WCRO non-Bacteria TMDL WLA Summary

Stroubles Creek Benthic TMDL

- ***Developed for Sediment***
- ***Approved in 2004***
- ***Implementation Plan approved in 2006 by SWCB***

EXISTING AND FUTURE CONDITIONS:

[redacted]

VAR10282	Carriage Court II	38.08	100	0.54	0.54
CAFO Permit					
VPG120011	VT - Dairy Science Center			0.00	0.00
MS4 Permits					
VAR040019	Town of Blacksburg			421.77	210.88
VAR040049	Virginia Tech				
VAR040016	VDOT - Blacksburg Area				
Point Source Totals				**444.05**	**233.2**

- Permitted loads were calculated as the average annual modeled runoff times the area governed by the permit times a maximum TSS concentration of 100 mg/L
- Modeled runoff for industrial stormwater dischargers was calculated by multiplying the maximum annual modeled runoff depth for commercial pervious land uses (17.84 cm) and for commercial impervious land uses (90.90 cm) by their respective percentages (21% pervious, 79% impervious) for an average annual runoff depth for commercial areas (75.56 cm);
- the modeled runoff for construction areas used the average annual modeled runoff depth for transitional land uses (38.08 cm)

WLAs:

Table 7.2. Stroubles Creek TMDL Sediment Load

TMDL (t/yr)	WLA (t/yr)	LA (t/yr)	MOS (t/yr)
2,145.6	233.2	1,697.9	214.6
	VAR050441 - Litton Systems Inc Poly Scientific Div : 2.7 VAR050508 - VT - Central Heating Plt: 0.46 VAR10042 - VT - Dairy Science Center: 2.37 VAR10267 - VT - Campus: 15.43 VAR10275 - Hawthorne Ridge Town Houses: 0.77 VAR10282 - Carriage Court II: 0.54 VPG120011 - VT - Dairy Science Center: 0 MS4s (VAR040019, VAR040049, VAR040016): 210.88		

Roanoke River Watershed Benthic TMDL

- ***Developed for Sediment***
- ***Approved in 2006 by EPA***
- ***No Implementation Plan as of June 2009***

EXISTING CONDITIONS:

Table 6-1: Point Sources in the Roanoke River Impaired Watershed

Facility Name	Permit Number	Permitted Load (Kg/day)	Annual Sediment Loading (tons/yr)
Western Virginia Water Authority	VA0025020	1174	472.2
Roanoke Electric Steel Corporation	VA0001589	231	92.9
Shawville Town STP	VA0024031	22.7	9.1
Carvin Cove Water Filtration Plant	VA0001473	NA	17.6
Crystal Springs WTP	VA0091065	NA	8.8

Facility Name	Permit Number	Permitted Load (Kg/day)	Annual Sediment Loading (tons/yr)
Norfolk Southern Railway Company - Shaffers Crossings	VA0001597	NA	1.62
Ellison Lafayette WWTP	VA0062219	28	11.2
Blacksburg Country Club STP	VA0027481	3.9	1.57
Roanoke Moose Lodge	VA0077895	0.21	0.21

Permits in the Watershed:

- 9 permitted facilities having a permit limit for TSS (Table 6-1).

- annual point source loadings were computed based on the permitted discharge loading rate for total suspended solids for each facility.

- MS4s
  - The cities of Roanoke and Salem, as well as portions of Roanoke, Botetourt, and Montgomery Counties, and three facilities located within the Roanoke City metropolitan area, are covered by MS4 permits which regulate their stormwater discharges
  - Combined, these MS4 permits cover approximately 21.6% of the Roanoke River benthic impairment watershed (Table 2-6).
- Eight of the 13 facilities holding individual permits possess general stormwater permits as part of their NPDES discharge permit.
  - These facilities and their allocated stormwater loads are presented in Appendix D.
- Additionally, stormwater sediment loads allocated to the 152 general permits present in the watershed are also presented in Appendix D.

