

# 2012 Impaired Waters Category 4 & 5 by 2012 Impaired Area ID\*

### **New River Basin**

Cause Group Code: N22R-02-BAC - Stroubles Creek

Location:	The upstream end is at the Duck Pond dam on the southwest end of the VPI&SU campus on the Blacksburg Quad. The downstream end is at the Walls Branch mouth on Stroubles Creek.
City/County	Montgomery Co.
Use(s):	Recreation
Cause(s) / VA Category:	Escherichia coli / 5A

Fecal coliform (FC) bacteria exceedances of the former 1000 cfu/100 ml WQS instantaneous criterion in 2002 cause impairment of the Recreational Use. Three of 23 observations exceed the former criterion at station 9-STE002.41 Rt. 705 Bridge (Coal Hollow Road). The 2004 IR at 9-STE002.41 records four exceedances from 35 samples in excess of the current 400 cfu/100 ml WQS instantaneous criterion. Escherichia coli (E.coli) bacteria replaced fecal coliform (FC) in 2006 as the indicator as required by Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters]. 2008 results find E.coli exceedances at 9-STE002.41 are three of 31 samples and resulted in 2.10 miles de-listed with the 2008 IR.

This 2.10 mile portion, delisted (partial - length) with the 2008 assessment, but returned with the 2010 303(d) Listing. The original 7.08 mile impairment returned with the 2010 assessment.

9-STE002.41- (Rt. 705 Bridge- Coal Hollow Road) The 2012 data window finds eight of 36 observations exceeding the 235 cfu/100 ml instantaneous criterion. Exceeding values range from 280 to greater than 2000 cfu/100 ml. 2010 Escherichia coli (E. coli ) samples find eight exceed the 235 cfu/100 ml criterion from a total of 32 samples with the same range of exceedance.

9-STE007.29 (Rt. 657 Bridge below old B'Burg STP) The 2012 IR reports eight E.coli samples exceed the instantaneous criterion from a total of 33. Exceeding values range from 280 to greater than 2000 cfu/100 ml. 2010 results find eight exceed from a total of 32 samples with the same range of exceedance as 2012. E.coli results exceed in five of 25 samples. The 2008 exceedance range is from 300 to greater than 2000 cfu/100 ml. 2006 E.coli samples reveal five exceed the instantaneous criterion from a total of 16. Exceeding values range from 490 to greater than 5000 cfu/100 ml.

Assessment Unit	Water name	Location Description	Cause Category	Cause Name	Cycle First Listed	TMDL Schedule	Size
VAW-N22R_STE03A00	Stroubles Creek	These mainstem waters extend from the Slate Branch mouth on Stroubles Creek upstream to the mouth of Walls Branch.	5A	Escherichia coli	2010	2014	2.10
VAW-N22R_STE04A00	Stroubles Creek	These mainstem waters extend from the Walls Branch mouth upstream to the Duck Pond located on the VPI&SU Campus.	5A	Escherichia coli	2006	2014	4.98

Stroubles Creek		Estuary (sq. miles)	Reservoir (acres)	River (miles)
Impaired area ID: VAW-N22R-01	Escherichia coli / 5A Total impaired size by water type:			7.08

Recreation

#### Sources:

• Discharges from Municipal Separate Storm Sewer Systems (MS4)

- Livestock (Grazing or Feeding Operations)
- Municipal (Urbanized High Density Area)
- Unspecified Domestic Waste
- Wastes from Pets
- Wet Weather Discharges (Non-Point Source)Wildlife Other than Waterfowl



## Category 4 & 5 by 2012 Impaired Area ID\*

## **New River Basin**

Cause Group Code: N22R-02-BEN - Stroubles Creek

Location:	These mainstem waters extend from the Walls Branch mouth upstream to the Duck Pond located on the VPI&SU Campus.
City/County	Montgomery Co.
Use(s):	Aquatic Life
Cause(s) / VA Category:	Benthic-Macroinvertebrate Bioassessments / 4A

The Stroubles Creek General Standard (Benthic- Sediment) Total Maximum Daily Load (TMDL) is U.S. EPA approved on 1/28/2004 [Fed ID: 21904]. The SWCB approved the Study on 6/17/2004. The Benthic (Sediment) Implementation Plan (IP) is SWCB approved (9/27/2006) (formerly VAW-N22R-02). The 1996 original 303(d) Listed 4.98 mile waters remain impaired for contravention of the General Standard (Benthic).

