

Missouri Clean Water Commission
Department of Natural Resources
Lewis and Clark State Office Building
LaCharrette/Nightingale Conference Rooms
1101 Riverside Drive
Jefferson City, Missouri

April 2, 2014

2014 303(d) Impaired Waters List

Issue: The Federal Water Pollution Control Act, Section 303(d) requires states to biennially submit to the U.S. Environmental Protection Agency (EPA) a list of impaired waters for which adequate pollution controls have not yet been required.

Background: The Commission approved the 2014 Listing Methodology Document (LMD) on May 2, 2012. The Department used this document to assess waters for the 2014 303(d) list of impaired waters. The Department completed the draft list in October 2013, and the draft list was placed on public notice from October 15, 2013 through January 31, 2014.

During the public comment period, the Department held two public availability meetings to discuss the draft 303(d) list. These meetings were held on November 13, 2013 and December 11, 2013. A list of attendees and a summary of the meetings is posted on the Department's website. A public hearing was held on January 22, 2014.

Public Comments: The Department received and responded to 11 written comments on the proposed 303(d) list. All public comments, along with the Department's responses are provided here and are also available on the Department's website. As a result of the comments, six waters were removed from the list, while three waters were added to the list.

Overview of the Proposed 303(d) List

There are a total of 385 pollutant pairs on the proposed 303(d) list. Fifty-eight of those are new to the list while the remaining 325 pollutant pairs continue from the 2012 EPA approved list. Two are added back to the list due to Total Maximum Daily Loads (TMDLs) being withdrawn by EPA.

The six most common pollutant categories on the list are: bacteria (114 listings), heavy metals in water or sediments (81), low dissolved oxygen (65), mercury in fish tissue (42), biological impairments based on biomonitoring (19), and chloride (19).

The top five most common source categories on the list are: atmospheric deposition (21), mining and milling (34), urban runoff/storm sewers (23), rural nonpoint source (234), and unknown sources (37).

Overview of Streams Proposed to be Delisted

A total of thirty-four water body/pollutant pairs from the 2012 list are being proposed for de-listing. Of the proposed de-listings, nine now meet water quality standards, eleven are due to new assessment methods, three now have either approved TMDLs or permits in lieu of TMDLs, nine are due to being originally listed in error, and two are due to changes in the definition of the pollutant or re-segmentation of the water body.

Updates that were completed following the public comment period included:

- Update of several pollutant sources to be consistent throughout the list.
- The initial listing years for West Fork Black River (WBID 2755) and River des Peres (WBID 1710) were corrected to 2008 and 2010, respectively.
- Added “Unknown” to pollutants listed for Aquatic Macroinvertebrate Bioassessments and Fish Bioassessments. Aquatic Macroinvertebrate and Fish Bioassessments are a type of test that results in an unknown pollutant listing.
- Center Creek (WBID 3203) was removed from the proposed impaired list. The impairment for zinc was covered by a TMDL.
- Additional data was used to reassess Coldwater Creek (WBID 1706) for chloride, and the reassessment resulted in this water being added to the impaired list.
- North Fork Cuivre River (WBID 0170) will be retained on the 303(d) list for bacteria impairments because the data did not indicate just cause for removal.
- Middle Fork of the Black River (WBID 2744) will be removed from the list and placed in Category 2B until additional data is available.
- Pearson Creek (WBID 2373) and Wilsons Creek (WBID 2375) were added back to the list for aquatic macroinvertebrate bioassessments/unknown, because the TMDLs were withdrawn by EPA.
- Big River (WBID 2080), Shaw Branch (WBID 2170), Bee Fork (WBID 3966), and Turkey Creek (WBID 3217) will be requested to be delisted. Data was reassessed based upon geometric mean vs arithmetic mean.
- Assessment worksheets that were inadvertently missed were added to the 303(d) website: Strother Creek (WBID 2752 & 3965) and Peruque Creek (WBID 0217 & 0218).
- Little Blue River data was reassessed after additional information was provided. The assessment outcome remained the same. Additional information was also provided in the assessment worksheet.
- Habitat scores will be added to biological assessment worksheets.
- Web links to water quality and aquatic invertebrate data were placed on the 303(d) list to provide quick reference to the information and increase data transparency.
- Several sediment assessment worksheets were revised to improve consistency on how duplicate samples were handled.

Recommended Action: The Department recommends the Commission approve this list.

List of Attachments:

- The Proposed 2014 303(d) List
- A List of Waters on the 2012 303(d) List Proposed for Removal from the 2014 List
- Summary of Comments and Department Responses
- Official Transcript
- Public Comments

Assessment worksheets available on the Department's Website at:
<http://dnr.mo.gov/env/wpp/waterquality/303d.htm>



