
**STATUS OF WATER QUALITY
SCIOTO BRUSH CREEK WATERSHED**

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Designated aquatic life uses in the Scioto Brush Creek watershed include exceptional warmwater habitat (EWH) and warmwater habitat (WWH). All streams are designated primary contact recreation (PCR) use. Scioto Brush Creek and South Fork Scioto Brush Creek are designated as Class A PCR and all other streams are designated as Class B PCR (see Appendix C for further details). Explanations of use designations and changes that were recommended following the 2006 field survey can be found in the *Biological and Water Quality Study of the Scioto Brush Creek Basin, 2006. Adams and Scioto Counties, Ohio* (Ohio EPA 2008; http://www.epa.ohio.gov/portals/35/documents/SciotoBrushCreek_TSD_2006_apr08.pdf), also known as the technical support document (TSD).

B1 Aquatic Life Use Attainment

Much of the Scioto Brush Creek watershed was unaffected by anthropogenic sources. Particularly high quality habitat existed along most of the South Fork Scioto Brush Creek and Scioto Brush Creek mainstems. In these areas, beneficial in-stream cover, such as logs, aquatic macrophytes, boulders, cobble, and undercut banks were moderately abundant. Deep pool areas, greater than one meter deep, were common throughout the stream. Such intact habitat should be preserved.

Areas with problems caused by anthropogenic influences include Beech Fork, Rarden Creek and the headwaters of Scioto Brush Creek (at river mile 24.3). In each case, habitat was disturbed by in-stream or adjacent land uses, specifically in-stream gravel mining, straightening of the stream channel and use of the stream by livestock. In addition, Rarden Creek was affected by nutrients from livestock with unrestricted access to the stream. There were additional areas where non-attainment of water quality standards (WQS) occurred; in these cases, causes were either natural (e.g., metals from natural geology or low stream flows) or unknown. Recreation use impairment was more widespread across the watershed.

Figure B-1 shows attainment across the watershed. Table B-1 shows the aquatic life use attainment information (see the TSD).