9-STE007.29- Bio 'IM' Nine Virginia Stream Condition Index (VSCI) surveys (2006 - 2010) with an average score of 46.82. The moderately pollution tolerant caddisfly family Hydropsychidae and fly family Chironomidae were the second most common macroinvertebrates during these surveys. This community indicates the benthic community is exposed to moderate level of pollution, possibly a nutrient source that provides the Hydropsychidae the opportunity to be second most dominant. Thus, this stream reach shows evidence of year long pollution. Habitat condition at this station is suboptimal, impacted by sediment and poor riparian vegetation zones. The mostly open canopy allows for increased water temperatures and primary production resulting in large mats of algae and bacteria on the stream substrate during the summer and fall. The 2010 assessment found impairment from seven VSCI surveys (2003 & 2006 - 2008) with an average score of 45.6. An average score of 45.6 is also found in 2008 from six VSCI surveys (2001 - 2003 & 2006).

Assessment Unit	Water name	Location Description	Cause Category	Cause Name	Cycle First Listed	TMDL Schedule	Size
VAW-N22R_STE04A00	Stroubles Creek	These mainstem waters extend from the Walls Branch mouth upstream to the Duck Pond located on the VPI&SU Campus.	4A	Benthic- Macroinvertebrate Bioassessments	1996	2010	4.98
Stroubles Creek			-	Estu (sq. m	ary Re iiles) (a	servoir acres)	River (miles)
Impaired area ID: V	AW-N22R-01	Benthic-Macroinvertebra Total impaired size by wa	te Bioasses ater type:	sments / 4A			4.98

**Aquatic Life** 

### Sources:

- Discharges from Municipal Separate Storm Sewer Systems (MS4)
- Livestock (Grazing or Feeding Operations)
- Municipal (Urbanized High Density Area)
- Sediment Resuspension (Clean Sediment)



# **2012 Impaired Waters** Category 4 & 5 by 2012 Impaired

Area ID\*

## New River Basin

Cause Group Code: N22R-03-BAC - Back Creek

Location:	The waters extend from 0.70 miles below the Rt. 636 Bridge crossing downstream to Back Creek's mouth on the New River.
City/County	Pulaski Co.
Use(s):	Recreation
Cause(s) / VA Category:	Escherichia coli / 4A

The 1996 303(d) Listed Back Creek Bacteria Total Maximum Daily Load (TMDL) is U.S. EPA approved on 6/21/2004 [Fed ID 24564] and SWCB approval on 12/02/2004. The Bacteria/Benthic Implementation Plan (IP) is SWCB approved 7/31/2008 (formerly VAW-N22R-03). 1996 fecal coliform (FC) exceedances are found in seven of seven observations at 9-BCK009.47; 2002 records 17 of 23 samples exceeding the former fecal coliform bacteria instantaneous criterion of 1000 cfu/100 ml. The 2004 Integrated Report (IR) records 19 of 21 samples exceeding the former WQS fecal coliform bacteria instantaneous criterion of 400 cfu/100 ml at 9-BCK009.47. The excursions range from 900 to >8000 cfu/100 ml. Escherichia coli (E.coli) bacteria replaced fecal coliform in 2006 as the indicator as required by Water Quality Standards [9 VAC 25-260-170. Bacteria; other waters]. The waters remain impaired for 16.38 miles with the 2010 Assessment.

9-BCK015.98 (Rt. 636 Bridge, Black Hollow Road) The 2012 finds Escherichia coli (E.coli) samples exceed the WQS instantaneous criterion of 235 cfu/100 ml in 24 of 36 total samples. Values in excess of the criterion range from 300 to greater than 2000 cfu/100 ml. 2010 E.coli samples exceed the instantaneous criterion in 25 of 35 samples. Values in excess of the criterion range from 300 to greater than 2000 cfu/100 ml. The 2008 assessment finds E coli exceeds the instantaneous criterion in 19 of 26 samples. Values in excess of the criterion range from 250 to greater than 2000 cfu/100 ml. In 2006 E coli samples exceed the instantaneous criterion in 11 of 14 samples with the same exceedance range.

