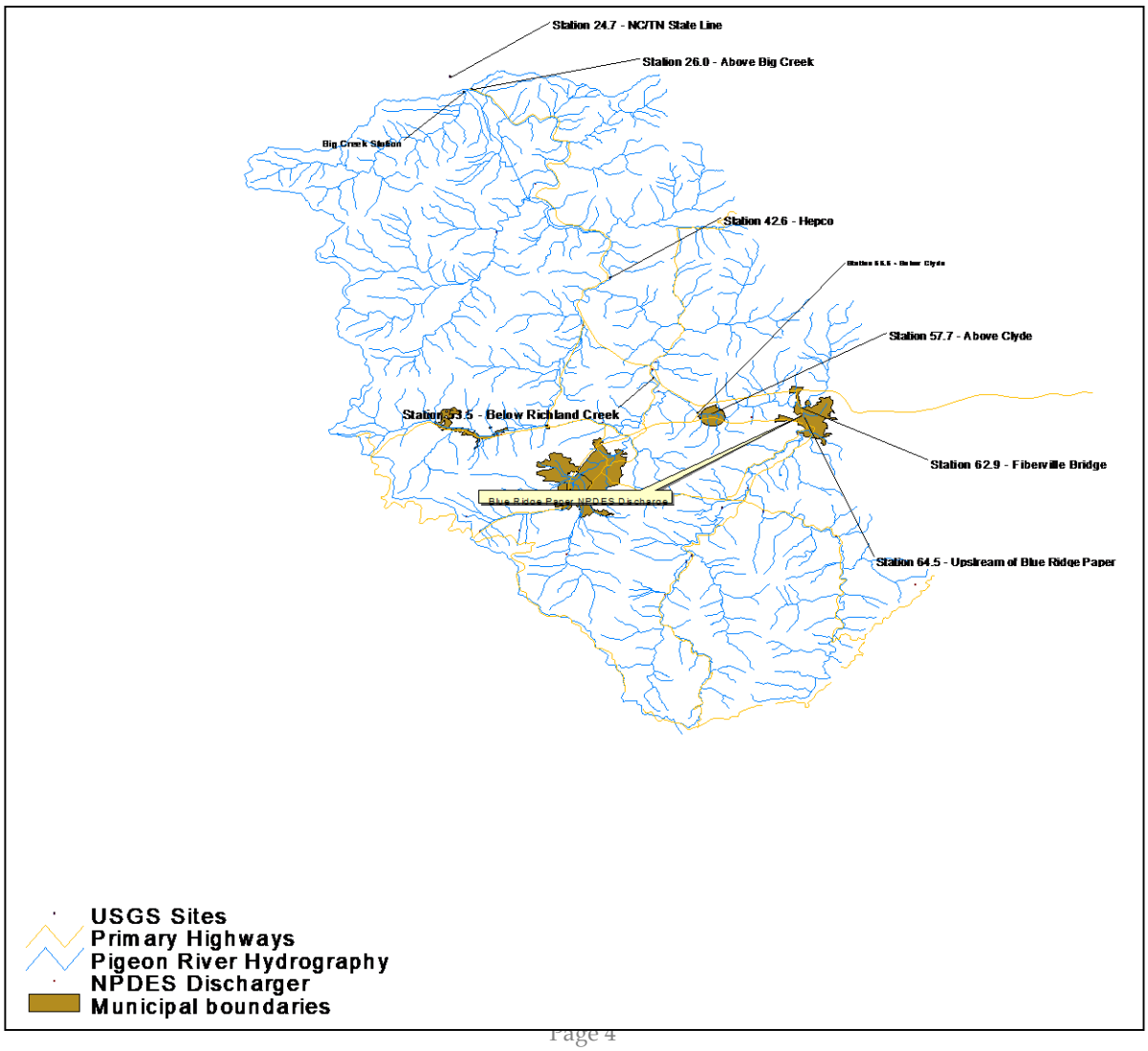
During the previous permit renewal all sampling results showed results below TEQ action level. Since the fish dioxin concentration have been reduced steadily during the last several decades and the facility had no dioxin detection in it's effluent since 1989 and the EPA High Volume dioxin sampling results, the fish tissue sampling requirement in the permit will be reduced from 3 times/5 years to 1 time/5 years. However, if any sampling result shows a TEQ exceedance, the facility shall conduct an additional round of fish sampling.