Scioto Brush Creek Watershed TMDLs

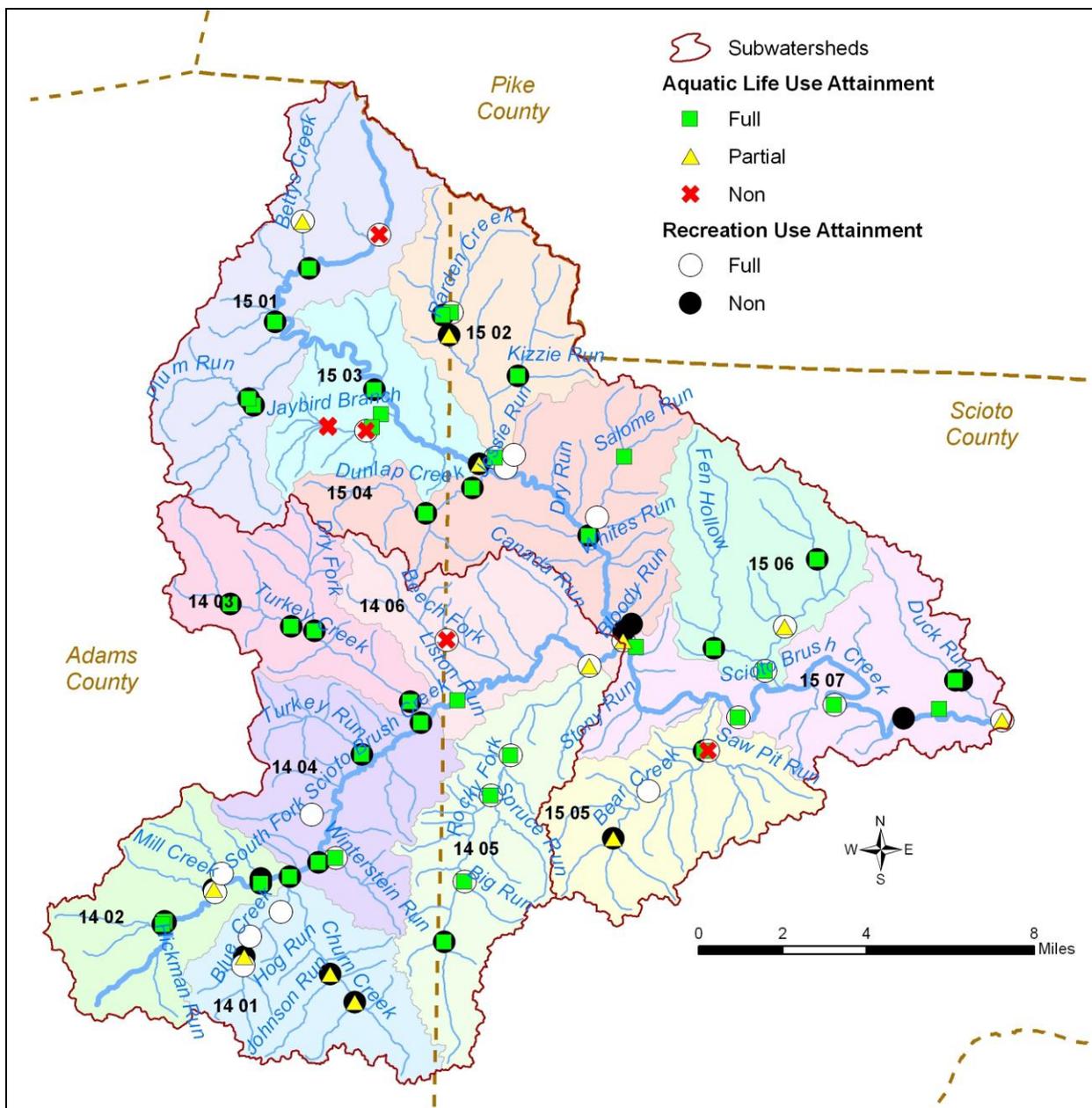


Figure B-1. Aquatic life use and recreation use attainment in the Scioto Brush Creek watershed.

For reference, Figure B-2 and Figure B-3 show the sampling locations with river miles.

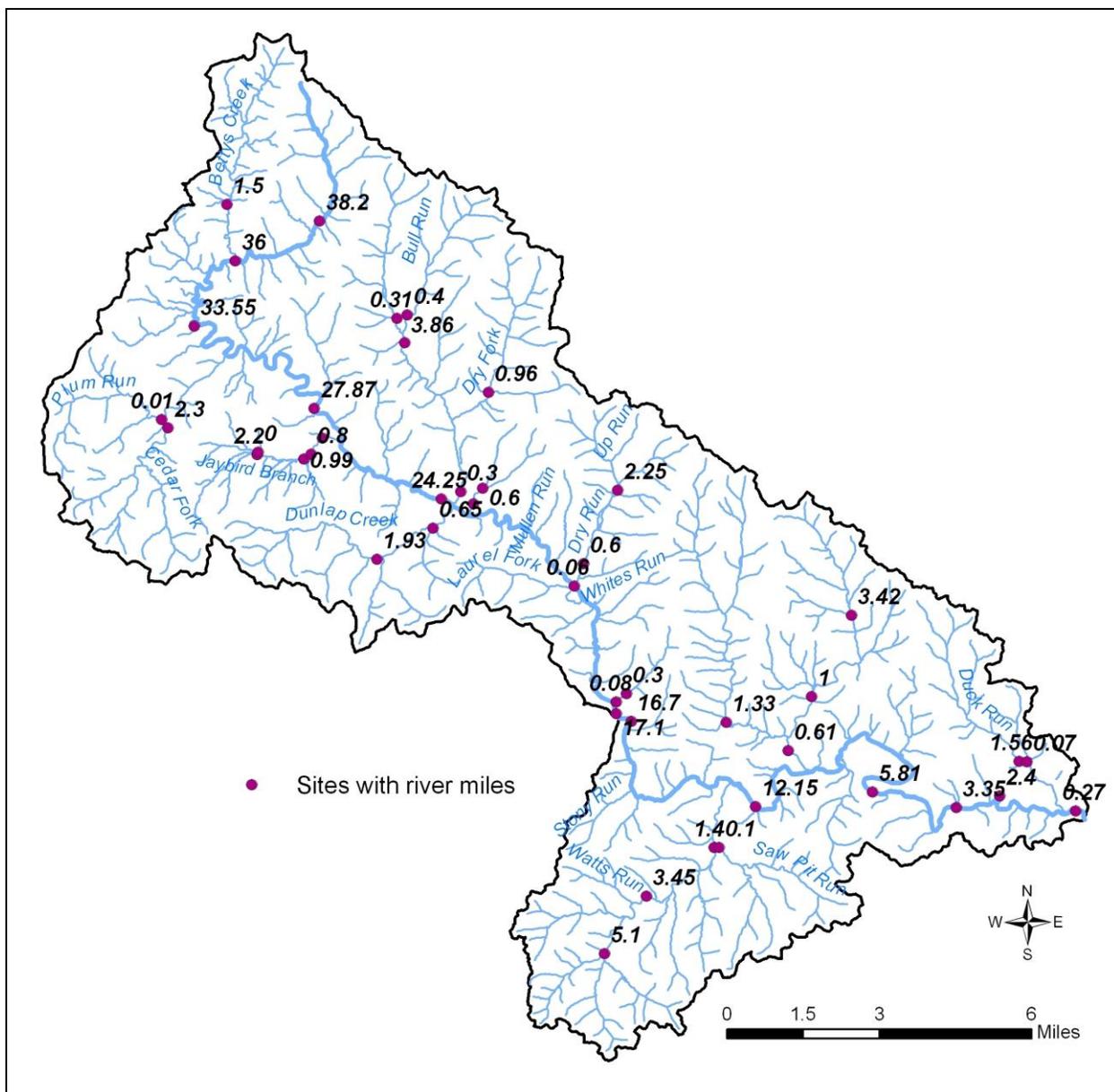


Figure B-3. Map showing the sampling locations, including river miles, in the Scioto Brush Creek subwatershed.