9-BCK009.47 (Rt. 100 Bridge) E.coli exceeds the 235 cfu/100 ml criterion in 34 of 36 samples within 2012 data window. The range of exceedance is from 320 to greater than 2000 cfu/100 ml. 2010 E. coli exceedances of the instantaneous criterion are found in 39 of 42 samples. The range of exceeding values is from 310 cfu/100 ml to 18,000. E.coli exceeds the instantaneous criterion in 32 of 35 samples in 2008. The range of exceeding values is from 310 cfu/100 ml to 18,000. Two of two geometric mean calculations exceed the 126 cfu/100 ml criterion based on the former WQS frequency of collection. The 2006 assessment found E coli exceeds the instantaneous criterion in 20 of 21 samples with the same exceedance range.

9-BCK000.74 (Rt. 600 Bridge) E.coli exceedances are found in 29 of 43 samples within the 2010 data window. Exceedances range from 250 cfu/100 ml to 9000. The 2008 assessment finds E.coli exceeds the instantaneous criterion in 23 of 36 samples with exceedances ranging from 290 cfu/100 ml to greater than 2000. Three of three geometric mean calculations exceed the 126 cfu/100 ml criterion based on the former WQS frequency of collection. The exceedance range in 2006 is the same as 2008 where E.coli exceeds in 15 of 22 samples.

Assessment Unit	Water name	Location Description	Cause Category	Cause Name	Cycle First Listed	TMDL Schedule	Size
VAW-N22R_BCK01A00	Back Creek	Back Creek mainstem waters from the mouth of Shuffle Branch downstream to Back Creek's mouth on the New River.	4A	Escherichia coli	2006	2010	5.39
VAW-N22R_BCK02A08	Back Creek	Back Creek from 0.70 miles downstream of the Rt. 636 crossing on downstream to the confluence of Shuffle Branch.	4A	Escherichia coli	2006	2010	10.99

Back Creek		Estuary (sq. miles)	Reservoir (acres)	River (miles)
Impaired area ID: VAW-N22R-01	Escherichia coli / 4A Total impaired size by water type:			16.38

### Recreation

### Sources:

- Livestock (Grazing or Feeding Operations)
- On-site Treatment Systems (Septic Systems and Similar Decentralized Systems)
- Unspecified Domestic Waste
- Wastes from Pets
- Wet Weather Discharges (Non-Point Source)
- Wildlife Other than Waterfowl



# Category 4 & 5 by 2012 Impaired Area ID\*

### **New River Basin**

Cause Group Code: N22R-03-BEN - Back Creek

Location:	The waters extend from 0.70 miles below the Rt. 636 Bridge crossing downstream to Back Creek's mouth on the New River.
City/County	Pulaski Co.
Use(s):	Aquatic Life
Cause(s) / VA Category:	Benthic-Macroinvertebrate Bioassessments / 4A

The 2002 303(d) Listed Back Creek General Standard (Benthic- Sediment) Total Maximum Daily Load (TMDL) is U.S. EPA approved on 6/21/2004 [Fed ID 24565]. The SWCB approved the Study on 12/02/2004. The Benthic/Bacteria Implementation Plan (IP) is SWCB approved 7/31/2008.

The TMDL identifies sediment as the primary stressor for the aquatic life use (benthic) impairment. The 2002 severe RBP II score of 37.50 produces the initial 16.38 mile listing of the benthic impairment. The 2008 assessment finds via station 9-BCK000.74 that a single Virginia Stream Condition Index (VSCI) score indicates full support. A potential delisting could occur for the lower end of Back Creek should additional surveys produce scores at 60 or above in succeeding assessment cycles.

9-BCK015.98- (Rt. 636 Bridge, Black Hollow Road) Bio 'IM' Two 2006 Virginia Stream Condition Index (VSCI) surveys with an average score of 42.8. The habitat surveys indicate the stream is impacted by sediment deposition, riparian vegetation removal, channel alteration (straightening of the stream), and destabilized stream banks. Additionally, the water in Back Creek is often turbid from cattle disturbance of stream banks and in-stream sediments. These impacts result in stream substrate and water that limits colonization of benthic macroinvertebrates and fish.