Missouri Department of Natural Resources

2014 Proposed Section 303(d) Impaired Waters List

Year	WBID	Waterbody	Cls	Imp Size	WB Size	Units	Pollutant	Source	RU	OU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2012	2188.00	Antire Cr.	P	1.9	1.9	Mi.	pH (W)	Source Unknown	AQL	LWW, WBC B	St. Louis	712454	4264477	710077	4264450	7140102	1
2012	2188.00	Antire Cr.	P	1.9	1.9	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis	712454	4264477	710077	4264450	7140102	1
2012	752.00	Bass Cr.	C	4.4	4.4	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, LWW	Boone	565032	4297418	561523	4298649	10300102	1
2012	3240.00	Baynham Br.	P	4.0	4.0	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Newton	379681	4092596	374809	4091661	11070207	1
2012	3265.00	Beaver Br.	P	2.0	2.0	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, WBC B	McDonald	371102	4059675	371030	4056963	11070208	1
2006	2760.00	Bee Fk.	C	1.4	8.7	Mi.	Lead (W)	Fletcher Lead Mine/Mill	AQL	CLF, LWW, WBC A	Reynolds	668683	4145627	670778	4145985	11010007	1
2014	7309.00	Bee Tree Lake	L3	10.0	10.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC B	St. Louis	732802	4254630	732802	4254630	7140102	1
2014	3224.00	Beef Br.	P	2.5	2.5	Mi.	Zinc (W)	Mill Tailings	AQL	LWW, WBC B	Newton	366623	4094312	366294	4097417	11070207	1
2014	3224.00	Beef Br.	P	2.5	2.5	Mi.	Cadmium (W)	Mill Tailings	AQL	LWW, WBC B	Newton	366623	4094312	366294	4097417	11070207	1
2014	3224.00	Beef Br.	P	2.5	2.5	Mi.	Cadmium (S)	Mill Tailings	AQL	LWW, WBC B	Newton	366623	4094312	366294	4097417	11070207	1
2014	3224.00	Beef Br.	P	2.5	2.5	Mi.	Lead (S)	Mill Tailings	AQL	LWW, WBC B	Newton	366623	4094312	366294	4097417	11070207	1
2014	3224.00	Beef Br.	P	2.5	2.5	Mi.	Zinc (S)	Mill Tailings	AQL	LWW, WBC B	Newton	366623	4094312	366294	4097417	11070207	1
2005	7365.00	Belcher Branch Lake	L3	42.0	42.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC B	Buchanan	351273	4382884	351273	4382884	10240012	1
2014	3980.00	Bens Br.	US	5.8	5.8	Mi.	Cadmium (S)	Oronogo Duenweg mining belt	GEN		Jasper	370848	4115314	371064	4111569	11070207	1
2014	3980.00	Bens Br.	US	5.8	5.8	Mi.	Lead (S)	Oronogo Duenweg mining belt	GEN		Jasper	371062	4111571	370847	4115315	11070207	1
2014	3980.00	Bens Br.	US	5.8	5.8	Mi.	Zinc (S)	Oronogo Duenweg mining belt	GEN		Jasper	371062	4111572	370856	4115295	11070207	1
2006	444.00	Big Cr.	P	1.0	31.5	Mi.	Ammonia, Total (W)	Bethany WWTP	AQL	DWS, LWW, WBC B	Harrison	409718	4456625	409046	4455653	10280101	1
2006	444.00	Big Cr.	P	6.1	31.5	Mi.	Oxygen, Dissolved (W)	Bethany WWTP	AQL	DWS, LWW, WBC B	Harrison	409718	4456625	408308	4451142	10280101	1
2012	1250.00	Big Cr.	P	70.5	70.5	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Jackson/Henry	384118	4301049	422204	4249326	10290108	1
1998	2916.00	Big Cr.	P	1.8	34.1	Mi.	Lead (S)	Glover smelter	AQL	CLF, LWW, SCR, WBC A	Iron	704405	4150532	704724	4147919	8020202	1
1998	2916.00	Big Cr.	P	1.8	34.1	Mi.	Cadmium (S)	Glover smelter	AQL	CLF, LWW, SCR, WBC A	Iron	704416	4150529	704726	4147921	8020202	1
2010	1578.00	Big Piney R.	P	4.0	7.8	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	DWS, LWW, SCR, WBC A	Texas	583132	4112464	579840	4108439	10290202	1
2006	2080.00	Big R.	P	52.8	81.3	Mi.	Cadmium (S)	Old Lead Belt tailings	AQL	IND, LWW, WBC A	St. Francois/Jefferson	712112	4194396	701042	4226033	7140104	1
2010	2080.00	Big R.	P	52.3	81.3	Mi.	Lead (S)	Mill Tailings	AQL	IND, LWW, WBC A	St. Francois/Jefferson	712625	4193891	701044	4226032	7140104	1
2012	111.00	Black Cr.	P	19.4	19.4	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Shelby	581883	4405278	593138	4393283	7110005	1
2012	111.00	Black Cr.	P	19.4	19.4	Mi.	Escherichia coli (W)	Shelbyville WWTF, Nonpoint Source	WBC B	AQL, LWW	Shelby	581883	4405278	593138	4393283	7110005	1
2006	3825.00	Black Cr.	P	1.6	1.6	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, SCR, WBC B	St. Louis	731266	4278180	732023	4276834	7140101	1
2012	3825.00	Black Cr.	P	1.6	1.6	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	SCR	AQL, LWW, WBC B	St. Louis	731266	4278180	732023	4276834	7140101	1
2012	3825.00	Black Cr.	P	1.6	1.6	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW, SCR	St. Louis	731266	4278180	732023	4276834	7140101	1
2002	2769.00	Black R.	P	47.1	47.1	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	CLF, DWS, IRR, LWW, SCR, WBC A	Butler	729886	4078610	729372	4042276	11010007	1
2008	2784.00	Black R.	P	39.0	39.0	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	CLF, DWS, IRR, LWW, SCR, WBC A	Wayne/Butler	697890	4112203	729886	4078610	11010007	1
2006	3184.00	Blackberry Cr.	C	3.5	6.5	Mi.	Chloride (W)	Asbury Power Plant	AQL	LWW, WBC B	Jasper	360861	4132403	361580	4127893	11070207	1
2008	3184.00	Blackberry Cr.	C	3.5	6.5	Mi.	Total Dissolved Solids (W)	Asbury Power Plant	AQL	LWW, WBC B	Jasper	360856	4132395	361579	4127903	11070207	1
2006	417.00	Blue R.	P	4.4	4.4	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, IND, LWW	Jackson	371184	4329015	373047	4332253	10300101	2
2006	418.00	Blue R.	P	9.4	9.4	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, IND, LWW, SCR	Jackson	368400	4319633	371184	4329015	10300101	1
2006	419.00	Blue R.	P	7.7	7.7	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC A	AQL, LWW, SCR	Jackson	364588	4312669	368400	4319633	10300101	1
2006	421.00	Blue R.	C	12.0	12.0	Mi.	Escherichia coli (W)	Runoff from Forest/Grassland/Parkland, Rural, Residential Areas, Urban Runoff/Storm Sewers	WBC B	AQL, LWW, SCR	Jackson	360459	4301385	364588	4312669	10300101	1
2012	1701.00	Bonhomme Cr.	C	2.5	2.5	Mi.	pH (W)	Source Unknown	AQL	LWW, WBC B	St. Louis	709512	4282258	711491	4284301	10300200	1