316(b)
The design intake for the facility is 80 MGD, the actual average withdrawal (2012-2014) is approximately 33 MGD. However, the facility only uses 12% of the withdrawn water for cooling purposes due to an extensive reuse of the wastewater. Therefore, the facility is not subject to 316(b) rule.

INSTREAM MONITORING

The current permit requires Blue Ridge Paper to conduct an extensive instream monitoring program consisting of 9 monitoring sites (1-upstream of mill in Pigeon River, and 7-downstream of mill in Pigeon River and 1-Big Creek; See Figure 1 and Table 1).

Figure 1. Instream Monitoring Stations for Blue Ridge Paper Products – Canton Mill.



Instream Monitoring by Parameter

Blue Ridge Paper is required to monitor **conductivity** upstream (at station UP) and downstream (at station DN1). The Division's recommends that conductivity monitoring continue as required by 15A NCAC 2B .0508(d).

Blue Ridge Paper monitors **temperature** upstream at station UP and downstream at all monitoring stations except station DN6 and station BC. Review of the data from 01/01/2004 through 12/31/2008 indicated that the monthly average temperature of the Pigeon River did not exceed the permitted limits of 32 °C (summer) or 29 °C (winter).

Blue Ridge Paper monitors **dissolved oxygen** (DO) at all the instream stations except station DN6 and station BC. Over the period of review (01/01/2014-12/31/2018), daily average dissolved oxygen concentration did not drop below the North Carolina's standard of 5.0 mg/L for Class C streams at DN1 and DN2 instream monitoring locations. Historically, the lowest oxygen concentrations occurred at the DN2 monitoring station. This trend continued during the last 5 years. The average DO level at the DN1 location during the review period was 9.58 mg/L and at the DN2 location was 8.69 mg/L.

Table 1. Instream Monitoring Requirements According to the 1997 NPDES Permit and Color Variance.

Stream Designation	Mile Marker	Location Description	Parameter	Frequency
UP	63.8	Pigeon River upstream of the waste treatment plant outfall (prior to mixing with the discharge)	Temperature D.O. BOD_5 Conductivity Color Flow Fecal coliform	Daily Daily 1/Week Daily 2/Week Daily 1/Week
DN1	62.9	Pigeon River at Fiberville Bridge	Temperature D.O. Conductivity Fecal Coliform Color	Daily Daily Daily 1/Week 2/Week
DN2	57.7	Pigeon River Above Clyde	Temperature D.O.	Daily Daily
DN3	55.5	Pigeon River Below Clyde	Temperature D.O. Color	1/Week 1/Week 2/Week
DN4	53.5	Pigeon River at NCSR 1625 bridge	Temperature D.O. Color	1/Week 1/Week 2/Week
DN5	42.6	Pigeon River at Hepco	Temperature D.O. Color Flow	1/Week 1/Week 1/Week Daily
DN6	26.0	Pigeon River prior to mixing with Big Creek	Color	1/Week
BC	~ 26.0	Mouth of Big Creek prior to mixing with the Pigeon River	Color	1/Week
DN7	24.7	Pigeon River at Browns Bridge (~ NC/TENNESSEE State Line)	Temperature D.O. BOD_5 Color	1/Week 1/Week 1/Week 1/Week

During the 1997-2001 permit cycle, an EPA-approved computer model indicated that BOD_5 limits were required to protect North Carolina's instream dissolved oxygen standard of 5 mg/L for Class C waters. An economically feasible end-of-pipe technology capable of consistently treating to levels necessary to meet the

limits specified by the model did not exist. North Carolina agreed with the continuation of the requirement that Blue Ridge Paper meet the instream dissolved oxygen standard by use of sidestream oxygen injection facilities. Blue Ridge Paper maintained these oxygen injection facilities at the effluent and at approximately 0.9, and 2.1 miles downstream of the discharge.

To ensure compliance with the above requirement, the average daily instream dissolved oxygen levels at stations DN1, DN2 and DN3 were required to equal or exceed 5.0 mg/L and the minimum instantaneous instream values were required to be greater than or equal to 4.0 mg/L. If dissolved oxygen drops below the prescribed values, Blue Ridge Paper shall utilize the instream dissolved oxygen injection stations to increase the dissolved oxygen in the river.