Scioto Brush Creek Watershed TMDLs

Table B-1. Aquatic life use attainment table for the Scioto Brush Creek watershed.

Site	RM	ALU Desig.	Attainment	IBI	MIwb	ICI ^a	Stream Habitat	Causes(s)	Source(s)
Scioto Brush Cr. Adj. Hackelshin Rd	38.2	WWH	Non	20*	N/A	F*	Good	Metals	Natural
Scioto Brush Cr. at Poplar Grove Rd.	36.0	WWH	Full	44	N/A	G	Good		
Scioto Brush Cr. at SR 32	33.55	EWH	Full	58	N/A	E	Good		
Scioto Brush Cr. at SR 73 Dst Coffee Hollow	27.87	EWH	Full	56	10.1	46	Excellent		
Scioto Brush Cr. at ford upstream Rarden Cr.	24.25	EWH	Partial	52	8.7*	VG ^{ns}	Fair	Habitat	Channel modification
Scioto Brush Cr. at SR 348 near Otway	17.1 ^b	EWH	Partial	48	9.0*	46	-	Unknown	Unknown
Scioto Brush Cr. near Otway, DST. S. Fork, adj. St. Rt. 73	16.7 ^b	EWH	Full	54	10.1	-	Excellent		
Scioto Brush Cr. at Dielman Rd.	12.15 ^b	EWH	Full	51	9.6	E	Excellent		
Scioto Brush Cr. at Tatman-Coe Rd.	5.81 ^b	EWH	Full	50	9.9	50	Excellent		
Scioto Brush Cr. @ end of lane off McDermott-Pond Cr. Rd.	2.4 ^b	EWH	Full	47 ^{ns}	10.0	-	Excellent		
Scioto Brush Cr. at SR 104 E. of McDermott	0.27 ^b	EWH	Partial	42*	9.4 ^{ns}	48	Excellent	Unknown	Unknown
Jaybird Branch UPST trib (RM 2.11)	2.2	LRW	Non	12*	N/A	-	Good	Metals	Natural
Jaybird Branch at Beaver Pond Rd.	0.99	LRW	Non	12*	N/A	P	Good	Metals	Natural
Jaybird Branch just DST G.E. Trib. (lower)	0.8	LRW	Full	20	N/A	-	Good		
Jaybird Branch at Jaybird @ bend in road near mouth	0.4	LRW	Full	36	N/A	-	Good		
Trib. to Jaybird Branch (2.11) near mouth, UPST RR culvert	0.0	LRW	Non	12*	N/A	-	Fair	Metals	Natural
Bettys Creek adj. Poplar Grover Rd.	1.5	WWH	Partial	38*	N/A	G	Excellent	Unknown	Unknown
Duck Run at Lane upstream Reeds Run	1.56	WWH	Full	40 ^{ns}	N/A	G	Fair		
McCullough Creek at Lane off Henley Deemer Rd.	1.33	WWH	Full	48	N/A	G	Fair		
McCullough Creek at Diehlman Road	0.61	WWH	Full	58	N/A	G	Good		
E. Branch McCullough Creek adj. SR 348	3.42	WWH	Full	48	N/A	G	Fair		
E. Branch McCullough Creek upstream Conley Rd	1.0	WWH	Partial	54	N/A	F*	Good	Low flow/ bedrock	Natural
Bear Creek at Spruce Road	5.1	WWH	Partial	38*	N/A	VG	-	Unknown	Unknown
Bear Creek adj SR 73 Dst. Sawpit Run	1.4	WWH	Full	56	N/A	E	Excellent		
Saw Pit Run West of Lombardsville at mouth	0.1	WWH	Non	28*	N/A	F*	Fair	Intermittent flow	Natural
S. Fk. Scioto Br. Cr. @ In to Hall Hollow off Blue Cr. Rd	12.36	EWH	Full	50	9.4	44 ^{ns}	Good		
S. Fk. Scioto Br. Cr. @ SR 348 near Wamsley	7.02	EWH	Full	58	9.7	42 ^{ns}	Excellent		
S. Fk. Scioto Br. Cr. @ footbridge off left fork	5.9	EWH	Full	56	10.2	VG ^{ns}	Good		