9-BCK009.47 (Rt. 100 Bridge) Bio- 'IM'; The 2012 Integrated Report (IR) reveals four VSCI surveys (2006 & 2010) with an average score of 41.0 The benthic community is dominated by taxa that are tolerant of nutrient/organic enrichment. Late summer of 2006 a fish kill occurred that was the probable cause for the decline in the benthic community for the Fall sample. The community recovered between Fall of 2006 and Spring of 2010, however a decline is noted in the Fall 2010 score. NPS pollution from agricultural sources upstream from Rt. 100 has impacted the stream. Habitat at this site has been impacted by the agricultural land use in the watershed, resulting in sedimentation and excessive algal growth on the substrate. The 2008 and 2010 assessments report three VSCI surveys (2003 & 2006) with an average score of 41.0 as well.

9-BCK000.74- (Rt. 600 Bridge) Bio- 'FS' There are no additional data beyond the 2006 IR. One fall 2003 VSCI survey scoring 67.2. This AU would be a candidate for delisting should additional surveys find scores above 60. The reach appears to have habitat that would suit a diverse benthic community and was surveyed to determine if it was a recovery zone from upstream impairments. However, this station had a low abundance of sensitive EPTs. The high dominance of Elmidae (53.3%) is possibly due to slight nutrient enrichment and the subsequent abundance of periphyton, which is the predominant food of riffle beetles. This station is slightly impacted by sediment deposition. The banks and riparian zones are impacted by altered hydrology and human activities. However, the substrate size, frequency of riffles, flow, velocity, and channel gradient have a positive effect on the benthic community.

Assessment Unit	Water name	Location Description	Cause Category	Cause Name	Cycle First Listed	TMDL Schedule	Size
VAW-N22R_BCK01A00	Back Creek	Back Creek mainstem waters from the mouth of Shuffle Branch downstream to Back Creek's mouth on the New River.	4A	Benthic- Macroinvertebrate Bioassessments	2002	2010	5.39
VAW-N22R_BCK02A08	Back Creek	Back Creek from 0.70 miles downstream of the Rt. 636 crossing on downstream to the confluence of Shuffle Branch.	4A	Benthic- Macroinvertebrate Bioassessments	2002	2010	10.99

Back Creek		Estuary	Reservoir	River
Impaired area ID: VAW-N22R-01	Benthic-Macroinvertebrate Bioassessments / 4A	(sq. iiiies)	(00163)	16.38
Aquatic Life	l otal impaired size by water type:			

### Sources:

- Channelization
- Loss of Riparian Habitat
- Sediment Resuspension (Clean Sediment)



# Category 4 & 5 by 2012 Impaired Area ID\*

## **New River Basin**

Cause Group Code: N22R-04-TEMP - Toms Creek

Location:	Toms Creek mainstem waters just below the Poverty Creek confluence upstream to its headwaters.
City/County	Montgomery Co.
Use(s):	Aquatic Life
Cause(s) / VA Category:	Temperature, water / 5C

The initial 2008 5.23 mile impairment is extended upstream 5.72 miles with data provided by the National Committee for the New River (NCNR). The 2012 Integrated Report finds the Aquatic Life Use is impaired for 10.95 miles based on the initial 2008 temperature exceedances and 2012 Citizen temperature measurements of the Class V 21°C stockable trout water criterion.

9TOM-1-NCNR (Off Glade Rd. at Heritage Park Trail) Two temperature measurements exceed the Class V 21°C criterion at 24.5°C on 7/19/2010 and 24.0°C on 8/19/2010 from 10 measurements for 2012.

9-TOM005.32- (Rt. 725 Bridge upstream of Poverty Creek) Both the 2010 and 2008 IRs find two temperature measurements exceed the Class V 21°C criterion from 13 observations. Exceedances occur on 8/15/2005 at 24.4°C and 21.4 °C on 8/15/2006. There are no additional data beyond the 2008 Integrated Report (IR).

9TOM-2-NCNR (Poverty Creek Rd. Bridge) Three temperature exceedances of the Class V 21°C criterion occur on 6/16/2010 at 22°C; 7/19/2010 at 24.0°C and 8/16/2010 at 24.5°C from 11 measurements for 2012.