The oxygen injection facilities will continue to be maintained at the effluent, 0.9, and 2.1 miles downstream, and used as necessary to maintain an instream dissolved oxygen level of 5 mg/L. The condition to maintain the instream dissolved oxygen stations shall remain a condition of the permit until such time that the permitted loading of oxygen consuming waste to the Pigeon River is less than or equal to that proposed by an appropriate water quality model.

If dissolved oxygen at station 57.7 drops below 5.0 mg/L, the facility is required to monitor dissolved oxygen at river mile 55.5 and 53.5.

Instream monitoring continues to be required in order to assess Blue Ridge Paper 's impact on the Pigeon River and to ensure that the dissolved oxygen standard is maintained within the river.

Compliance Summary

During the review period (08/2013 through 09/2008) the following NOVs (notices of violation) have been issued: 14 - for violating fecal coliform limit, 1 – for violating BOD limit, 1 – for violating TSS limit, and 2 – for violating Color limit.

Permitting Rationale – Toxicity Testing

The facility has consistently passed the chronic toxicity test at 90% effluent during the previous 5 years (19 of 19 tests passed). Therefore, chronic toxicity is not an issue. The permit renewal retains the same chronic toxicity test limit. The draft permit retains the Quarterly Chronic Toxicity limit @ 90% effluent.

Permitting Rationale – Color

The annual average color limit of 36,000 lb/day, the monthly average color limit of 52,000 lb/day, and the daily maximum color limit of 105,250 lb/day were established in accordance with the Technology Review Workgroup (TRW) recommendations for the 2010 permit renewal and will be continued in the new permit. The TRW was chaired by the EPA and consisted of the independent experts, EPA experts, and representatives from North Carolina and Tennessee.

Permitting Rationale – Toxicants

Using the self-monitoring data required per the NPDES permit for Outfall 001, reasonable potential analyses were conducted on the following toxicants: dioxin, zinc, cadmium, selenium and silver. The standards used for the analyses are consistent with North Carolina standards for a class C waterbody.

Arsenic, Cadmium, Total Phenolic Compounds, Total Chromium, Total Copper, Cyanide, Fluoride, Total Lead, Total Mercury, Total Molybdenum, Total Nickel, Total Selenium, Total Silver, Total Zinc - Based on the Division's analysis of self-monitoring data, this discharge does not pose a reasonable potential to cause a violation of the North Carolina stream standard for these parameters.

Dioxin – Based on the Division's analysis of self-monitoring data, this discharge does not pose a reasonable potential to cause a violation of the North Carolina stream standard for dioxin because all the values were below detection level. However, the dioxin limit will be maintained because of the EPA requirement. The facility had no dioxin detection in it's effluent since 1989. Currently, Blue Ridge Paper is required to monitor dioxin and dibenzofuran isomers from the influent, sludge, landfill leachate, and effluent.

Permitting Rationale – Oxygen Consuming Waste Pollutants

A site-specific Best Available Technology (BAT) based limit was calculated for the 2001 permit to determine the **monthly average 5 - day biochemical oxygen demand (BOD_5) limit**. A site-specific BAT approach was used because North Carolina's Division of Water Resources continues to agree that an economically feasible end-of-pipe technology capable of reliably meeting the water quality limit specified by the existing model does not exist at this time and no violations of the dissolved oxygen standard in the river have been observed in recent years.

The North Carolina Division of Water Resources' recommendation for the 2001 permit BOD_5 limit was established based on the demonstrated level of performance for the existing treatment plant. Data on treatment plant performance and influent loading from the Canton Mill (1998 through 2000) was evaluated and examined for outliers. The maximum influent loading and lowest treatment plant performance were used to develop the monthly average BOD_5 limit. The data set was sufficient to account for the day to day variability of the treatment system.

Over the time period evaluated, the treatment plant has performed extremely well. The lowest percent removal was 96.9% and the highest influent loading was 414.9 mg/L. Based on this analysis, North Carolina's Division of Water Resources recommends to retain a monthly average BOD_5 loading of 3,205 lb/day in the draft permit

Because Blue Ridge Paper has oxygen injection facilities in place to maintain the instream dissolved oxygen standard should instream dissolved oxygen dictate a need, Blue Ridge Paper complies with the conditions set forth by 40 CFR 125.3 (f).