Year	WBD	Waterbody	Cl	Imp Size	WB Size	Units	Pollutant	Source	HU	OU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2012	1701.00	Bonhomme Cr.	C	2.5	2.5	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis	709512	4282258	711491	4284301	10300200	1
2006	750.00	Bonne Femme Cr.	P	7.8	7.8	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, LWW	Boone	560346	4298772	553749	4294435	10300102	1
2012	753.00	Bonne Femme Cr.	C	7.0	7.0	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Boone	565633	4303361	560346	4298772	10300102	1
2002	2034.00	Bourbeuse R.	P	136.7	136.7	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	CLF, DWS, IRR, LWW, SCR, WBC A	Phelps/Franklin	622849	4221417	684343	4252206	7140103	1
2012	7003.00	Bowling Green Lake - Old	L1	7.0	7.0	Ac.	Nitrogen, Total (W)*	Rural NPS	AQL	DWS, LWW, WBC B	Pike	658497	4356565	658497	4356565	7110004	1
2012	7003.00	Bowling Green Lake - Old	L1	7.0	7.0	Ac.	Phosphorus, Total (W)*	Rural NPS	AQL	DWS, LWW, WBC B	Pike	658502	4356562	658502	4356562	7110004	1
2014	7003.00	Bowling Green Lake - Old	L1	7.0	7.0	Ac.	Chlorophyll-a (W)*	Rural NPS	AQL	DWS, LWW, WBC B	Pike	658498	4356565	658498	4356565	7110004	1
2012	1796.00	Brazeau Cr.	P	10.8	10.8	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Perry	798229	4172491	807335	4172833	7140105	1
2002	1371.00	Brush Cr.	P	4.7	4.7	Mi.	Oxygen, Dissolved (W)	Humansville WWTP	AQL	LWW, WBC B	Polk/St. Clair	448632	4182404	444769	4187320	10290106	1
2012	3273.00	Buffalo Cr.	P	8.0	8.0	Mi.	Fishes Bioassessments/Unknown	Source Unknown	AQL	CLF, IRR, LWW, SCR, WBC A	Newton/McDonald	369204	4075685	363942	4068061	11070208	1
2006	1865.00	Burgher Br.	C	1.5	1.5	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, SCR, WBC B	Phelps	610212	4200283	611960	4199017	7140102	1
2006	7057.00	Busch W.A. No. 35 Lake	L3	51.0	51.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC B	St. Charles	697830	4288213	697830	4288213	7110009	1
2010	7627.00	Busch W.A. No. 37 Lake	L3	30.0	30.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC B	St. Charles	692005	4287348	692005	4287348	7110009	1
2006	3234.00	Capps Cr.	P	5.0	5.0	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CDF, IRR, LWW, SCR	Barry/Newton	408562	4082428	402563	4083044	11070207	1
2010	2288.00	Castor R.	P	7.5	7.5	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, IRR, LWW, SCR	Bollinger	760131	4115294	766484	4110895	7140107	1
2008	737.00	Cedar Cr.	C	7.9	37.4	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, SCR, WBC B	Boone	574525	4320028	573573	4311774	10300102	1
2008	1344.00	Cedar Cr.	P	10.9	31.0	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	IRR, LWW, SCR, WBC A	Cedar	419908	4170049	422735	4179340	10290106	1
2010	1344.00	Cedar Cr.	P	10.9	31.0	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	IRR, LWW, SCR, WBC A	Cedar	419909	4170046	422734	4179339	10290106	1
2008	1357.00	Cedar Cr.	C	16.2	16.2	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Dade/Cedar	412791	4154079	419820	4170283	10290106	1
2010	1357.00	Cedar Cr.	C	16.2	16.2	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, WBC B	Dade/Cedar	412791	4154079	419820	4170283	10290106	1
2006	3203.00	Center Cr.	P	19.0	26.8	Mi.	Cadmium (W)	Tri-State Mining District	AQL	CLF, IND, IRR, LWW, SCR, WBC A	Jasper	377331	4111756	356399	4112875	11070207	1
2006	3203.00	Center Cr.	P	19.0	26.8	Mi.	Cadmium (S)	Tri-State Mining District	AQL	CLF, IND, IRR, LWW, SCR, WBC A	Jasper	377337	4111756	356408	4112884	11070207	1
2006	3203.00	Center Cr.	P	19.0	26.8	Mi.	Lead (S)	Tri-State Mining District	AQL	CLF, IND, IRR, LWW, SCR, WBC A	Jasper	377338	4111757	356399	4112875	11070207	1
2014	3203.00	Center Cr.	P	26.8	26.8	Mi.	Escherichia coli (W)	Nonpoint Source	WBC A	AQL, CLF, IND, IRR, LWW, SCR	Jasper	383685	4107350	356376	4112852	11070207	1
2008	3210.00	Center Cr.	P	21.0	21.0	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, IND, IRR, LWW, SCR	Newton/Jasper	404365	4099517	383685	4107350	11070207	1
2010	3214.00	Center Cr.	P	4.9	4.9	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CDF, IND, IRR, LWW, SCR	Lawrence/Newton	410298	4100642	404365	4099517	11070207	1
2014	7634.00	Chaumiere Lake	UL	3.4	3.4	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	GEN		Clay	367178	4337088	367178	4337088	10300101	1
2012	1781.00	Cinque Hommes Cr.	P	8.3	17.1	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Perry	779346	4178425	786087	4185609	7140105	1
2006	1333.00	Clear Cr.	P	28.2	28.2	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC A	Vernon/St. Clair	402340	4186711	417795	4205727	10290105	1
2006	1336.00	Clear Cr.	C	22.3	22.3	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Vernon	391921	4172771	402340	4186711	10290105	1
2006	3238.00	Clear Cr.	P	11.1	11.1	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Lawrence/Newton	410980	4088931	397639	4088317	11070207	1
2002	3239.00	Clear Cr.	C	3.5	3.5	Mi.	Oxygen, Dissolved (W)	Monett WWTP	AQL	LWW, WBC B	Barry/Lawrence	415495	4086458	410980	4088931	11070207	1
2002	3239.00	Clear Cr.	C	3.5	3.5	Mi.	Nutrient/Eutrophication Biol. Indicators (W)	Monett WWTP	AQL	LWW, WBC B	Barry/Lawrence	415495	4086458	410980	4088931	11070207	1