Assessment Unit	Water name	Location Description	Cause Category	Cause Name	Cycle First Listed	TMDL Schedule	Size
VAW-N22R_TOM02A00	Toms Creek	Toms Creek mainstem waters just below the Poverty Creek confluence upstream to the mouth of Big Run. These waters are not within the WQS public water supply (PWS) designation.	5C	Temperature, water	2008	2020	5.23
VAW-N22R_TOM03A08	Toms Creek	Toms Creek from the mouth of Big Run upstream to its headwaters.	5C	Temperature, water	2012	2020	5.72

Toms Creek		Estuary (sq. miles)	Reservoir (acres)	River (miles)
Impaired area ID: VAW-N22R-01	Temperature, water / 5C Total impaired size by water type:			10.95

### **Aquatic Life**

### Sources:

• Source Unknown



# Category 4 & 5 by 2012 Impaired Area ID\*

## **New River Basin**

Cause Group Code: N22R-06-BEN - Unnamed Tributaries XEJ and XEH to Slate Branch

Location:	Unnamed Tributary XEH from its mouth on Slate Branch upstream to its headwaters. And Unnamed Tributary XEJ from its mouth on Unnamed Tributary XEH upstream to its headwaters.
City/County	Montgomery Co.
Use(s):	Aquatic Life
Cause(s) / VA Category:	Benthic-Macroinvertebrate Bioassessments / 5A

The 2008 assessment finds the Aquatic Life Use via the General Standard (Benthic) is impaired for a total of 2.64 miles. Unnamed Tributary to Slate Branch- XEH for 1.79 miles and Unnamed Tributary XEJ to XEH for 0.85 miles. There are no additional data beyond the 2008 Integrated Report (IR).

9-XEH000.75- (Downstream of Villages Development at NRV Mall) Bio 'IM' Two 2006 Virginia Stream Condition Index (VSCI) surveys with an average score of 23.1. This station was sampled at the request of the WCRO VWP program with the goal of collecting water quality data prior to new development immediately upstream near the New River Valley Mall complex. A crayfish/macro invertebrate kill in January 2006 impacted the stream with the source occurring somewhere above this station. The most noticeable difference between this site and the reference station is the low abundance of organisms collected in the spring sample compared to the reference site. The abundance increased in the fall and is comparable to the reference site (Falling Branch).

9-XEJ000.10- (North of NRV Mall) Bio 'IM' Two 2006 VSCI surveys with an average score of 23.8. This station was sampled at the request of the WCRO VWP program with the goal of collecting water quality data prior to new development immediately upstream and north of the New River Valley Mall and above the Huckleberry Tail crossing. The main source of impact appears to be recent development and urban land use resulting in altered hydrology, excessive storm water runoff, sediment deposition, bank erosion, and riparian vegetation removal.

Assessment Unit	Water name	Location Description	Cause Category	Cause Name	Cycle First Listed	TMDL Schedule	Size
VAW-N22R_XEH01A08	Slate Branch, UT (XEH)	Unnamed tributary XEH from its mouth on Slate Branch upstream to its headwaters.	5A	Benthic- Macroinvertebrate Bioassessments	2008	2020	1.79
VAW-N22R_XEJ01A08	Unnamed Trib. XEJ to XEH	Unnamed Tributary XEJ from its mouth on Unnamed Tributary XEH upstream to its headwaters.	5A	Benthic- Macroinvertebrate Bioassessments	2008	2020	0.85

Unnamed Tributaries XEJ and XEH to Slate Branch		Estuary (sq. miles)	Reservoir (acres)	River (miles)
	Benthic-Macroinvertebrate Bioassessments / 5A			2.64

Impaired area ID: VAW-N22R-01

I otal impaired size by water type:

### **Aquatic Life**

#### Sources:

- Loss of Riparian Habitat
- Municipal (Urbanized High Density Area)
  Sediment Resuspension (Clean Sediment)
- Streambank Modifications/destabilization



## Category 4 & 5 by 2012 Impaired Area ID\*

## **New River Basin**

Cause Group Code: N29R-01-PCB - New River, Claytor Lake, Peak Creek, Reed Creek and Stony Creek

Location:	The impairment begins at the I-77 bridge crossing the New River and extends downstream to the VA/WV State Line and includes the tributaries Peak Creek and Reed Creek and Stony Creek as described below.
City/County	Giles Co., Montgomery Co., Pulaski Co., Radford City, Wythe Co.
Use(s):	Fish Consumption
Cause(s) / VA Category:	PCB in Fish Tissue / 5A