The methodology used for the **daily maximum 5 - day biochemical oxygen demand (BOD_5) limit** was developed during the 1997 permit cycle. A site-specific daily maximum to monthly average multiplier was used for determination of the recommended daily maximum limit. Using this methodology and reviewing data since the Canton Modernization Project (1998 –2001) the recommended daily maximum limit was based on a multiplier of 3.4 (daily maximum/monthly average) is 10,897 lb/day. The draft Permit retains the existing BOD_5 daily maximum limit.

Ammonia monitoring requirements are retained in the draft permit to provide data concerning levels of ammonia discharged to the Pigeon River (which may affect instream dissolved oxygen).

Effluent **dissolved oxygen** is limited at no less than 6 mg/L based on the above discussion. Daily monitoring is required based on 15A NCAC 2B .0508 (d), Paper and Allied Products, Class IV facility.
Chemical Oxygen Demand (COD) monitoring is required to assess the potential impact of chemical oxygen demand from the Blue Ridge Paper wastewater effluent. Neither federal effluent guidelines nor North Carolina water quality standards require a limit for COD. Though no limit is proposed, the EPA has reserved COD for potential future limits. Therefore, COD monitoring will be continued.

Permitting Rationale – Flow Limit

The facility requested to increase flow limit to 34.0 MGD to accommodate changes at the facility and submitted EAA to justify the increase in flow.

The facility will make the following changes that results in the flow increases:

1. Two new scrubbers for compliance with MACT Control conditions required by the mill's Air Permit. Based upon information provided by the Mill, each scrubber has a designed blowdown of 100 gpm (0.144 MGD). Estimated Increase – 0.288 MGD;
2. Additional water usage from an existing scrubber to maintain compliance operational performance. This has led to an increase of 100 gpm (0.144 MGD) of water usage due to an increase in blowdown. Estimated Increase – 0.144 MGD;
3. The Mill's water intake plant was required to capture the water from the traveling screen. This has led to an increase in flow to the wastewater treatment plant of 167 gpm (0.24 MGD). Estimated Increase – 0.24 MGD;
4. Increased water usage to maintain settling basin performance has led to an increase of 63 gpm (0.0907 MGD). Estimated Increase – 0.091 MGD;
5. A new desilicizer system was installed. The backwash and regeneration rate is estimated at 66 gpm (0.095 MGD). Estimated Increase – 0.095 MGD;
6. Increased fresh water demand in the paper process area required to meet more stringent product food safety requirements for two paper machines. Estimated flow increase is 1,041 to 2,014 gpm (1.5 to 2.9 MGD). Estimated Increase – 2.9 MGD;
7. Additional leachate collected from the Canton Mill Landfill. The current cells opened in 2010 (D-South) and 2015 (D-North). There is a total of 15 acres of landfill currently being used. An additional cell will open in the Fall of 2020. As the landfill increases in size, the amount of leachate captured increases. This has led to an increase of 22 gpm (0.03 MGD), with an additional 43 gpm (0.06 MGD) after the new cell is added. Estimated Increase – 0.03 to 0.06 MGD; and
8. Flow and loadings can increase from the Town of Canton wastewater collection system as the town changes. While the Town does not anticipate a large growth, it has available water systems. Their current estimates are 26 to 27 million gallons of water consumed. The Town's Water Treatment Plant has a capacity of 4 MGD and currently produces an average of 1.3 MGD. Range of Increase – 0.0 to 0.3 MGD.

The result of each of these changes has led to an increase in water coming to the Mill's wastewater treatment plant. The estimated flow increase ranges from 2.4 to 4.12 MGD.

Based on the provided rational, the DEQ approved the request to increase flow limit from 29.9 MGD to 34.0 MGD.

Permitting Rationale – Nutrients

Total phosphorus and total nitrogen monitoring is required by 15A NCAC 2b .0508 (d) (2) (A). Monthly monitoring is required to assess the contribution of nutrients from Blue Ridge Paper and the potential impact to Waterville Reservoir.