Scioto Brush Creek Watershed TMDLs

Site	RM	ALU Desig.	Attainment	IBI	MIwb	ICI ^a	Stream Habitat	Causes(s)	Source(s)
S. Fk. Scioto Br. Cr. @ SR 125	1.14	EWH	Partial	-	-	38*	Excellent	Unknown	Unknown
Rocky Fork Creek @ SR 125	8.78	EWH	Full	46 ^{ns}	N/A	VG ^{ns}	Excellent		
Rocky Fk. Scioto Brush Creek dst Big Run	7.15	EWH	Full	52	N/A	E	Good		
Rocky Fk. Scioto Brush Creek adj Rocky Fork Rd	3.52	EWH	Full	48 ^{ns}	N/A	E	Good		
Spruce Run @ Rocky Fork Rd. near Wamsley	0.1	EWH	Full	48 ^{ns}	N/A	E	Fair		
Beech Fork @ Beech Fork Rd	1.85	EWH	Non	40*	N/A	G*	Poor	Habitat	Channel modification
Turkey Creek @ Jones Rd	6.0	EWH	Full	46 ^{ns}	N/A	E	Fair		
Turkey Creek upstream Dry Fork	4.24	EWH	Full	52	N/A	E	Excellent		
Turkey Creek upstream SR 781	0.6	EWH	Full	58	N/A	VG ^{ns}	Fair		
Dry Fork (Turkey Creek) @ SR 781	0.18	EWH	Full	52	N/A	VG ^{ns}	Good		
Turkey Run @ Newman Rd. near Blue Creek	0.26	WWH	Full	44	N/A	E	Good		
Winterstein Run @ adj Winterstein Rd./Moors Mem. Chapel	0.4	EWH	Full	56	N/A	E	Fair		
Mill Creek Upstream Middle Branch	2.2	EWH	Partial	56	N/A	G*	Excellent	Unknown	Unknown
Mill Creek upstream Hickman Run	0.8	EWH	Full	58	N/A	E	Excellent		
Middle Br. Mill Creek Upstream Hickman Run	1.95	WWH	Full	42 ^{ns}	N/A	VG	Fair		
Middle Br. Mill Creek Downstream Hickman Run	1.8	WWH	Full	52	N/A	E	Good		
Hickman Run @ Burr Rd.	0.1	WWH	Full	46	N/A	VG	Good		
Churn Creek upstrem Slate Fk. Adj. Churn Creek Rd.	3.9	WWH	Partial	36*	N/A	VG	Excellent	Unknown	Unknown
Churn Creek upstream Johnson Run Adj. Churn Creek Rd.	3.0	WWH	Partial	36*	N/A	E	Good	Unknown	Unknown
Churn Creek @ SR 125 west of Blue Creek	0.15	WWH	Full	50	N/A	VG	Excellent		
Blue Creek dst Glen Run	2.2	WWH	Partial	30*	N/A	MG ^{ns}	Fair	Intermittent flow	Natural
Dry Run dst. Salome Run upst. Staley Run	2.25	WWH	Full	54	N/A	-	Good		
Dry Run Near mouth	0.06	WWH	Full	52	N/A	G	Good		
Dunlap Creek Adj private lane	1.93	WWH	Full	40 ^{ns}	N/A	G	Excellent		
Dunlap Creek @ Gravel Rd. upstream mouth	0.65	WWH	Full	56	N/A	VG	Excellent		
Rarden Creek @ Lane upst Adams/Scioto County Line	3.86	WWH	Partial	32*	N/A	G	Fair	Habitat, nutrients	Unrestricted livestock access
Rarden Creek @ SR 73	0.3	WWH	Full	50	N/A	G	Excellent		
Straight Fork Adj. Straight Fork Rd.	0.31	WWH	Full	50	N/A	MG ^{ns}	Fair		

Scioto Brush Creek Watershed TMDLs

Site	RM	ALU Desig.	Attainment	IBI	MIwb	ICI ^a	Stream Habitat	Causes(s)	Source(s)
Bull Run Adj Bull Run Road	0.4	WWH	Full	42 ^{ns}	N/A	G	Fair		
Dry Fork Rarden Creek Lane dst Kizzie Run	0.96	WWH	Full	44	N/A	VG	Fair		
Cedar Fk. At Davis Memorial Rd. near Peebles	2.3	WWH	Full	52	N/A	G	Excellent		
Plum Run @ mouth 3 miles east of Peebles	0.01	WWH	Full	46	N/A	G	Excellent		

^{ns} Nonsignificant departure from biocriterion (≤ 4 IBI or ICI units; ≤ 0.5 MIwb units).

* Significant departure from biocriterion (> 4 IBI or ICI units; > 0.5 MIwb units). Poor and very poor results are underlined.

^a Narrative evaluation used *in lieu* of ICI (E=Exceptional; VG=Very Good; G=Good; MG=Marginally Good; F=Fair; P=Poor).

^b Boat method was used to collect IBI/MIwb data from Scioto Brush Creek from RM 17.1 to the mouth. All other locations were wading method.