The Virginia Department of Health (VDH) issued a fish consumption advisory on August 6, 2001 for polychlorinated biphenyls (PCBs) for the lower portion of the New River (Rt. 114 Bridge downstream to the VA / WV State Line - 52.0 miles) based on fish tissue collections from Carp. An Advisory extension to Claytor dam was issued 8/06/2003 (11.47 miles) recommends that no carp be consumed in these waters and no more than two meals per month of flathead and channel catfish. The VDH PCB Fish Consumption Advisory was further extended upstream on the New River (13 miles) to the I-77 Bridge to include the lower portions of Peak Creek (4.02 miles), Reed Creek (16.35 miles) and Claytor Lake (4,287 acres) on 12/02/2004. The VDH advises consumption should not exceed two meals per month for carp and smallmouth bass. The VDH level of concern is 50 parts per billion (ppb) in fish tissue.

There are eight fish tissue collection sites within the 2010 data window reporting exceedances of the WQS based 20 ppb fish tissue value (TV) (VDH 50 ppb). These data are reviewed by the VDH in making an advisory determination. A complete listing of collection sites and associated fish tissue data are available at http://www.deq.virginia.gov/fishtissue/fishtissue.html. A more detailed presentation of the data can also be found using an interactive mapping application at http://www.deq.virginia.gov/. The VDH Advisory information is also available via the web at http://www.vdh.virginia.gov/Epidemiology/PublicHealthToxicology/Advisories/.

9-SNC000.20- 2004 fish tissue finds with application of the new WQS TV for PCB (20 ppb) the addition of 3 species exceeding the new TV criterion. Rock Bass (size 16-20 cm) at 25.21, SM Bass (size 28.6-30.5 cm) at 22.13 and White sucker (1 fish) at 30.08 ppb. Stony Creek is therefore a 2010 addition based on the new WQS PCB tissue value of 20 ppb.

Station 9-RDC009.00 exceeded the DEQ screening value for PCBs in a carp sample.

Assessment Unit	Water name	Location Description	Cause Category	Cause Name	Cycle First Listed	TMDL Schedule	Size
VAW-N22R_NEW01A00	New River	The New River mainstem from the confluence of Back Creek downstream to the Watershed Boundary at the Montgomery / Giles County Line.	5A	PCB in Fish Tissue	2002	2014	3.47
VAW-N22R_NEW02A00	New River	New River mainstem from the Radford Army Arsenal Plant downstream intake near Whitethorne downstream to the confluence of Back Creek.	5A	PCB in Fish Tissue	2002	2014	2.88
VAW-N22R_NEW03A00	New River	New River mainstem from the confluence of Stroubles Creek downstream to the Radford Army Arsenal Plant downstream water intake near Whitethorne.	5A	PCB in Fish Tissue	2002	2014	4.52
VAW-N22R_NEW04A00	New River	New River mainstem from the Radford Army Arsenal Plant upstream intake/Pepper's Ferry Region POTW outfall downstream to the confluence of Stroubles Creek.	5A	PCB in Fish Tissue	2002	2014	2.35
VAW-N22R_NEW05A00	New River	New River mainstem from the Blacksburg /Christiansburg /VPI Authority intake at Rt. 114 downstream to the Radford Army Arsenal Plant upstream intake / Pepper's Ferry Regional POTW outfall.	5A	PCB in Fish Tissue	2002	2014	1.77
		New River mainstem from the Watershed Boundary at		PCB in			

VAW-N22R_NEW06A00	New River	the Crab Creek confluenc Blacksburg /Christiansbur	e downstream to the g /VPI Authority intake.	5A	Fish Tissue	2006	2018	1.73
VAW-N23R_NEW01A00	New River	New River mainstem from County Line downstream Creek.	the Giles/Montgomery to the confluence of Sinking	5A	PCB in Fish Tissue	2002	2014	5.46
New River, Claytor La and Stony Creek	ake, Peak (	Creek, Reed Creek			Estua (sq. mil	ry Res es) (a	servoir Icres)	River (miles)

**Fish Consumption** 

#### Sources:

• Source Unknown