WLAs:

Table 7-1: Point Source Wasteload Allocations for Roanoke River

Facility Name	Permit Number	Annual Sediment Loads (tons/yr)	Allocated Loads (tons/yr)	Percent Reduction
Western Virginia Water Authority	VA0025020	472.2	472.2	0
Roanoke Electric Steel Corporation	VA0001589	92.9	92.9	0
Shawville Town STP	VA0024031	9.1	9.1	0
Carvin Cove Water Filtration Plant	VA0001473	17.6	17.6	0
Crystal Springs WTP	VA0091065	8.8	8.8	0
Norfolk Southern Railway Company - Shaffers Crossings	VA0001597	1.62	1.62	0
Ellison Lafayette WWTP	VA0062219	11.2	11.2	0
Blacksburg Country Club STP	VA0027481	1.57	1.57	0
Roanoke Moose Lodge	VA0077895	0.21	0.21	0
		Total Allocated Load	615.3	0

Table 7-3: MS4 Wasteload Allocation by MS4 Urban Area

MS4 Permit Holder	Permit Number	Sediment Allocation (Tons/Year)
Roanoke County	VAR040022	1823
City of Roanoke	VAR040004	1487
Town of Vinton	VAR040026	128
Botetourt County	VAR040023	327
City of Salem	VAR040010	589
VDOT Roanoke Urban Area	VAR040017	27
Virginia Western Community College	VAR040030	2
Virginia Medical Center	VAR040050	10
VDOT Montgomery County Urban Area	VAR040016	4
Town of Blacksburg	VAR040019	102
Town of Christianburg	VAR040025	75
	Total	**4573**

Table 7-5: Wasteload Allocation for each Individual MS4 Permit

MS4 Permit Holder	Permit Number	Sediment Allocation (Tons/Year)
Roanoke County	VAR040022	1680.0
City of Roanoke	VAR040004	953.0
Town of Vinton	VAR040026	119.30
Botetourt County	VAR040023	286.1
City of Salem	VAR040010	428.8
VDOT Roanoke Urban Area	VAR040017	25.2
Virginia Western Community College	VAR040030	1.9
Virginia Medical Center	VAR040050	9.3
VDOT Montgomery County Urban Area	VAR040016	3.7
Town of Blacksburg	VAR040019	82.8
Town of Christianburg	VAR040025	69.90
	Total	**3659.3**

WLAs (con't): Appendix D of Roanoke River Watershed Benthic TMDL Report:

Table D-1: Stormwater TMDL Allocations for Individual Permitted Facilities

Permit Number	Facility	TSS Stormwater Allocation (tons/yr)
VA0001252	Associated Asphalt Inc.	2.78
VA0001333	Koppers Inc.	18.24
VA0001589	Roanoke Electric Steel Corp.	56.55
VA0001511	Norfolk Southern Railway Co - East End Shops	35.70
VA0001597	Norfolk Southern Railway Co. - Shaffers Crossing	28.83
VA0025020	Western Virginia Water Authority	34.17
VA0088358	Fred Whitaker Co.	0.97
VA0089991	Federal Mogul Corp.	12.30

Table D-2: TMDL Allocations for General Stormwater Permits Issued to Industrial Facilities

Permit Number	Facility	Receiving Waterbody	MS4 Area	TSS Allocation (tons/yr)
VAR050027	Auto Salvage & Sales, Inc.	Tinker Creek	Roanoke City	0.53
VAR050134	Greater Roanoke Transit Company	Lick Run	Roanoke City	0.81
VAR050135	Virginia Scrap Iron & Metal Company Inc	Roanoke River	Roanoke City	1.66
VAR050143	Virginia Scrap Iron & Metal Incorporated	Roanoke River	Roanoke City	1.66
VAR050144	North 11 Asphalt Plant - Roanoke	Carvins Creek	Roanoke City	27.43
VAR050145	Holland-Richards Vault Service	Mason Creek	Roanoke City	0.25
VAR050178	BFI Waste Systems LLC - Roanoke	Roanoke River	Roanoke City	0.63
VAR050207	1915 Plantation Rd LLC	Lick Run	Roanoke City	0.63
VAR050208	Walker Machine & Foundry Corp	Roanoke River	Roanoke City	2.40
VAR050272	Roanoke Regional Airport	Deer Creek	Roanoke City	179.22
VAR050273	Ralph Smith Inc Steel Fabrication	Roanoke River UT	Roanoke City	0.67
VAR050274	USPS Roanoke Vehicle Maintenance Service	Roanoke River	Roanoke City	3.56
VAR050275	Old Dominion Auto Salvage	Tinker Creek	Roanoke City	3.46
VAR050436	Norfolk Southern Corp - Roadway Material Yard	Roanoke River	Roanoke City	0.49
VAR050437	Estes Express Lines Incorporated	Roanoke River, UT	Roanoke City	2.33
VAR050460	Yellow Freight System Inc	Tinker Creek	Roanoke City	1.62
VAR050496	Federal Express Corp - ROAA Station	Lick Run	Roanoke City	1.69
VAR050516	Mennel Milling Company	Roanoke River	Roanoke City	0.32
VAR050519	FedEx Freight East, Inc.	UT to Lick Run	Roanoke City	1.73
VAR050520	O'Neal Steel Inc	Tinker Creek	Roanoke City	6.46
VAR050522	Progress Rail Services Corp - Roanoke	Roanoke River	Roanoke City	3.95