B1.1 Causes and Sources of Impairment

Anthropogenic causes included habitat and nutrients from channelization and unrestricted livestock access. The distribution of causes and sources is shown in Figure B-4.

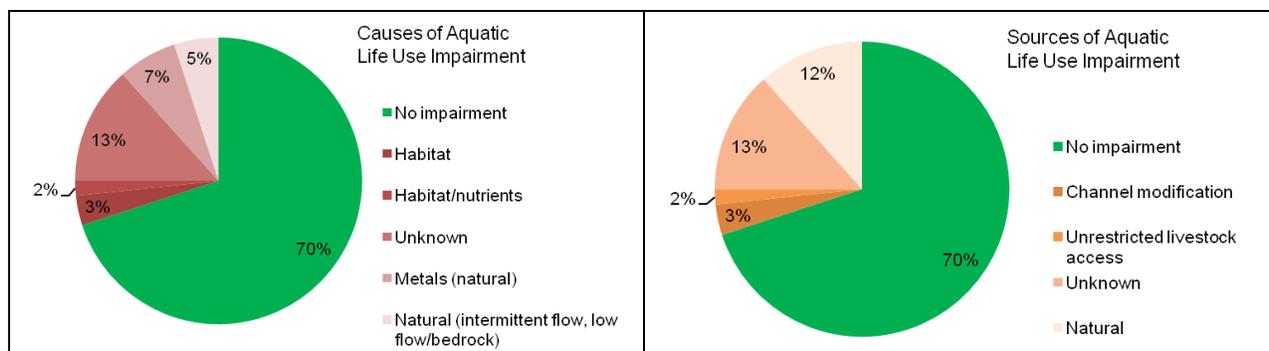


Figure B-4. Distribution of causes and sources in the Scioto Brush Creek watershed.

Note: This figure does not include data from the Ohio Department of Natural Resources.

B1.2 Water and Sediment Chemistry

Water Chemistry

Support of aquatic life uses is determined by attainment of the biological criteria in Ohio's water quality standards. Water chemistry data help to determine causes and sources of impairment. While no samples of total phosphorus exceeded targets (0.1 mg/L) at Rarden Creek river mile (RM) 3.86 during the 2006 survey, several samples taken during 2008 and 2010 did exceed targets. The technical support document (TSD) contains more information about total phosphorus and other parameters sampled during the 2006 survey (Ohio EPA 2008).

Sediment Chemistry

Sediment samples were collected from twelve locations in the Scioto Brush Creek study area in 2006. Samples were analyzed for metals, volatile organic compounds, semivolatile organic compounds, organochlorinated pesticides, polychlorinated biphenyls, nutrients and particle size. Pentachlorophenol was detected at one sampling location; all other sediment organic, pesticide, semivolatile and volatile chemicals were not detected. All metals that were tested were measured above screening levels at at least one location; nickel and arsenic were above screening levels at all twelve locations and cadmium and zinc at all but one.

B2 Recreation Use Attainment

Recreation use was supported in only one nested subwatershed (Beech Fork-South Fork Scioto Brush Creek, 05060002 14 06). Otherwise, non-attainment was widespread throughout the watershed. The most common probable source of bacteria was failing home sewage treatment systems. Unrestricted livestock access to streams was identified at several sites as a probable cause.

Figure B-1 shows recreation use attainment at each sampled site in the watershed. Figures B-5 and B-6 show magnitudes of *E. coli* geometric means across the watershed.