Year	WBID	Waterbody	Cl	Imp Size	WB Size	Units	Pollutant	Source	HJ	OU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2006	935.00	Clear Fk.	P	3.1	25.8	Mi.	Oxygen, Dissolved (W)	Knob Noster WWTP, Nonpoint Source	AQL	LWW, SCR, WBC B	Johnson	448495	4291442	448650	4293696	10300104	1
2002	7326.00	Clearwater Lake	L2	1635.0	1635.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC A	Wayne	697891	4112204	697891	4112204	11010007	1
2014	7326.00	Clearwater Lake	L2	1635.0	1635.0	Ac.	Chlorophyll-a (W)*	Rural NPS	AQL	LWW, SCR, WBC A	Wayne	697891	4112204	697891	4112204	11010007	1
2006	1706.00	Coldwater Cr.	C	5.5	5.5	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	IND, LWW, WBC B	St. Louis	735019	4299846	741431	4301794	10300200	1
2008	1706.00	Coldwater Cr.	C	6.9	6.9	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, IND, LWW	St. Louis	735014	4299849	741449	4301962	10300200	1
2012	2177.00	Coonville Cr.	C	1.3	1.3	Mi.	Lead (W)	Source Unknown	AQL	LWW, WBC B	St. Francois	717474	4206559	716589	4204963	7140104	1
2006	1943.00	Courtois Cr.	P	2.6	32.0	Mi.	Lead (S)	Doe Run Viburnum Division Lead mine	AQL	CLF, LWW, SCR, WBC A	Washington	669868	4181478	670865	4184583	7140102	1
2006	1943.00	Courtois Cr.	P	2.6	32.0	Mi.	Zinc (S)	Doe Run Viburnum Division Lead mine	AQL	CLF, LWW, SCR, WBC A	Washington	669862	4181470	670877	4184596	7140102	1
2012	2382.00	Crane Cr.	P	13.2	13.2	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	CDF, LWW, SCR, WBC A	Stone	445954	4088238	456895	4081483	11010002	1
2012	2816.00	Craven Ditch	C	11.6	11.6	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	IRR, LWW, SCR	Butler	730995	4068609	730730	4052473	11010007	1
2006	1703.00	Creve Coeur Cr.	C	3.8	3.8	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, WBC B	St. Louis	718172	4283167	718455	4287491	10300200	1
2006	1703.00	Creve Coeur Cr.	C	3.8	3.8	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	St. Louis	718172	4283167	718455	4287491	10300200	1
2006	1703.00	Creve Coeur Cr.	C	3.8	3.8	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis	718172	4283167	718455	4287491	10300200	1
2006	1928.00	Crooked Cr.	P	3.5	3.5	Mi.	Cadmium (W)	Buick Lead Smelter	AQL	CLF, LWW, WBC A	Crawford	662216	4173989	658201	4175646	7140102	1
2006	1928.00	Crooked Cr.	P	3.5	3.5	Mi.	Cadmium (S)	Buick Lead Smelter	AQL	CLF, LWW, WBC A	Crawford	662216	4173989	658201	4175646	7140102	1
2006	1928.00	Crooked Cr.	P	3.5	3.5	Mi.	Lead (S)	Buick Lead Smelter	AQL	CLF, LWW, WBC A	Crawford	662216	4173989	658201	4175646	7140102	1
2008	3961.00	Crooked Cr.	US	6.8	6.8	Mi.	Cadmium (W)	Buick Smelter	GEN		Iron/Dent	664596	4168505	662197	4173781	7140102	1
2010	3961.00	Crooked Cr.	US	6.8	6.8	Mi.	Copper (W)	Buick Smelter	GEN		Iron/Dent	664588	4168517	662197	4173782	7140102	1
2006	2636.00	Current R.	P	124.0	124.0	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	CLF, IRR, LWW, SCR, WBC A	Shannon/Ripley	628633	4137638	696834	4041519	11010008	1
2006	219.00	Dardenne Cr.	P1	7.0	7.0	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, SCR, WBC B	St. Charles	708078	4300264	713786	4304316	7110009	1
2002	221.00	Dardenne Cr.	P	16.5	16.5	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, SCR, WBC B	St. Charles	692485	4289827	708078	4300264	7110009	2
2006	221.00	Dardenne Cr.	P	16.5	16.5	Mi.	Sedimentation/Siltation (S)	Source Unknown	AQL	LWW, SCR, WBC B	St. Charles	692485	4289827	708078	4300264	7110009	2
2006	3826.00	Deer Cr.	P	1.6	1.6	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, SCR, WBC A	St. Louis/St. Louis City	732023	4276834	733741	4275807	7140101	1
2012	3826.00	Deer Cr.	P	1.6	1.6	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	SCR	AQL, LWW, WBC A	St. Louis/St. Louis City	732023	4276834	733741	4275807	7140101	1
2012	3826.00	Deer Cr.	P	1.6	1.6	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC A	AQL, LWW, SCR	St. Louis/St. Louis City	732023	4276834	733741	4275807	7140101	1
2002	7015.00	Deer Ridge Community Lake	L3	39.0	39.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC B	Lewis	599833	4448447	599833	4448447	7110002	1
2006	3109.00	Ditch #36	P	7.8	7.8	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Dunklin	770137	4018408	767863	4007224	8020204	1
2006	3810.00	Douger Br.	C	3.1	3.1	Mi.	Lead (S)	Aurora lead mining district	AQL	LWW	Lawrence	432983	4092649	428971	4092384	11070207	1
2006	3810.00	Douger Br.	C	3.1	3.1	Mi.	Zinc (S)	Aurora lead mining district	AQL	LWW	Lawrence	432983	4092649	428971	4092384	11070207	1
2006	1180.00	Dousinbury Cr.	P	3.9	3.9	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Dallas	506028	4158604	501716	4160952	10290110	1
2008	3189.00	Dry Fk.	C	10.2	10.2	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, LWW	Jasper	391617	4123451	379518	4128240	11070207	1
2012	1314.00	Dry Wood Cr.	P	3.8	29.9	Mi.	Total Dissolved Solids (W)	Acid Mine Drainage	AQL	LWW, WBC B	Barton	361693	4158074	361439	4162037	10290104	1
2006	3569.00	Dutro Carter Cr.	P	0.5	1.5	Mi.	Oxygen, Dissolved (W)	Rolla SE WWTP	AQL	LWW, WBC B	Phelps	611946	4199021	612708	4199006	7140102	1
2010	372.00	E. Fk. Crooked R.	P	19.9	19.9	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Ray	418043	4367620	423049	4349970	10300101	1
2006	457.00	E. Fk. Grand R.	P	28.7	28.7	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, DWS, IRR, LWW, SCR	Worth/Gentry	388817	4483394	384234	4450462	10280101	2
2008	608.00	E. Fk. Locust Cr.	P	16.7	16.7	Mi.	Escherichia coli (W)	Municipal Point Source Discharges, Nonpoint Source	WBC B	AQL, LWW	Sullivan	490788	4450893	485177	4432656	10280103	1
2008	610.00	E. Fk. Locust Cr.	C	14.8	15.7	Mi.	Oxygen, Dissolved (W)	Rural NPS	AQL	LWW, SCR, WBC A	Sullivan	492629	4468112	490930	4451859	10280103	1
2008	610.00	E. Fk. Locust Cr.	C	15.7	15.7	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, LWW, SCR	Sullivan	492641	4468112	490788	4450893	10280103	1
2006	1282.00	E. Fk. Tebo Cr.	C	10.4	14.5	Mi.	Oxygen, Dissolved (W)	Windsor SW WWTP	AQL	LWW, WBC B	Henry	453388	4263004	446906	4257222	10290108	1
2006	2166.00	Eaton Br.	C	1.2	1.2	Mi.	Cadmium (W)	Leadwood tailings pond	AQL	LWW, SCR	St. Francois	710945	4193695	712097	4194409	7140104	1
2006	2166.00	Eaton Br.	C	1.2	1.2	Mi.	Cadmium (S)	Leadwood tailings pond	AQL	LWW, SCR	St. Francois	710945	4193695	712097	4194409	7140104	1