Permit Number	Facility	Receiving Waterbody	MS4 Area	TSS Allocation (tons/yr)
VAR050530	Shenandoah Auto Parts	Lick Run	Roanoke City	0.60
VAR050539	Kenan Transport Co	Tinker Creek, UT	Roanoke City	1.62
VAR050643	Akzo Nobel Coatings Inc	Roanoke River	Roanoke City	1.13
VAR050717	Cycle Systems Incorporated	Ore Branch	Roanoke City	1.77
VAR050743	Hanson Concrete Products Inc - Roanoke	Roanoke River	Roanoke City	0.77
VAR050757	Metalsa Roanoke Inc	Tinker Creek	Roanoke City	12.96
VAR050843	Estes Express Lines Inc - Roanoke	Tinker Creek	Roanoke City	0.99
VAR051315	A D Weddle Company Inc	Tinker Creek	Roanoke City	2.36
VAR051371	Roanoke Regional Water Pollution Control Plant	Roanoke River	Roanoke City	34.20
VAR051460	Dynax American Corporation	Cook Creek	Roanoke City	5.15
VAR051478	Precision Steel	Glade Creek UT	Roanoke City	1.69
VAR051480	J and J Asphalt Incorporated	UT, Roanoke River	Roanoke City	0.18
VAR051492	Virginia Transformer Corp	Glade Creek, UT	Roanoke City	2.89
VAR520005	Vishay Vitramon Inc	Tinker Creek	Roanoke City	7.10
VAR520131	Virginia DMA - OMS #10	Roanoke River	Roanoke City	0.92
VAR520200	Hancock Rack Systems	Roanoke River	Roanoke City	0.85
VAR051199	Pitt Ohio Express Roanoke Terminal - Plantation Rd	Tinker Creek	Roanoke City	0.92
VAR051262	Shorewood Packaging Corporation	Tinker Creek	Roanoke City	0.85
VAR050146	Hedge Metal Company Incorporated	Roanoke River	Salem City	0.11
VAR050148	Salem Frame Company	Mill Race to Roanoke River	Salem City	11.44
VAR050150	Graham White Manufacturing Company	Snyders Branch	Salem City	7.28
VAR050174	Carbone of America Corporation	Masons Creek	Salem City	2.54
VAR050175	General Electric Industrial Systems	Masons Creek	Salem City	24.40
VAR050176	John W Hancock Jr Incorporated	Roanoke River	Salem City	0.85
VAR050457	Waste Management of Virginia - Salem	Roanoke River, UT	Salem City	1.98
VAR050506	Timber Truss Housing Systems Inc	Roanoke River, UT	Salem City	19.13
VAR050515	Yokohama Tire Corp	Roanoke River, UT	Salem City	18.00
VAR050744	Hanson Concrete Products Inc Salem1	Roanoke River	Salem City	1.73
VAR050745	Hanson Concrete Products Inc Salem2	Roanoke River	Salem City	4.41
VAR050749	Valleydale Foods Incorporated	Roanoke River	Salem City	3.18