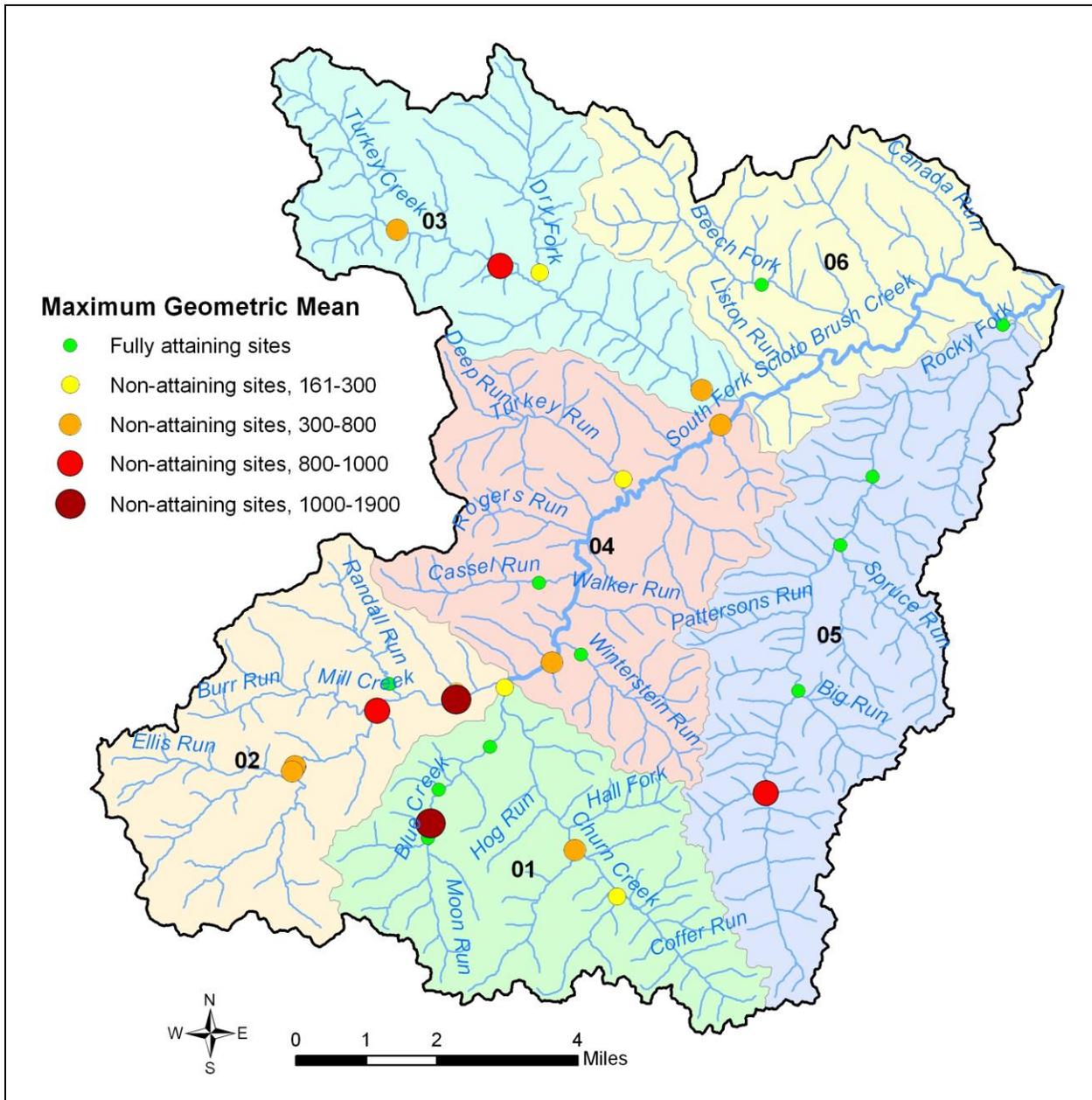


Figure B-5. Ranges of *E. coli* geometric means in the South Fork Scioto Brush Creek subwatershed.