Year	WBD	Waterbody	Ch	Imp Size	WB Size	Units	Pollutant	Source	BU	QU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2006	2166.00	Eaton Br.	C	1.2	1.2	Mi.	Lead (S)	Leadwood tailings pond	AQL	LWW, SCR	St. Francois	710945	4193695	712097	4194409	7140104	1
2006	2166.00	Eaton Br.	C	1.2	1.2	Mi.	Zinc (W)	Leadwood tailings pond	AQL	LWW, SCR	St. Francois	710945	4193695	712097	4194409	7140104	1
2006	2166.00	Eaton Br.	C	1.2	1.2	Mi.	Zinc (S)	Leadwood tailings pond	AQL	LWW, SCR	St. Francois	710945	4193695	712097	4194409	7140104	1
2002	2593.00	Eleven Point R.	P	22.7	22.7	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	CLF, IRR, LWW, SCR, WBC A	Oregon	658823	4067446	663687	4040687	11010011	1
2006	2597.00	Eleven Point R.	P	11.4	11.4	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	CDF, LWW, SCR, WBC A	Oregon	648216	4073792	658823	4067446	11010011	1
2008	2601.00	Eleven Point R.	P	22.3	22.3	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	CLF, LWW, SCR, WBC A	Oregon	626147	4076649	648216	4073792	11010011	1
2006	1283.00	Elm Br.	C	3.0	3.0	Mi.	Oxygen, Dissolved (W)	Windsor SE WWTP	AQL	LWW, SCR, WBC B	Henry	455758	4264046	453816	4261489	10290108	1
2012	1704.00	Fee Fee Cr. (new)	P	1.5	1.5	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, WBC B	St. Louis	720613	4290506	718639	4290795	10300200	1
2012	1704.00	Fee Fee Cr. (new)	P	1.5	1.5	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis	720613	4290506	718639	4290795	10300200	1
2012	7237.00	Fellows Lake	L1	800.0	800.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	DWS, LWW, SCR, WBC A	Greene	479585	4129878	479585	4129878	10290106	1
2012	3595.00	Fenton Cr.	P	0.5	0.5	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis	723865	4265429	724629	4265304	7140102	1
2008	2186.00	Fishpot Cr.	P	3.5	3.5	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis	715611	4270777	718256	4269401	7140102	1
2012	2186.00	Fishpot Cr.	P	3.5	3.5	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, WBC B	St. Louis	715611	4270777	718256	4269401	7140102	1
2006	2168.00	Flat River Cr.	C	4.7	10.0	Mi.	Cadmium (W)	Old Lead Belt tailings	AQL	LWW, WBC B	St. Francois	717605	4190862	719860	4196746	7140104	1
2010	7151.00	Forest Lake	L1	580.0	580.0	Ac.	Chlorophyll-a (W)*	Rural NPS	AQL	DWS, LWW, WBC A	Adair	529121	4446689	529121	4446689	10280202	1
2010	7151.00	Forest Lake	L1	580.0	580.0	Ac.	Nitrogen, Total (W)*	Rural NPS	AQL	DWS, LWW, WBC A	Adair	529121	4446690	529121	4446690	10280202	1
2010	7151.00	Forest Lake	L1	580.0	580.0	Ac.	Phosphorus, Total (W)*	Rural NPS	AQL	DWS, LWW, WBC A	Adair	529118	4446689	529118	4446689	10280202	1
2006	747.00	Fowler Cr.	C	6.0	6.0	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Boone	567705	4291358	568085	4285215	10300102	1
2012	1842.00	Fox Cr.	P	7.2	7.2	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, WBC B	St. Louis	698956	4266805	702113	4258893	7140102	1
2008	38.00	Fox R.	P	42.0	42.0	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW, SCR	Clark	591716	4495662	619844	4469932	7110001	1
2010	7008.00	Fox Valley Lake	L3	89.0	89.0	Ac.	Phosphorus, Total (W)*	Rural NPS	AQL	LWW, SCR, WBC B	Clark	604600	4483686	604600	4483686	7110001	1
2014	7008.00	Fox Valley Lake	L3	89.0	89.0	Ac.	Chlorophyll-a (W)*	Agriculture	AQL	LWW, SCR, WBC B	Clark	604601	4483675	604601	4483675	7110001	1
2014	7008.00	Fox Valley Lake	L3	89.0	89.0	Ac.	Nitrogen, Total (W)*	Agriculture	AQL	LWW, SCR, WBC B	Clark	604599	4483679	604599	4483679	7110001	1
2010	7382.00	Foxboro Lake	L3	22.0	22.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC B	Franklin	644959	4249576	644959	4249576	7140103	1
2002	7280.00	Frisco Lake	L3	5.0	5.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC B	Phelps	608340	4201513	608340	4201513	7140102	1
2012	1004.00	Gans Cr.	C	5.5	5.5	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, LWW	Boone	562859	4305362	558288	4303469	10300102	1
2002	1455.00	Gasconade R.	P	264.0	264.0	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	CLF, DWS, LWW, SCR, WBC A	Wright/Gasconade	543608	4120607	626331	4281831	10290202	1
2002	2184.00	Grand Glaize Cr.	C	4.0	4.0	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC B	St. Louis	720447	4272244	721056	4270200	7140102	1
2006	2184.00	Grand Glaize Cr.	C	4.0	4.0	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, WBC B	St. Louis	720447	4272244	721056	4270200	7140102	1
2008	2184.00	Grand Glaize Cr.	C	4.0	4.0	Mi.	Escherichia coli (W)	Municipal, Urbanized High Density Area, Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis	720447	4272244	721056	4270200	7140102	1
2006	593.00	Grand R.	P	56.0	56.0	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, DWS, IRR, LWW, SCR	Livingston/Chariton	454151	4399076	490791	4359355	10280103	1
2012	593.00	Grand R.	P	56.0	56.0	Mi.	Escherichia coli (W)	Rural NPS	SCR	AQL, DWS, IRR, LWW, WBC A	Livingston/Chariton	454151	4399076	490791	4359355	10280103	1
2006	1712.00	Gravois Cr.	P	2.3	2.3	Mi.	Escherichia coli (W)	Municipal, Urbanized High Density Area, Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis/St. Louis City	735408	4269269	737783	4270129	7140101	2
2008	1712.00	Gravois Cr.	P	2.3	2.3	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, WBC B	St. Louis/St. Louis City	735408	4269269	737783	4270129	7140101	2
2006	1713.00	Gravois Cr.	C	6.0	6.0	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, WBC B	St. Louis	731101	4269870	735408	4269269	7140101	1
2006	1713.00	Gravois Cr.	C	6.0	6.0	Mi.	Escherichia coli (W)	Municipal, Urbanized High Density Area, Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis	731101	4269870	735408	4269269	7140101	1
2006	1009.00	Grindstone Cr.	C	2.5	2.5	Mi.	Escherichia coli (W)	Runoff from Forest/Grassland/Parkland, Rural, Residential Areas, Urban Runoff/Storm Sewers	WBC A	AQL, LWW	Boone	561330	4309115	558769	4308985	10300102	1
2014	7386.00	Harrison County Lake	L1	280.0	280.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	DWS, LWW, WBC B	Harrison	407760	4472463	407760	4472463	10280101	1