The Waterville Reservoir is not currently impaired due to the nutrients. The nutrient contributions from the paper mill is relatively low, the long term Nitrogen concentration in the discharge is 1.7 mg/L, and the long term Phosphorus concentration in the discharge is 0.68 mg/L.

Permitting Rationale –Conventional Pollutants

The **total suspended solids (TSS)** limits were calculated using the EPA promulgated Effluent Guidelines for the Pulp, Paper, and Paperboard Point Source Category - 40 CFR 430 Subpart B and compared to existing limits . The TSS limits contained in the current NPDES permit are more stringent than the calculated federal effluent guidelines since the current limits are based on the **1993** proposed guidelines for the oxygen delignification process. The existing TSS limits remain unchanged for this permit renewal.

North Carolina does not have a numeric standard for TSS. The rules specifically regulate floating solids, settleable solids, and sludge deposits [ref. 15A NCAC 2B .0211(3)(c)]. The draft permit restricts floating solids.

The **temperature** requirement is based on a Section 316 (a) temperature variance determination issued by the NC Environmental Management Commission October 11, 1984 and approved by EPA August 6, 1985.

In making the recommendation to retain the current 316(a) temperature variance, DWR staff evaluated Blue Ridge Paper's Balanced and Indigenous Species Report and concluded that temperature was not prohibiting a Balanced and Indigenous population. In addition, DWR staff reviewed existing temperature data and concluded that Blue Ridge Paper still cannot meet the North Carolina temperature requirement. Therefore, DWR is recommending that the 316(a) temperature variance continue, with Blue Ridge Paper conducting a Balanced and Indigenous Species Study prior to the next permit renewal.

The **flow** limit is based on Blue Ridge Paper's current flow values and post-CMP production, and includes 0.9 MGD for the Town of Canton's wastewater. This flow limit remains unchanged.

Limitations for **fecal coliform** are based on the contribution of domestic wastewater from the Town of Canton and the requirements of 15A NCAC 2B .0211 (b) (3) (E).

Conductivity monitoring is required based on 15A NCAC 2B .0508 (d), Paper and Allied Products (Water Quality Limited Facilities), for a Class IV facility.

Limitations for **pH** 6.0 –9.0 are based on 15A NCAC 2B .0211 (b) (3) (G).

Permitting Rationale – EPA Effluent Guidelines

The facility is subject to the Cluster Rules (40 CFR 430 Subpart B). The Pulp and Paper Cluster Rule was established by EPA to protect human health and the environment by reducing toxic releases to the air and water from U.S. pulp and paper mills.

Adsorbable Organic Halides (AOX). Weekly effluent monitoring and limits for AOX is required. AOX is an overall test for adsorbable organic halides, which includes chlorinated organics. Trends in concentration changes have been observed between AOX and specific pollutants (dioxins, chlorinated organics) at pulp and paper mills. Therefore, any decrease in AOX may also indicate a decrease in chlorinated organics.

Chloroform. Chloroform limits for bleach plants have been recalculated for the proposed permit. Limits contained in the NPDES permit on the bleach plant effluent are based on the EPA promulgated Effluent Guidelines for the Pulp, Paper, and Paperboard Point Source Category. Since Blue Ridge Paper operates two separate fiber lines, there shall be two compliance points for chloroform as stipulated in the sampling plan.

Dioxin. In addition to the dioxin conditions stated in the **"Permitting Rationale – Toxicants" section, dioxins shall be limited and monitored on the effluent from the each bleach plant. 2,3,7,8 TCDD and 2,3,7,8 TCDF limits are based on the EPA promulgated Effluent Guidelines for the Pulp, Paper, and Paperboard Point Source Category.**

Chlorinated Phenolics. Per 40 CFR 430.24, the daily maximum limits for 12 chlorinated phenolics are "less than Minimum Level" (<ML as specified in 40 CFR 430.01.

Trichlorophenol/Pentachlorophenol limits and monitoring are not required. The permittee has certified that chlorophenolic biocides are not used at the facility. This certification eliminates the requirement to include effluent limits for these two parameters based on 40 CFR 430. However, if the facility changes future operations to include chlorophenolic biocides, limits and monitoring will be required. Limits for these parameters were recalculated to reflect the current level of the production (please see attached).