Permit Number	Facility	Receiving Waterbody	MS4 Area	TSS Allocation (tons/yr)
VAR050762	Novozymes Biologicals Inc	Unnamed ditch to Mason Creek	Salem City	0.56
VAR051227	Old Virginia Brick Co Inc - Salem	UT to Roanoke River	Salem City	5.26
VAR050179	CEI - Roanoke	Tinker Creek	Roanoke County	11.22
VAR050206	Con-Way Southern Express-NRO	Lick Run	Roanoke County	2.4
VAR050462	Southern States Cooperative Inc - Vinton Feed Mill	Tinker Creek	Roanoke County	0.39
VAR050547	ITT Industries - Night Vision	Carvin Creek	Roanoke County	3.60
VAR050747	Parts Unlimited	Tinker Creek	Roanoke County	1.70
VAR050775	Star City Auto Parts Inc	Roanoke River	Roanoke County	0.35
VAR050011	Architectural Concrete Products Incorporated	Tinker Creek	Botetourt County	0.49
VAR050142	Southern States Cooperative Inc Cloverdale	Tinker Creek	Botetourt County	12.00
VAR050204	Eagle Picher Wolverine Gasket Division Cedar Run	Cedar Run UT	Montgomery County	4.41
VAR050340	Eagle Picher Wolverine Gasket Division Blacksburg	Cedar Run	Montgomery County	4.13
VAR051352	MRSWA Solid Waste Transfer Station MRF	Wilson Creek	Montgomery County	44.20
VAR050147	Rowe Furniture Corporation	Roanoke River	Outside MS4	12.21
VAR050180	Hooker Furniture Corporation - Roanoke	Tinker Creek	Outside MS4	11.00
VAR050220	Blue Ridge Stone - Portable Rip Rap Plant	Glade Creek	Outside MS4	4.97
VAR050251	Federal Mogul Corp - Blacksburg	Cedar Run Creek	Outside MS4	12.28
VAR050337	Sewell Products Inc	Mill Race	Outside MS4	1.27
VAR050448	United Parcel Service Inc - Roanoke	Lick Run	Outside MS4	15.07
VAR050461	L H Sawyer Paving Co Inc	Roanoke River	Outside MS4	0.60
VAR050507	Watkins Motor Lines - Roanoke Terminal	Little Bear Creek	Outside MS4	0.71
VAR050526	RR Donnelley and Sons Company - Roanoke	Branch Creek	Outside MS4	43.63
VAR050741	Medeco Security Locks Inc	Roanoke River, UT	Outside MS4	9.64
VAR050760	VT - Virginia Tech Airport	Slate Branch, UT	Outside MS4	587.89
VAR051245	KIK Virginia Incorporated	Mill Race	Outside MS4	1.27
VAR050277	General Shale Products LLC Plant No 35 and 36	Glade Creek	Outside MS4	6.46

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Crab Creek Benthic TMDL

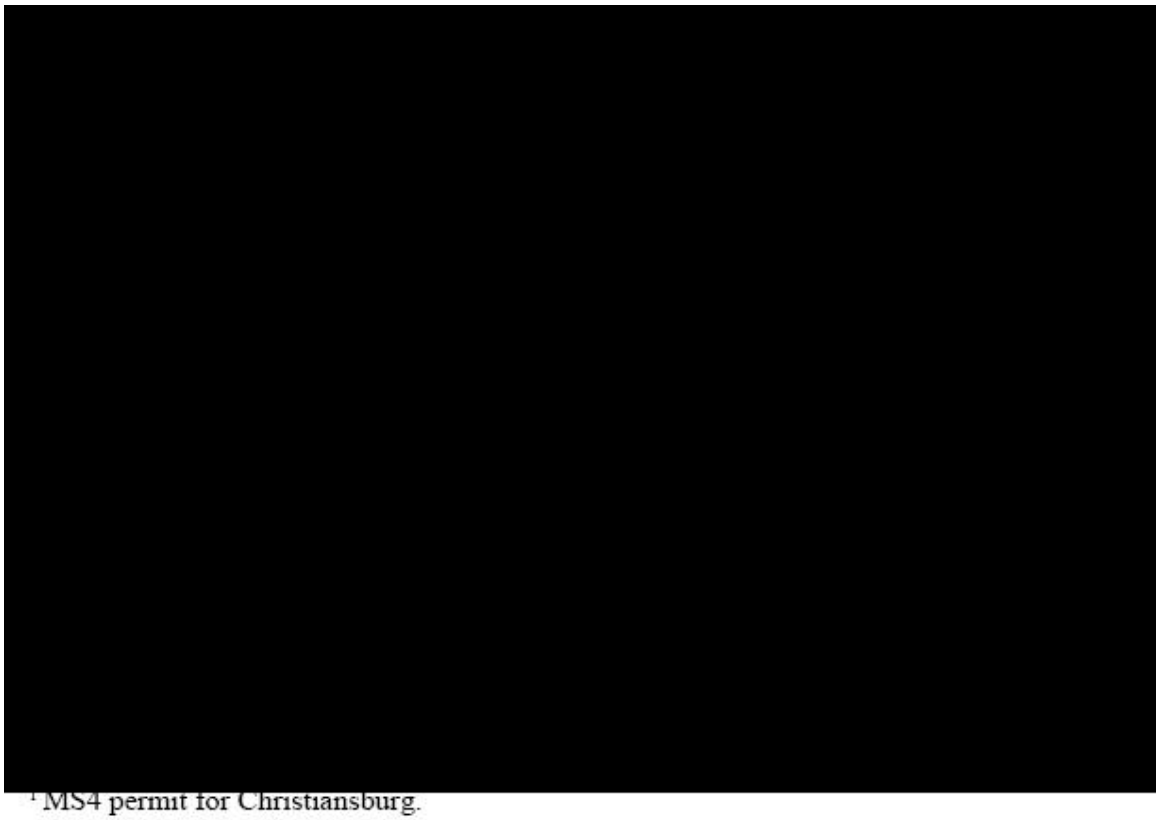
- ***Developed for Sediment***
- ***EPA Approved in 2004***
- ***No Implementation Plan as of June 2009***

