## French Broad River Basin Basinwide Assessment Report Whole Effluent Toxicity Program

2003-2007



## The Division of Water Quality's Whole Effluent Toxicity Monitoring Program

Acute and/or chronic toxicity tests are used to determine toxicity of discharges to sensitive aquatic species (usually fathead minnows or the water flea, *Ceriodaphnia dubia*). Results of these tests have been shown by researchers to be predictive of discharge effects to receiving stream populations.

Many facilities are required to monitor whole effluent toxicity (WET) by their NPDES permit. Facilities without monitoring requirements may have their effluents evaluated for toxicity by DWQ's Aquatic Toxicology Laboratory. If toxicity is detected, DWQ may include aquatic toxicity testing upon permit renewal.

DWQ's Aquatic Toxicology Unit maintains a compliance summary for all facilities required to perform tests and provides a monthly update of this information to regional offices and WQ administration. Ambient toxicity tests can be used to evaluate stream water quality relative to other stream sites and/or a point source discharge.

## WET Monitoring in the French Broad River Basin – 2003-2007

Thirty one facility permits in the French Broad River basin currently require whole effluent toxicity (WET) monitoring (Figure 1 and Table 1). All Thirty-One permits have a WET limit. Some of these facilities have more than one permit because they have multiple outfalls.

Figure 1. French Broad River basin facilities required to conduct whole effluent toxicity testing

1	MB Industries	11	Blue Ridge Paper Products	21	N. Buncombe High School
2	Transportation, NC Dept of	12	Maggie Valley WWTP	22	Marshall WWTP
3	EBDC,LLC-Mill in Pisgah	13	SKF USA Incorporated	23	Unimin CorpCrystal Operation
4	Brevard WWTP	14	Maggie Valley WWTP	24	Feldspar Corp.
5	Hendersonville WWTP	15	Ridgeview Acres MHP	25	Burnsville WWTP
6	Henderson Co. Schools	16	Silver-Line Plastics Corp.	26	Spruce Pine WWTP
7	Camp Highlander WWTP	17	Asheville DeBruhl WTP	27	K-T Feldspar
8	Mt. Pisgah Lodge/Recreation Area	18	Buncombe County MSD	28	Unimin Corp. Red Hill Plant
9	CP&L-Asheville Ash Pond	19	Asheville Northfork WTP	29	Unimin Corp-Mica Operations
10	Tyco Electronic Corporation	20	Woodfin Sanitary WTP	30	Unimin Corp. Red Hill Plant

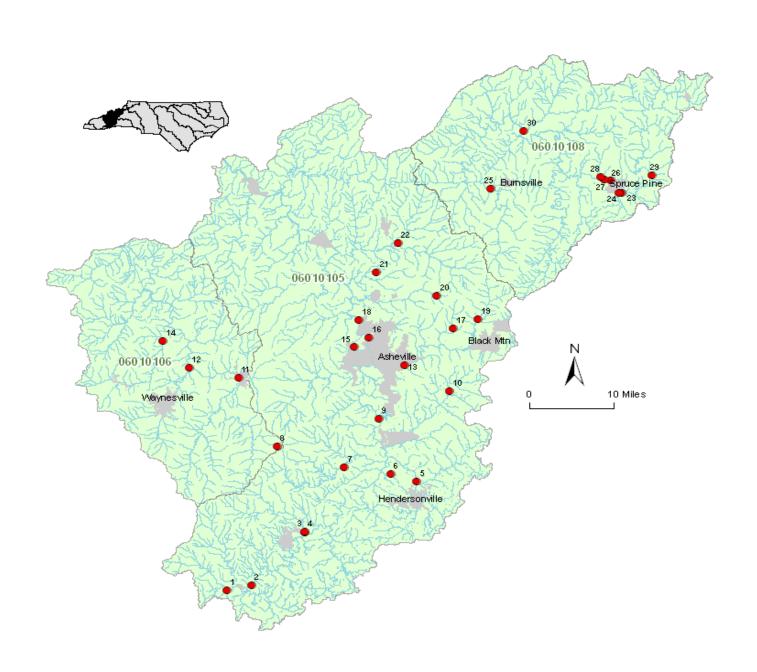


Table 1. French Broad River basin facilities required to conduct whole effluent toxicity testing