Year	WBD	Waterbody	Cls	Imp Size	WB Size	Units	Pollutant	Source	IJ	QU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2008	7152.00	Hazel Creek Lake	L1	453.0	453.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	DWS, LWW, WBC B	Adair	531552	4461098	531552	4461098	10280201	1
2010	7152.00	Hazel Creek Lake	L1	453.0	453.0	Ac.	Chlorophyll-a (W)*	Rural NPS	AQL	DWS, LWW, WBC B	Adair	531556	4461098	531556	4461098	10280201	1
2008	848.00	Heaths Cr.	P	21.0	21.0	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	CLF, LWW, WBC B	Pettis/Cooper	481311	4306305	498383	4308084	10300103	1
2014	596.00	Hickory Br.	C	6.8	6.8	Mi.	Oxygen, Dissolved (W)	Rural NPS	AQL	LWW, WBC B	Chariton	492740	4382070	484609	4381385	10280103	1
2006	3226.00	Hickory Cr.	P	4.9	4.9	Mi.	Escherichia coli (W)	Runoff from Forest/Grassland/Parkland, Rural, Residential Areas	WBC A	AQL, LWW	Newton	381782	4079307	377855	4083987	11070207	1
2012	1008.00	Hinkson Cr.	C	18.8	18.8	Mi.	Escherichia coli (W)	Runoff from Forest/Grassland/Parkland, Rural, Residential Areas	WBC A	AQL, LWW, SCR	Boone	567735	4324925	557334	4308969	10300102	1
2012	1011.00	Hominy Br.	C	1.0	1.0	Mi.	Escherichia coli (W)	Runoff from Forest/Grassland/Parkland, Rural, Residential Areas, Urban Runoff/Storm Sewers	WBC B	AQL, LWW, SCR	Boone	561244	4310832	560154	4310816	10300102	1
2010	3169.00	Honey Cr.	P	16.5	16.5	Mi.	Escherichia coli (W)	Rural NPS runoff	WBC B	AQL, LWW	Lawrence	441810	4098909	423404	4104004	11070207	1
2010	3170.00	Honey Cr.	C	2.7	2.7	Mi.	Escherichia coli (W)	Rural NPS runoff	WBC B	AQL, LWW	Lawrence	443610	4095816	441810	4098909	11070207	1
2008	1348.00	Horse Cr.	P	27.7	27.7	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	IRR, LWW, WBC B	Vernon/Cedar	405029	4166750	422134	4180183	10290106	1
2010	1348.00	Horse Cr.	P	27.7	27.7	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	IRR, LWW, WBC B	Vernon/Cedar	405029	4166750	422134	4180183	10290106	1
2014	3413.00	Horseshoe Cr.	C	5.8	5.8	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Lafayette/Jackson	404067	4315232	403598	4321954	10300101	1
2002	7388.00	Hough Park Lake	L3	10.0	10.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC B	Cole	571196	4266084	571196	4266084	10300102	1
2012	7029.00	Hunnewell Lake	L3	228.0	228.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC B	Shelby	597507	4395785	597507	4395785	7110004	1
2002	420.00	Indian Cr.	C	3.4	3.4	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC A	AQL, IND, LWW	Jackson	360621	4311182	364588	4312669	10300101	1
2010	420.00	Indian Cr.	C	3.4	3.4	Mi.	Chloride (W)	Road/Bridge Runoff, Non-construction	AQL	IND, LWW, WBC A	Jackson	360621	4311182	364588	4312669	10300101	1
2010	1946.00	Indian Cr.	P	1.9	1.9	Mi.	Zinc (S)	Doe Run Viburnum Division Lead mine	AQL	LWW, WBC B	Washington	668798	4178896	669872	4181483	7140102	1
2012	1946.00	Indian Cr.	P	1.9	1.9	Mi.	Lead (S)	Doe Run Viburnum Division Lead mine	AQL	LWW, WBC B	Washington	668798	4178896	669872	4181483	7140102	1
2006	3256.00	Indian Cr.	P	9.7	30.8	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CLF, IRR, LWW, SCR	Newton/McDonald	390072	4072826	381952	4065143	11070208	1
2008	7389.00	Indian Creek Community Lake	L3	185.0	185.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC B	Livingston	440538	4416531	440538	4416531	10280101	1
2012	3223.00	Jacobs Br.	P	1.6	1.6	Mi.	Zinc (W)	Tri-State Mining District	AQL	LWW, WBC B	Newton	365485	4095641	365862	4097358	11070207	1
2014	3223.00	Jacobs Br.	P	1.6	1.6	Mi.	Cadmium (W)	Mill Tailings	AQL	LWW, WBC B	Newton	365485	4095641	365862	4097358	11070207	1
2014	3223.00	Jacobs Br.	P	1.6	1.6	Mi.	Cadmium (S)	Mill Tailings	AQL	LWW, WBC B	Newton	365485	4095641	365862	4097358	11070207	1
2014	3223.00	Jacobs Br.	P	1.6	1.6	Mi.	Lead (S)	Mill Tailings	AQL	LWW, WBC B	Newton	365485	4095641	365862	4097358	11070207	1
2014	3223.00	Jacobs Br.	P	1.6	1.6	Mi.	Zinc (S)	Mill Tailings	AQL	LWW, WBC B	Newton	365485	4095641	365862	4097358	11070207	1
2012	3207.00	Jenkins Cr.	P	2.8	2.8	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, LWW	Jasper	389303	4103152	386194	4105401	11070207	1
2014	3208.00	Jenkins Cr.	C	4.8	4.8	Mi.	Escherichia coli (W)	Agriculture	WBC A	AQL, LWW	Newton/Jasper	393119	4101129	389303	4103152	11070207	1
2012	3205.00	Jones Cr.	P	7.5	7.5	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CLF, LWW	Newton/Jasper	388104	4099353	383685	4107350	11070207	1
2012	3592.00	Keifer Cr.	P	1.2	1.2	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, WBC A	St. Louis	713475	4270033	714845	4269588	7140102	1
2012	3592.00	Keifer Cr.	P	1.2	1.2	Mi.	Escherichia coli (W)	Runoff from Forest/Grassland/Parkland, Rural, Residential Areas	WBC A	AQL, LWW	St. Louis	713475	4270033	714845	4269588	7140102	1
2008	1529.00	L. Beaver Cr.	C	3.5	3.5	Mi.	Sedimentation/Siltation (S)	Smith Sand and Gravel	AQL	LWW, WBC A	Phelps	602527	4199503	600308	4195828	10290203	1
2014	1529.00	L. Beaver Cr.	C	3.5	3.5	Mi.	Escherichia coli (W)	Municipal Point Source Discharges	WBC A	AQL, LWW	Phelps	602527	4199503	600308	4195828	10290203	1
2012	422.00	L. Blue R.	P	35.1	35.1	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW, SCR	Jackson	372712	4309259	394916	4340608	10300101	1
2012	1003.00	L. Bonne Femme Cr.	P	9.0	9.0	Mi.	Escherichia coli (W)	Source Unknown	WBC B	AQL, LWW	Boone	558288	4303469	553242	4296685	10300102	1
2006	1863.00	L. Dry Fk.	P	1.0	5.2	Mi.	Oxygen, Dissolved (W)	Rolla SE WWTP	AQL	LWW, SCR, WBC B	Phelps	613267	4199796	614362	4200448	7140102	1