EXISTING & PROJECTED FUTURE CONDITIONS:

Table 8.4 VPDES point source facilities and permitted TSS load.

Crab Creek Point Sources		Existing Conditions				Future Conditions
VPDES ID	Name	Runoff (cm)	Area (ha)	Conc. (mg/L)	TSS (T/yr)	TSS (T/yr)
Construction Stormwater Discharge Permits						
VAR100229	VDOT-Salem District	29.90	8.50	100	2.54	2.54
VAR101126	VDOT – Christiansburg (4541)	29.90	2.99	100	0.90	0.90
VAR102138	Depot Street School Residence	29.90	0.917	100	0.27	0.27
VAR102140	Oaktree Townhouses Phase VI	29.90	2.83	100	0.85	0.85
VAR102148	Holy Spirit Catholic Church	29.90	1.00	100	0.30	0.30
VAR102164	New River Medical Assoc. Medical Office Park	29.90	2.02	100	0.61	0.61
VAR102279	Edgemont of Diamond Hill	29.90	19.02	100	5.69	5.69
VAR102308	Lions Gate	29.90	5.38	100	1.61	1.61
VAR 103014	Hunters Ridge Phase III	29.90	1.09	100	0.33	0.33
VAR103064	Oak Tree Professional Park	29.90	3.24	100	0.97	0.97
VAR103090	Hans Meadow Drainage Improvements	29.90	0.809	100	0.24	0.24
VAR103349	Oak Tree Townhouses	29.90	12.38	100	3.70	3.70
Industrial Stormwater Discharge Permits						
VAR051370	Town of Christiansburg	60.60	13.63	30	2.479	2.479
VAG110015	Marshall Concrete	60.60	3.24	30	0.589	0.589
VAR520312	Federal Express Corp-WALA Station	60.60	0.809	30	0.147	0.147
Total Point Source Loads					**21.23**	**21.23**
MS4 Permits						
VAR040025	Town of Christiansburg				55.14	27.57
VAR040016	VDOT (load included in Town of CHBG					
Total MS4 Source loads					**55.14**	**27.57**
Total Point Source Loads + MS4 Source Loads					**76.38**	**48.76**

WLAs:



[1] MS4 permit for Christiansburg.

Back Creek (Pulaski Co.) Benthic TMDL

- ***TMDL Developed for Sediment***
- ***EPA Approved 2004***
- ***Implementation Plan Approved by Soil & Water Conservation Board 2008***

EXISTING & PROJECTED FUTURE CONDITIONS:

Table 8.4 Point Sources in the Back Creek watershed.