Cubb sain/Facility	NPDES	Receiving	Country	Flow	IWC	7Q10	
Subbasin/Facility	Permit No.	Stream	County	(MGD)	(%)	(cfs)	
04-03-01	NC0000504/004	Franch Dread D	Tananakanin	2.5	0.4	404	
Brevard WWTP	NC0060534/001	French Broad R.	Transylvania	2.5	2.4	161	
EBDC,LLC-Mill in Pisgah	NC0000078/001	French Broad R.	Transylvania	27.5	21	154	
MB Industries-001	NC0000311/001	W Fr French Broad R.	Transylvania	0.030	0.17	27.9	
Transportation, NC Dept of	NC0085979/001	French Broad R.	Transylvania	0.0288	0.01	725	
04-03-02							
Asheville DeBruhl WTP	NC0056961/001	Beetree Cr.	Buncombe	0.1	12.3	1.1	
Asheville Northfork WTP	NC0035807/001	N. Fk. Swannanoa R.	Buncombe	8.0	42.2	1.7	
Buncombe County MSD	NC0024911/001	French Broad R.	Buncombe	40.0	12.0	466.0	
Tyco Electronic Corporation	NC0033227/004	Cane Cr.	Buncombe	0.288	5.6	7.5	
CP&L-Asheville Ash Pond/ 001	NC0000396/001	French Broad R.	Buncombe	NA	NA	375.0	
Henderson Co. Schools	NC0066681/001	Mill Pond Cr.	Henderson	0.0099	13	0.1	
Hendersonville WWTP	NC0025534/001	Mud Cr.	Henderson	4.8	22	17	
N. Buncombe High School	NC0061182/001	Stanfield Branch	Buncombe	0.025	100	0.0	
Ridgeview Acres MHP	NC0060283/001	UT Smith Mill Cr.	Buncombe	0.0078	100	0.0	
Silver-Line Plastics Corp.	NC0023591/002	French Broad R.	Buncombe	0.144	0.05	460	
SKF USA Incorporated	NC0086088/001	Gashes Cr.	Buncombe	0.108	15	0.94	
Woodfin Sanitary WTP	NC0083178/001	Reems Cr.	Buncombe	.03375	8.0	0.61	
04-03-03							
Camp Highlander WWTP	NC0033251/001	UT S. Fork Mills R.	Henderson	0.0074	100	0.0	
04-03-04							
Marshall WWTP	NC0021733/001	French Broad R.	Madison	0.40	0.12	535	
04-03-05							
Blue Ridge Paper Products	NC0000272/001	Pigeon R.	Haywood	29.9	100	0	
Maggie Valley WWTP	NC0056561/001	Jonathans Cr.	Haywood	1.0	6.3	23.0	
Mt. Pisgah Lodge/Recreation Area	NC0072729/001	UT Pisgah Cr.	Haywood	0.032	25	0.15	
Waynesville WWTP	NC0025321/001	Pigeon R.	Haywood	6.0	8.91	95.0	
04-03-06							
Feldspar Corp.	NC0000353/001	North Toe R.	Mitchell	3.5	11.18	43	
K-T Feldspar	NC0000400/001	North Toe R.	Mitchell	1.73	5.73	44.0	
Spruce Pine WWTP	NC0021423/001	North Toe R.	Mitchell	2.0	6.6	44.0	
Unimin Corp-Mica Operations (001)	NC0000361/001	North Toe R.	Avery	2.16	10	30	
Unimin Corp.	NC0000175/001	North Toe R.	Mitchell	3.61	11	45.0	
Unimin Corp. Red Hill Plant	NC0085839/001	North Toe R.	Mitchell	0.682	1.2	90.7	
Unimin CorpCrystal Operation	NC0084620/001	North Toe R.	Mitchell	0.36	1.3	41	
<b>04-03-07</b>	1400004020/001	140rdi 100 iv.	WINCHON	0.50	1.0	71	
Burnsville WWTP	NC0020290/001	Cane R.	Yancey	0.8	6.0	19.0	
<b>04-03-08</b>	1400020230/001	Jane IX.	I alloey	0.0	0.0	19.0	
	NC0023504/004	French Broad B	Runcombo	0.096	0.02	460	
Silver-Line Plastics Corp.	NC0023591/001	French Broad R.	Buncombe	0.096	0.03	460	

The number of facilities in this basin with whole effluent toxicity limits has increased from 1985 (first year monitoring required) until 1999. The numbers of permits have started declining in this basin since 2003. The compliance rate of those facilities has generally risen since the inception of the program. In 2004, the compliance rate stabilized in the range of 99% (Figure 2 and Table 2).

North Buncombe High School, discharging to French Broad River (subbasin 02), began to experience WET non-compliances since 2003. Evaluation of the facility shows that they are using chlorine to chlorinate their system. This could be a causative reason for the failure as well as high ammonia.

North Carolina Department of Transportation, Rosman site, has had intermittent toxicity failures. This site was managing a ground remediation site because of chloride contamination from road salt storage. Water lines have been extended to the homes in the affected area. The facility had been "forcing" a discharge in order to get a sample to submit for testing. We have informed the facility that they only need to pull a sample if they are discharging during the required month of testing.

Figure 2. NPDES facility whole effluent toxicity compliance in the French Broad River Basin, 1985-2007. The compliance values were calculated by determining whether facilities with WET limits were meeting their ultimate permit limits during the given time period, regardless of any SOCs in force.