Year	WBDID	Waterbody	Ch	Imp Size	WQ Size	Units	Pollutant	Source	HU	OU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2006	1864.00	L. Dry Fk.	C	0.6	4.7	Mi.	Oxygen, Dissolved (W)	Rolla SE WWTP	AQL	LWW, WBC B	Phelps	612755	4198995	613258	4199800	7140102	1
2008	1864.00	L. Dry Fk.	C	4.7	4.7	Mi.	Oxygen, Dissolved (W)	Rolla SE WWTP	AQL	LWW, WBC B	Phelps	613005	4192818	612727	4198982	7140102	1
2006	1325.00	L. Dry Wood Cr.	P	20.5	20.5	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Vernon	376904	4174682	376740	4191482	10290104	1
2010	1326.00	L. Dry Wood Cr.	C	15.6	15.6	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Barton/Vernon	379798	4162808	376904	4174682	10290104	1
2010	3279.00	L. Lost Cr.	P	5.8	5.8	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Newton	362556	4080613	355717	4078288	11070206	1
2006	623.00	L. Medicine Cr.	P	39.8	39.8	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Mercer/Grundy	464025	4492224	467988	4439145	10280103	1
2006	623.00	L. Medicine Cr.	P	19.8	39.8	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, WBC B	Mercer	463960	4492230	465770	4469240	10280103	1
2006	1189.00	L. Niangua R.	P	20.2	43.8	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	CLF, LWW, SCR, WBC A	Dallas/Hickory	499870	4188127	491901	4206838	10290110	1
2004	3652.00	L. Osage R.	C	23.6	23.6	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Vernon	358279	4206140	378073	4204995	10290103	2
2014	2854.00	L. St. Francis R.	P	24.2	32.4	Mi.	Lead (S)	Catherine Lead Mine, pos. Mine La Motte	AQL	CLF, DWS, LWW, SCR, WBC A	Madison	735771	4165598	726082	4157726	8020202	1
2012	2229.00	L. Whitewater Cr.	P	24.2	24.2	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, WBC A	Bollinger/Cape Girardeau	759234	4159953	782136	4144237	7140107	1
2002	7469.00	Lake Buteo	L3	7.0	7.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC A	Johnson	449405	4289087	449405	4289087	10300104	4
2002	7436.00	Lake of the Woods	L3	3.0	3.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC B	Boone	565550	4313830	565550	4313830	10300102	1
2008	7629.00	Lake of the Woods	UL	7.0	7.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	GEN		Jackson	368315	4317421	368315	4317421	10300101	1
2010	7054.00	Lake St. Louis	L3	444.0	444.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC A	St. Charles	694062	4297113	694062	4297113	7110009	1
2014	7055.00	Lake Ste. Louise	L3	71.0	71.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC A	St. Charles	691846	4296923	691846	4296923	7110009	1
2010	7212.00	Lake Winnebago	L3	272.0	272.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC A	Cass	382248	4297460	382248	4297460	10290108	1
2006	847.00	Lamine R.	P	64.0	64.0	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, IRR, LWW, SCR	Morgan/Cooper	504073	4279987	513022	4314616	10300103	1
2006	3105.00	Lateral #2 Main Ditch	P	11.5	11.5	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Stoddard	774316	4075750	773639	4058046	8020204	1
2008	3105.00	Lateral #2 Main Ditch	P	11.5	11.5	Mi.	Temperature, water (W)	Channelization	AQL	LWW, WBC B	Stoddard	774316	4075750	773639	4058046	8020204	1
2012	3137.00	Lee Rowe Ditch	C	6.0	6.0	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Mississippi	824366	4076900	824243	4068035	8020201	1
2002	7020.00	Lewistown Lake	L1	35.0	35.0	Ac.	Atrazine (W)	Agriculture	DWS	AQL, LWW, SCR, WBC B	Lewis	600676	4439291	600676	4439291	7110002	3
2012	3575.00	Line Cr.	C	7.0	7.0	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW	Platte	358975	4343373	360133	4335563	10240011	1
2006	606.00	Locust Cr.	P	37.7	91.7	Mi.	Escherichia coli (W)	Rural NPS	SCR	AQL, DWS, LWW, WBC B	Putnam/Sullivan	488062	4492444	485937	4450771	10280103	1
2006	606.00	Locust Cr.	P	37.7	91.7	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, DWS, LWW, SCR	Putnam/Sullivan	488061	4492447	485932	4450780	10280103	1
2012	2763.00	Logan Cr.	P	6.1	36.0	Mi.	Lead (S)	Sweetwater Lead Mine/Mill	AQL	LWW, SCR, WBC A	Reynolds	666297	4135268	666165	4127460	11010007	1
2006	696.00	Long Branch Cr.	C	1.8	14.8	Mi.	Oxygen, Dissolved (W)	Atlanta WWTP	AQL	LWW, SCR, WBC B	Macon	543323	4416546	543605	4414156	10280203	1
2002	7097.00	Longview Lake	L2	953.0	953.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC A	Jackson	372710	4309262	372710	4309262	10300101	1
2006	3278.00	Lost Cr.	P	8.5	8.5	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CLF, LWW, SCR	Newton	365739	4083856	355717	4078288	11070206	1
2010	123.00	M. Fk. Salt R.	C	11.4	25.4	Mi.	Oxygen, Dissolved (W)	Macon WWTP, Nonpoint Source	AQL	LWW, WBC B	Macon	550935	4400206	554273	4390082	7110006	1
2006	2814.00	Main Ditch	C	13.0	13.0	Mi.	Temperature, water (W)	Channelization	AQL	IRR, LWW, WBC B	Butler	732529	4068029	728374	4048617	11010007	1
2006	2814.00	Main Ditch	C	13.0	13.0	Mi.	pH (W)	Poplar Bluff WWTP	AQL	IRR, LWW, WBC B	Butler	732529	4068029	728374	4048617	11010007	1
2012	1709.00	Maline Cr.	C	0.6	0.6	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW, SCR	St. Louis/St. Louis City	741069	4291198	741513	4290475	7140101	1
2012	3839.00	Maline Cr.	C	0.5	0.5	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, SCR	St. Louis City	741513	4290475	743767	4287000	7140101	1
2010	3140.00	Maple Slough	C	18.2	18.2	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Mississippi/New Madrid	820609	4090553	816878	4062805	8020201	1
2002	7033.00	Mark Twain Lake	L2	18132.0	18132.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	DWS, LWW, SCR, WBC A	Ralls	616550	4375856	616550	4375856	7110007	1
2014	3596.00	Mattese Cr.	P	1.1	1.1	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, SCR, WBC B	St. Louis	733139	4260643	732308	4259650	7140102	1
2014	3596.00	Mattese Cr.	P	1.1	1.1	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW, SCR	St. Louis	733139	4260643	732308	4259650	7140102	1
2006	619.00	Medicine Cr.	P	43.8	43.8	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Putnam/Grundy	471740	4492250	467988	4439145	10280103	1
2008	2183.00	Meramec R.	P	22.8	22.8	Mi.	Lead (S)	Old Lead belt tailings	AQL	DWS, IND, LWW, SCR, WBC A	St. Louis	718256	4269401	732150	4252184	7140102	1
2008	2185.00	Meramec R.	P	15.7	15.7	Mi.	Lead (S)	Old Lead Belt tailings	AQL	CLF, DWS, IND, LWW, SCR, WBC A	Jefferson/St. Louis	707821	4260833	718256	4269401	7140102	1
1994	1299.00	Miami Cr.	P	19.6	19.6	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Bates	372360	4240637	383003	4222753	10290102	1
2006	468.00	Middle Fk. Grand R.	P	27.5	27.5	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, IRR, LWW, SCR	Worth/Gentry	385572	4488578	381803	4452419	10280101	1