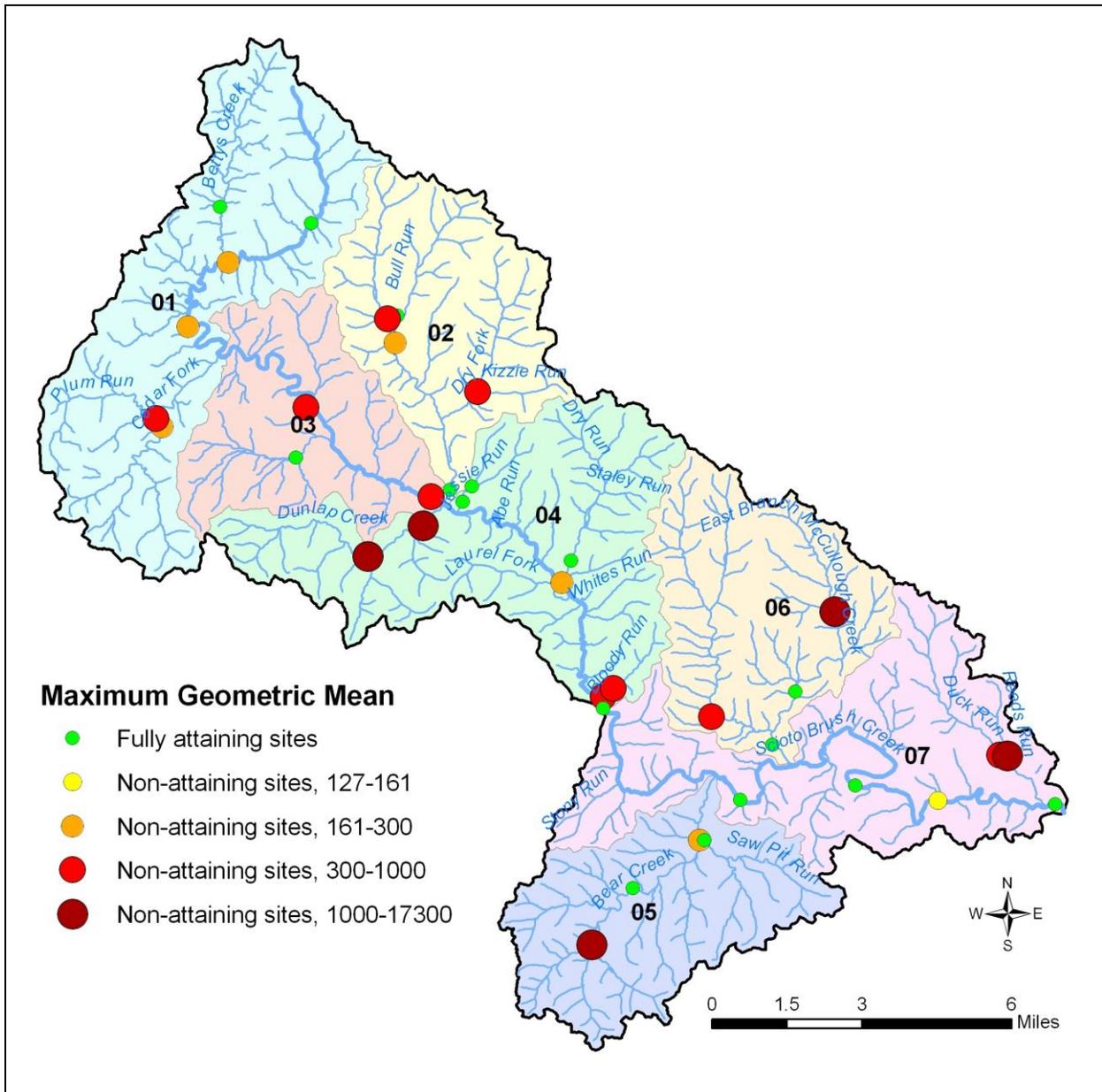


Figure B-6. Ranges of *E. coli* geometric means in the Scioto Brush Creek subwatershed

Table B-2 shows the recreation use attainment in the Scioto Brush Creek watershed. Sites are sorted alphabetically.

Scioto Brush Creek Watershed TMDLs

Table B-2. Recreation use attainment in the Scioto Brush Creek watershed.

Site	RM	Attainment	Max Geo Mean	Years Sampled	Probable Source
Anderson Run @ Anderson Hill Rd.	0.12	Non	298	2008	Failing HSTS
Bear Creek adj SR 73 Dst. Sawpit Run	1.4	Non	223	2007	Failing HSTS
Bear Creek at Big Spruce Road	3.45	Full	56	2007	
Bear Creek at Spruce Road	5.1	Non	17230	2007	Failing HSTS
Beech Fork @ Beech Fork Rd	1.85	Full	98	2006, 2008	
Bettys Creek adj. Poplar Grover Rd.	1.5	Full	60	2007	
Bloody Run @ RR bridge downstream Otway	0.08	Non	463	2007	Failing HSTS
Bloody Run @ SR 348	0.3	Non	841	2007	Failing HSTS
Blue Ck @ Blue Creek Rd just upst Glen Run	2.4	Full	17	2008	
Blue Ck @ gravel ln upst unnamed trib (1.64) dst. Phipps Rd	1.65	Full	23	2008	
Blue Creek dst Glen Run	2.2	Non	1834	2006, 2008	Failing HSTS
Blue Creek SW of Blue Creek, adj. Blue Creek-Rome Rd.	0.6	Full	72	2007, 2008	
Bull Run Adj Bull Run Road	0.4	Full	157	2007	
Cassel Run adj. Cassel Run Rd.	0.6	Full	27	2008	
Cedar Fk. At Davis Memorial Rd. near Peebles	2.3	Non	229	2007	Failing HSTS
Churn Creek @ SR 125 west of Blue Creek	0.15	Non	162	2008	Failing HSTS
Churn Creek upstream Johnson Run Adj. Churn Creek Rd.	3.0	Non	461	2006, 2008	Failing HSTS
Churn Creek usptream Slate Fk. Adj. Churn Creek Rd.	3.9	Non	293	2006, 2008	Failing HSTS
Dry Fork (Turkey Creek) @ SR 781	0.18	Non	203	2006	Failing HSTS
Dry Fork Rarden Creek Lane dst Kizzie Run	0.96	Non	324	2007	Failing HSTS
Dry Run Near mouth	0.06	Non	177	2007	Failing HSTS
Dry Run North of Youngs adj Dry Run Rd.	0.6	Full	20	2007	
Duck Run at Lane upstream Reeds Run	1.56	Non	432	2007	Failing HSTS
Dunlap Creek @ Gravel Rd. upstream mouth	0.65	Non	1172	2007	Failing HSTS
Dunlap Creek Adj private lane	1.93	Non	1195	2007	Failing HSTS
E. Branch McCullough Creek adj. SR 348	3.42	Non	1113	2007	Failing HSTS
E. Branch McCullough Creek upstream Conley Rd	1.0	Full	113	2007	
Hickman Run @ Burr Rd.	0.1	Non	274	2006 – 2008	Failing HSTS
Jaybird Branch at Beaver Pond Rd.	0.99	Full	66	2007	
Jessie Run @ Hill Rd.	0.25	Full	95	2007	
Jessie Run Upstream from Rarden	0.6	Full	115	2007	
McCullough Creek at Diehlman Road	0.61	Full	138	2007	
McCullough Creek at Lane off Henley Deemer Rd.	1.33	Non	631	2007	Failing HSTS
Middle Br. Mill Creek Downstream Hickman Run	1.8	Non	366	2006	Failing HSTS