Best Management Practices (BMPs) requirements for spent pulping liquors, turpentine, and soap have been maintained in the permit. At this time, Blue Ridge Paper is in compliance with the best management practices stipulated in the EPA promulgated Effluent Guidelines for the Pulp, Paper, and Paperboard Point Source Category.

Blue Ridge Paper has not joined the Voluntary Advanced Technology Incentives Program (VATIP) for existing direct or new direct dischargers as outlined in 40 CFR 430 Subpart B. The VATIP program was set up for new or existing direct dischargers whereby mills agree to accept enforceable effluent limitations and conditions in their NPDES permits that are more stringent than the BAT limitations, in exchange for regulatory and enforcement related rewards and incentives.

Blue Ridge Paper will use steam stripping to treat process condensates, rather than hard piping to the WWTP; thus interface with the Division of Air Quality is not necessary.

Rationale for Temperature Variance Renewal

Blue Ridge Paper submitted the latest Balanced and Indigenous Species Study on the Pigeon River in 2012. The study was conducted by the University of Tennessee. DWR biologists have reviewed the report and concluded that continuance of the temperature variance is appropriate. Therefore, the Division of Water Resources is recommending continuation of the temperature variance with reporting requirements consistent with the previous permits. The facility will be required to provide a new Balanced and Indigenous Species Study prior to the permit renewal.

Color Variance Removal Rationale

In order to evaluate the color compliance, we need to review the color narrative water quality standard definition from the North Carolina Administrative code 15A NCAC 2B.0211 Fresh Surface Water Quality Standards for Class C Waters.

The narrative color standard consists of several components, and each of the components has to be evaluated:

1) Public Health - There has never been a public health advisory related to color in North Carolina.

2) Aquatic Life and Wildlife - The University of Tennessee biological studies conducted in 2005 and 2012 concluded that the Pigeon River has a "balanced and indigenous fish community in the Pigeon River below the mill's discharge". The facility is also consistently passing WET tests during the last 5 years and for an extended time period before that. Therefore, the benthic macroinvertebrate impairment is not believed to be associated with the color discharge.

3) Palatability of Fish – Color is not a parameter associated with fish palatability.

4) Secondary Recreation - Pigeon River in North Carolina continues to be used for secondary recreation. Division's employees from the central office and the regional office have observed people fishing below the discharge on numerous occasions.

5) Aesthetic Quality- NC has generally viewed color as primarily an aesthetic issue, and the interpretation of color as an aesthetic impact is subjective.

Most of the color standard components are easily quantifiable and we can conclude that all of them are being met in the Pigeon River. The most difficult component of the color standard is aesthetic because it depends on the personal preferences and perceptions, vision characteristics, background light condition, natural setting, bottom substrate, previous experiences, etc. Therefore, it is extremely difficult to determine compliance with the color standard and it inevitably leads us to the need to translate the narrative standard to a numeric value.

One such attempt was made by the EPA in the early 1980's, the EPA interpreted the North Carolina color standard as an instream standard of 50 PCU [Platinum-Cobalt units]. This number is based on the ability of the average observer to detect instream color. However, it is important to emphasize that the ability to detect

color does not mean that the color is objectionable to the observer, which is the basis of the North Carolina standard. Hence, the EPA interpretation is overly conservative.

There are very few studies on the color perception, the most definitive color perception research on pulp mill color discharges has been conducted by Dr. Prestrude of Virginia Tech Department of Psychology. His research was funded in part by the State of Tennessee, and included color perception studies in both Tennessee and North Carolina waters (Pigeon River). Prestrude (July 1996) reported that the vast majority of persons participating in the research projects considered water quality color in the receiving stream as aesthetically acceptable in the 100-110 PCU color range.

Therefore, we have a contradiction between the EPA's interpretation of the North Carolina color standard and the conclusions of the Prestrude's studies. It is reasonable to suggest that the true level of color that does not impair aesthetic quality of the stream lies somewhere within the range of 50 PCU to 100 PCU. Nevertheless, in the absence of acceptable site specific color perception studies, North Carolina DEQ is forced to use 50 PCU as the *de facto* instream color standard.