Back Creek Point Sources		Existing Conditions					Future Conditions
VPDES ID	Name	Permit Discharge (MGD)	Runoff (cm)	Area (ha)	Conc. (mg/L)	TSS (T/yr)	TSS (T/yr)
Industrial Stormwater Permits							
VAR050140	Goochs Recycling	-	59.78	0.40469	100	0.246	0.242
Confined Animal Feedlot Permits		-		-	-	0	0.000
VPG120009	Back Creek Dairy						
Single Family Home Wastewater Permits							
VAG402033	Residence	0.00450		-	30		0.019
VAG402086	Residence	0.00450		-	30		0.019
Point Source Totals							**0.280**

WLAs:

Table 9.3 TMDL Targets for Back Creek Watershed.

Impairment		WLA (T/yr)	LA (T/yr)	MOS (T/yr)	TMDL (T/yr)
Back Creek		**0.280**	**3,693**	**410**	**4,103**
VAR050140	0.242				
VPG120009	0.000				
VAG402033	0.019				
VAG402086	0.019				

[1] General permits – single family home.

Peak Creek Benthic TMDL

- ***TMDL Developed for Copper and Zinc***
- ***EPA Approved 2004***
- ***No Implementation Plan as of June 2009***

EXISTING CONDITIONS:

[redacted]

VAR050339	Pulaski County Industrial Dev. Authority	N/A	N/A	N/A
VAR050444	Jefferson Mills Inc	N/A	N/A	N/A
VAR050454	Pulaski Furniture Corp. Plant # 5	N/A	N/A	N/A
VAR050772	McCready Lumber Company, Inc	N/A	N/A	N/A
VAR100264	VDOT - Salem District - Rte 641	N/A	N/A	N/A
VAR101248	Pulaski Business Park	N/A	N/A	N/A
VAR101880	VDOT Pulaski Co 0807 077 P01 N501	N/A	N/A	N/A
VAR101919	New Pulaski Elementary School	N/A	N/A	N/A
VAR520118	Gem City Iron & Metal Company, Inc	N/A	N/A	N/A
VAR520122	Pulaski Furniture	N/A	N/A	N/A
Single Family Watewater Discharge Permits				
VAG402040	Residence	0.0005	30	0.021
Industrial Wastewater Discharge Permits				
VA0000281	Magnox Pulaski, Inc.	0.84	4.19	4.866
Total				**4.887**

WLAS:

Table 9.3 Average annual Cu and Zn loads (kg/year) modeled based on TMDL in the Peak Creek watershed.

Impairment*	WLA (kg/year)	LA (kg/year)	MOS	TMDL (kg/year)
Peak Creek (Cu)	12.7	206		218.7
VA0000281 – Magnox	*12.0*			
VAR050772 – McCready	*0.6*		*Implicit*	
VAR520118 – Gem City	*0.1*			
Peak Creek (Zn)	57.6	1,776		1,833.6
VA0000281 – Magnox	*57.0*			
VAR050772 – McCready	*0.6*			

* The WLAs for affected permits are detailed in this table.

North Fork Blackwater River Benthic TMDL

- ***TMDL Developed for Sediment and Phosphorus***
- ***EPA Approved 2004***

Existing Conditions:

Table 1. VPDES point source facilities in the Upper Blackwater River watershed

Stream	Facility Name	VPDES Permit No.	Discharge Type	Design Flow (MGD)	Permitted Concentration (mg/L)	TSS Load (metric tons/year)	Phosphorus Load (metric tons/year)
South Fork Blackwater	Callaway Elementary	VA0088561	Municipal	0.0019	30 TSS	0.0789	
North Fork Blackwater	Clover Meadow Dairy Farm	VPG120013	General - CAFO	N/A	N/A	N/A	N/A
Unnamed Tributary to South Fork Blackwater	VDOT-Franklin County	VAR101262*	General - Stormwater	0.0032	100 TSS	0.447	

*Permitted load for this facility was calculated as the average annual modeled runoff times the area governed by the permit times a maximum TSS concentration of 100 mg/L. Flow was based on the average annual runoff from row crop lands.

WLAs:

[redacted]

10	Sediment	338.6	304.8	0.00	33.9
12	Sediment	1395.9	1256.3	0.00	139.6
13	Sediment	1833.1	1649.3	0.526 (*Callaway Elementary School = 0.0789; VDOT = 0.447*)	183.3
14	Sediment	1569.4	1412.4	0.00	156.9
15	Sediment	492.9	443.6	0.00	49.3