Scioto Brush Creek Watershed TMDLs

Site	RM	Attainment	Max Geo Mean	Years Sampled	Probable Source
Middle Br. Mill Creek near mouth @ Co. Rd. 174A	0.2	Full	137	2007, 2008	
Middle Br. Mill Creek Upstream Hickman Run	1.95	Non	536	2006 – 2008	Failing HSTS
Mill Creek upstream Hickman Run	0.8	Non	1257	2006 – 2008	Failing HSTS
Mill Creek Upstream Middle Branch	2.2	Non	847	2006 – 2008	Failing HSTS
Plum Run @ mouth 3 miles east of Peebles	0.01	Non	489	2007	Failing HSTS
Randall Run W of Blue Creek, upst. Randalls Run Rd.	0.4	Full	143	2007, 2008	
Rarden Creek @ Lane upst Adams/Scioto County Line	3.86	Non	214	2007	Failing HSTS
Rarden Creek @ SR 73	0.3	Full	75	2007	
Reeds Run at Duck Run - Otway Rd.	0.07	Non	2235	2007	Failing HSTS
Rocky Fk. Scioto Brush Creek adj Rocky Fork Rd	3.52	Full	52	2006	
Rocky Fk. Scioto Brush Creek dst Big Run	7.15	Full	77	2006	
Rocky Fork Creek @ SR 125	8.78	Non	861	2006	Failing HSTS
S. Fk. Scioto Br. Cr. @ In to Hall Hollow off Blue Cr. Rd	12.36	Non	363	2006 – 2008	Failing HSTS
S. Fk. Scioto Br. Cr. @ SR 125	1.14	Full	65	2006	
S. Fk. Scioto Br. Cr. @ SR 348 near Wamsley	7.02	Non	542	2006	Failing HSTS
Saw Pit Run West of Lombardsville at mouth	0.1	Full	151	2007	
Scioto Brush Creek Adj. Hackelshin Rd	38.2	Full	7	2007	
Scioto Brush Creek at Colley Rd	3.35	Non	151	2007	Failing HSTS
Scioto Brush Creek at Dielman Rd.	12.15	Full	123	2007	
Scioto Brush Creek at ford upstream Rarden Creek	24.25	Non	447	2007	Failing HSTS
Scioto Brush Creek at Poplar Grove Rd.	36.0	Non	206	2007	Failing HSTS
Scioto Brush Creek at SR 104 E. of McDermott	0.27	Full	32	2006, 2007	
Scioto Brush Creek at SR 32	33.55	Non	230	2007	Livestock
Scioto Brush Creek at SR 348 near Otway	17.1	Full	94	2007, 2008	
Scioto Brush Creek at SR 73 Dst Coffee Hollow	27.87	Non	502	2007	Failing HSTS
Scioto Brush Creek at Tatman-Coe Rd.	5.81	Full	45	2007	
Spruce Run @ Rocky Fork Rd. near Wamsley	0.1	Full	140	2006	
Straight Fork Adj. Straight Fork Rd.	0.31	Non	360	2007	Failing HSTS
Turkey Creek @ Jones Rd	6.0	Non	552	2006	Failing HSTS
Turkey Creek upstream Dry Fork	4.24	Non	852	2006	Failing HSTS
Turkey Creek upstream SR 781	0.6	Non	512	2006	Failing HSTS
Turkey Run @ Newman Rd. near Blue Creek	0.26	Non	226	2006, 2008	Livestock
Winterstein Run @ adj Winterstein Rd./Moors Mem. Chapel	0.4	Full	55	2006, 2008	

B3 Public Drinking Water Supply Use Attainment

There are no surface water public drinking water supplies in the Scioto Brush Creek watershed.

B4 Human Health Use Attainment

No fish tissue samples were collected in the Scioto Brush Creek watershed during the field survey because of high flows. Therefore, support of the use could not be assessed.

B5 References

Ohio EPA (Ohio Environmental Protection Agency – Division of Surface Water). 2008. *Biological and Water Quality Study of the Scioto Brush Creek Basin, 2006. Adams and Scioto Counties, Ohio*. Published at:
http://www.epa.ohio.gov/portals/35/documents/SciotoBrushCreek_TSD_2006_apr08.pdf.