During the last 30 years Blue Ridge Paper has made significant improvements to the facility in order to reduce effluent color load and improve its overall environmental performance. As a result, the annual average effluent color loading has been reduced from 380,000 lb/day in 1988 to 36,000 lb/day today.

In order to achieve this result, the mill has spent over $526 million in expenditures on environmental process improvement since 1990. One of the major accomplishments was development of a unique technology – BFR (bleach filtrate recycling process). BFR removes color from the effluent. It was installed in 1998 at a capital cost of $30 million.

According to the latest report of consultant Dr. Liebergott (issued on July 7, 2006) the mill is ranked # 1 in the world in regards to the BOD, COD, and color removal. Dr. Liebergott was originally hired in 2001 by the consortium of environmental groups to evaluate the facility for color reduction options. Dr. Liebergott also concluded, after evaluating data from 76 similar mills around the world, that Blue Ridge Paper Plant is ranked # 2 in the world in regards to the TSS and AOX (adsorbable organic halides) removal.

A biological studies conducted by the University of Tennessee in 2005 and 2012 concluded that the Pigeon River has a "balanced and indigenous fish community". This study also found a diverse and healthy macroinvertebrate community in the Pigeon River. Scientific studies indicate that stream color concentrations below 100 color units have no effect on health of aquatic organisms (NCASI Special Report 9407, Human Perception and Biological Impacts of Kraft Mill Effluent Color, June 1994).

According to the information the Division received from the state of Tennessee, the River Run Walleye has returned to the Pigeon River. This is a very sensitive species that indicate high water quality. The Pigeon River has also become a trophy smallmouth bass fishery and the number of rafters in Tennessee has increased from ~21,000 in 1995 to almost 150,000 in 2007.

The true color at the North Carolina/Tennessee line during the last 5 years (2014-2018) has averaged 21 color units, which is significantly below the value that was interpreted by EPA as the color water quality standard agreed upon by both states.

The true color at the Fiberville Bridge (0.4 miles below discharge) during the last 5 years (2014-2018) has averaged 41 color units, which indicates the long-term compliance with the EPA interpreted state color standard.

Review of the instream monitoring data for the period 2014-2018 indicates that this condition would be met most of the times with an exception of the drought conditions.

The facility requested removal of the Color Variance. Based on the evidence presented, the Division believes that the current discharge does not cause violation of the North Carolina Color Standard and the Color

Variance should be removed from the permit. The facility will also continue to investigate feasibility of the new technologies that will reduce color in the effluent and implement them (if economically achievable).

According to the state rule 15A NCAC 02B .0206(a)(4) the aesthetic quality standards will be protected using 30Q2 flow. The state rules do not explicitly define what kind of 30Q2 flow shall be used and the facility provided justification to use a Monthly 30Q2 flow as a basis for compliance determination. The justification for the Monthly 30Q2 flow is provided in Section 1.3.3 (page 1-12) of the attached document entitled Comprehensive Assessment and Analysis of Color in the Pigeon River. The lowest Monthly 30Q2 flow at the facility is measured at 129 cfs, this number will be used for the compliance purposes at the Fiberville bridge (0.4 miles below discharge).

The DEQ proposes that the permit condition shall require the facility to meet the monthly average Δ50 PCU (the difference between monthly average upstream and monthly average downstream true color) at the Fiberville bridge when the flow in the Pigeon river is equal or above Monthly 30Q2. By meeting this condition, the facility will not contravene the state color standard.

This decision can be supported by the additional following information:

1). The Bowater Hiwassee River Study (Prestrude and Laws, 1989) identified that color increases of 50 to 60 PCU were acceptable to observers. Since the background color concentration for Blue Ridge Paper is 13 PCU, the downstream color concentration of 64 to 74 PCU should be acceptable to observers.
2). The recommendation from the Bowater Study was accepted by the State of Tennessee and it established a color limit of 50 PCU above background for the Hiwassee River.
3) . Similar study conducted by Dr. Prestrude for the State of Maine resulted in the color limit of 40 PCU above the background per river.
4). Dr. Prestrude conducted a color perception studies in both Tennessee and North Carolina waters (Pigeon River). Prestrude (July 1996) reported that the vast majority of persons participating in the research projects considered water quality color in the receiving stream as aesthetically acceptable in the 100-110 PCU color range.