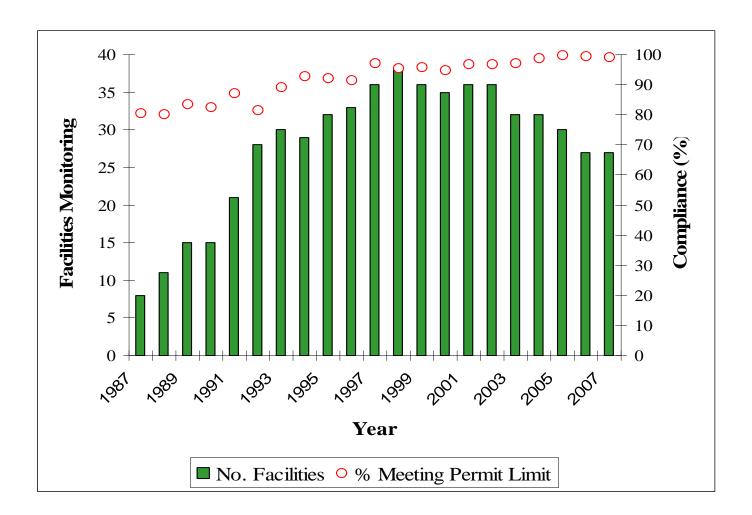


Table 2. Recent compliance record of facilities performing whole effluent toxicity testing in the French **Broad River basin** 

Subbasin/Facility	NPDES	2003		2004		2005		2006		2007	
	Permit No.	Pass	Fail								
04-03-01											
Brevard WWTP	NC0060534/001	4	0	4	0	4	0	4	0	4	0
EBDC,LLC-Mill in Pisgah	NC0000078/001	5	1	4	0	4	0	2	0	-	-
MB Industries-001	NC0000311/001	4	1	4	2	4	0	4	0	4	0
Transportation, NC Dept of	NC0085979/001	4	2	1	2	-	-	-	-	-	-
04-03-02											
Asheville DeBruhl WTP	NC0056961/001	-	-	-	-	-	-	-	-	-	-
Asheville Northfork WTP	NC0035807/001	4	0	4	0	4	0	4	0	4	0
Buncombe County MSD	NC0024911/001	5	1	4	0	4	0	4	0	4	0
Tyco Electronic Corporation	NC0033227/004	5	1	4	0	4	0	4	0	4	0
CP&L-Asheville Ash Pond/ 001	NC0000396/001	4	0	4	0	4	0	4	0	4	0
Henderson Co. Schools	NC0066681/001	3	0	4	0	4	0	4	0	4	0
Hendersonville WWTP	NC0025534/001	4	0	4	0	4	0	4	0	4	0
N. Buncombe High School	NC0061182/001	5	3	5	1	5	1	6	2	4	2
Ridgeview Acres MHP	NC0060283/001	-	-	-	-	-	-	-	_	-	-
Silver-Line Plastics Corp.	NC0023591/002	4	0	4	0	4	0	4	0	4	0
SKF USA Incorporated	NC0086088/001	4	0	4	0	4	0	4	0	4	0
Woodfin Sanitary WTP	NC0083178/001	4	0	4	0	4	0	4	0	4	0
04-03-03											
Camp Highlander WWTP	NC0033251/001	1	0	1	0	1	0	1	0	1	0
04-03-04											
Marshall WWTP	NC0021733/001	4	0	4	1	4	0	4	0	4	0
04-03-05											
Blue Ridge Paper Products	NC0000272/001	4	0	4	0	4	0	4	0	4	0
Maggie Valley WWTP	NC0056561/001	4	0	4	0	4	0	4	0	4	0
Mt. Pisgah Lodge/Recreation Area	NC0072729/001	2	0	2	0	3	1	2	0	2	0
Waynesville WWTP	NC0025321/001	4	0	4	0	4	0	4	0	4	0
04-03-06											
Feldspar Corp.	NC0000353/001	4	0	4	0	4	0	4	0	4	0
K-T Feldspar	NC0000400/001	4	0	4	0	4	0	4	0	4	0
Spruce Pine WWTP	NC0021423/001	4	0	4	0	4	0	4	0	4	0
Unimin Corp-Mica Operations (001)	NC0000361/001	4	0	4	0	4	0	4	0	4	0
Unimin Corp.	NC0000175/001	3	3	4	0	4	0	4	0	4	0
Unimin Corp. Red Hill Plant	NC0085839/001	4	0	5	1	4	0	4	0	4	0
Unimin CorpCrystal Operation	NC0084620/001	-	-	-	-	-	-	-	-	-	-
04-03-07											
Burnsville WWTP	NC0020290/001	4	0	4	0	4	0	4	0	4	0
04-03-08											
Silver-Line Plastics Corp.	NC0023591/001	4	0	4	0	4	0	4	0	4	0

Note that "pass" denotes meeting a permit limit or, for those facilities with a monitoring requirement, meeting a target value. The actual test result may be a "pass" (from a pass/fail acute or chronic test), LC50, or chronic value. Conversely, "fail" means failing to meet a permit limit or target value.