CANTON MODERNIZATION PROJECT

Prior to 1993, knotting hardwood brownstock was washed through one of two brownstock washer lines. After washing brownstock was screened using a two-stage fine screening process and bleached in one of the two bleaching lines. The two bleaching lines were operated independently for ‘low’ brightness and ‘high’ brightness.

Since 1993, the hardwood fiberline has incorporated numerous modifications designed to increase mill performance from both an environmental and product quality standpoint. Currently, the hardwood fiberline consist of two stage knotting followed by pre-oxygen delignification washers. After pulp is processed through the oxygen delignification unit, it is washed again prior to the four stage pressurized fine screening.

After screening, the pulp is bleached through one medium consistency bleach line.
Prior to 1992, pine (softwood) pulp was processed through one brownstock washing line prior to the two stage screening process. After screening, pulp was processed through one of the two bleaching lines. Similar to the hardwood fiberline, the softwood fiberline bleaching was operated independently for ‘low’ brightness and ‘high’ brightness.

Like the hardwood fiberline, the softwood fiberline has incorporated numerous modifications in order to enhance product quality and environmental performance. Currently, the softwood fiberline process consists of two stage knotting followed by a brownstock pre-oxygen delignification line. After the initial washing the pulp is processed through the oxygen delignification unit followed by another washing. After the second washing pulp is screened using four stage pressurized fine screen before entering a medium consistency bleach line.

In addition to the improvements noted, the facility has implemented full scale bleach filtrate recycle of the pine bleach line and partial caustic extraction stage (Eo) recycle on the hardwood bleach line.

SUMMARY - PROPOSED PERMIT CHANGES

1) Section A. (8.) Requirements for Color Analysis and Compliance Special Condition of the permit has been updated.
2) Section A. (9.) Dioxin Monitoring Special Condition has been updated and the number of the fish tissue sampling analysis has been reduced.
3) Section A. (12.) Clean Water Act Section 316(a) Thermal Variance has been updated.
4) Section A. (14.) Mixing Zone has been added to the permit.
5) The flow limit has been increased to 34.0 MGD to account for increased water usage resulting from the installation of two new wet scrubbers on coal fires boilers for boiler MACT compliance and change in operation of the Riley Bark boiler for SO_2 control.
6) The Color Variance is terminated and a new instream color compliance requirement has been added to the permit to replace the Color Variance, please see Footnote #16 (Part I Section A. (1.)).
7) Chloroform limits have been recalculated to reflect the current production level (Internal Outfall 002 and Internal Outfall 003).
8) AOX (adsorbable organic halides) limits have been recalculated to reflect the current production level (Outfall 001). The calculation indicated the need to increase the limits. However, the current limits were kept to provide an additional protection for the receiving stream.
9) Pentachlorophenol and trichlorophenol limits have been recalculated to reflect the current production level (Outfall 001). The calculation indicated the need to increase the limits. However, the current limits were kept to provide an additional protection for the receiving stream.
10) TSS (total suspended solids) limits have been recalculated to reflect the current production level (Outfall 001). The calculation indicated the need to increase the limits. However, the current limits were kept to provide an additional protection for the receiving stream.
11) Federal regulations require electronic submittal of all discharge monitoring reports (DMRs) and program reports. The final NPDES Electronic Reporting Rule was adopted and became effective on December 21, 2015. The requirement to begin reporting discharge monitoring data electronically using the NC DWR's Electronic Discharge Monitoring Report (eDMR) internet application has been added to your final NPDES permit. [See Special Condition A. (13.)]

    For information on eDMR, registering for eDMR and obtaining an eDMR user account, please visit the following web page: http://deq.nc.gov/about/divisions/water-resources/edmr.

    For more information on EPA's final NPDES Electronic Reporting Rule, please visit the following web site:
    https://www.federalregister.gov/documents/2015/10/22/2015-24954/national-pollutant-discharge-elimination-system-npdes-electronic-reporting-rule

PROPOSED SCHEDULE FOR PERMIT ISSUANCE

Draft Permit to Public Notice: November 5, 2020
Permit Scheduled to Issue: May XX, 2021

State Contact

If you have any questions on any of the above information or on the attached permit, please contact Sergei Chernikov at (919) 707-3606 or sergei.chernikov@ncdenr.gov.