Year	WBID	Waterbody	Cl	Imp Size	WB Size	Units	Pollutant	Source	IU	DU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2010	3262.00	Middle Indian Cr.	C	3.5	3.5	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, SCR, WBC A	Newton	400092	4074869	395454	4074061	11070208	1
2008	3263.00	Middle Indian Cr.	P	2.2	2.2	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Newton	395454	4074061	392652	4075387	11070208	1
2010	3263.00	Middle Indian Cr.	P	2.2	2.2	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, WBC B	Newton	395454	4074061	392652	4075387	11070208	1
2014	1707.03	Mississippi R.	P	44.6	44.6	Mi.	Escherichia coli (W)	Municipal Point Source Discharges, Nonpoint Source	WBC B	AQL, DWS, IND, LWW, SCR	St. Louis/Ste. Genevieve	732150	4252184	769132	4207187	7140101	1
2010	226.00	Missouri R.	P	184.5	184.5	Mi.	Escherichia coli (W)	Municipal Point Source Discharges, Nonpoint Source	WBC B	AQL, DWS, IND, IRR, LWW, SCR	Atchison/Jackson	265899	4496416	361019	4330707	10240009	1
2012	356.00	Missouri R.	P	129.0	129.0	Mi.	Escherichia coli (W)	Municipal Point Source Discharges, Nonpoint Source	SCR	AQL, DWS, IND, IRR, LWW, WBC B	Jackson/Chariton	361019	4330707	503487	4351401	10300101	1
2012	356.00	Missouri R.	P	129.0	129.0	Mi.	Escherichia coli (W)	Municipal Point Source Discharges, Nonpoint Source	WBC B	AQL, DWS, IND, IRR, LWW, SCR	Jackson/Chariton	361019	4330707	503487	4351401	10300101	1
2008	1604.00	Missouri R.	P	33.9	104.5	Mi.	Escherichia coli (W)	Municipal Point Source Discharges, Nonpoint Source	WBC B	AQL, DWS, IND, IRR, LWW, SCR	St. Charles/St. Louis	714448	4289612	750286	4299158	10300200	1
2014	7031.00	Monroe City Lake	L1	94.0	94.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	DWS, LWW, SCR, WBC A	Ralls	614623	4384928	614623	4384928	7110007	1
2010	7402.00	Mozingo Lake	L1	898.0	898.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	DWS, LWW, SCR, WBC B	Nodaway	348769	4467994	348769	4467994	10240013	1
2008	853.00	Muddy Cr.	P	62.2	62.2	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, WBC B	Pettis	458149	4281754	495127	4299752	10300103	1
2006	674.00	Mussel Fk.	C	29.0	29.0	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, DWS, LWW	Sullivan/Macon	509539	4450637	513872	4410410	10280202	1
2008	3186.00	N. Fk. Spring R.	P	17.4	17.4	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW, SCR	Jasper	379518	4128240	363884	4125753	11070207	1
2006	3188.00	N. Fk. Spring R.	C	1.1	55.9	Mi.	Ammonia, Total (W)	Lamar WWTP	AQL	LWW, SCR, WBC B	Barton	386254	4148800	386721	4148123	11070207	1
2006	3188.00	N. Fk. Spring R.	C	55.9	55.9	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, SCR, WBC B	Dade/Jasper	408705	4131497	379518	4128240	11070207	1
2008	3188.00	N. Fk. Spring R.	C	55.9	55.9	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW, SCR	Dade/Jasper	408705	4131497	379518	4128240	11070207	1
2008	3260.00	N. Indian Cr.	P	5.2	5.2	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Newton	395488	4077540	390081	4072821	11070208	1
2012	3260.00	N. Indian Cr.	P	5.2	5.2	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	LWW, WBC B	Newton	395488	4077540	390081	4072821	11070208	1
2006	1170.00	Niangua R.	P	56.0	56.0	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CLF, LWW, SCR	Webster/Dallas	507117	4144345	512225	4176338	10290110	1
2014	227.00	Nishnabotna R.	P	10.2	10.2	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, DWS, IRR, LWW, SCR	Atchison	276742	4495889	271481	4484915	10240004	1
2006	550.00	No Cr.	P	28.7	28.7	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Grundy/Livingston	461790	4446877	451131	4415226	10280102	1
2010	550.00	No Cr.	P	28.7	28.7	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Grundy/Livingston	461790	4446877	451131	4415226	10280102	1
2002	7316.00	Noblett Lake	L3	26.0	26.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC A	Douglas	579889	4085045	579889	4085045	11010006	1
2014	7316.00	Noblett Lake	L3	26.0	26.0	Ac.	Chlorophyll-a (W)*	Nonpoint Source	AQL	LWW, WBC A	Douglas	579888	4085045	579888	4085045	11010006	1
2014	7316.00	Noblett Lake	L3	26.0	26.0	Ac.	Phosphorus, Total (W)*	Nonpoint Source	AQL	LWW, WBC A	Douglas	579889	4085046	579889	4085046	11010006	1
2010	279.00	Nodaway R.	P	59.3	59.3	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, IRR, LWW, SCR	Nodaway/Andrew	328881	4493666	331916	4418596	10240010	1
2010	7109.00	North Bethany City Reservoir	L3	78.0	78.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC A	Harrison	412395	4463016	412395	4463016	10280101	1
2006	170.00	North Fk. Cuivre R.	C	8.0	8.0	Mi.	Fecal Coliform (W)	Rural NPS	WBC B	AQL, LWW	Pike	651684	4345260	656761	4337088	7110008	3
2010	1293.00	Osage R.	P	39.3	39.3	Mi.	Oxygen, Dissolved (W)	Source Unknown	***	***	Vernon/St.Clair	453701	4183192	444285	4187603	10290105	1
2006	1373.00	Panther Cr.	C	9.7	9.7	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Polk/St. Clair	453742	4183206	444279	4187593	10290106	1
2006	2373.00	Pearson Cr.	P	8.0	8.0	Mi.	Escherichia coli (W)	Livestock, Grazing or Feeding Operations, Urban Runoff/Storm Sewers	WBC A	AQL, LWW	Greene	486612	4121328	482571	4113045	11010002	1

Year	WBID	Waterbody	Cls	Imp Size	WB Size	Units	Pollutant	Source	HU	OU	D/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2006	2373.00	Pearson Cr.	P	8.0	8.0	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Urban Runoff/Storm Sewers	AQL	WBC A, LWW	Greene	486612	4121328	482571	4113045	11010002	1
2008	7628.00	Perry Phillips Lake	UL	32.0	32.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	GEN		Boone	561236	4305581	561236	4305581	10300102	1
2012	215.00	Peruque Cr.	P1	9.6	9.6	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, SCR, WBC B	St. Charles	700317	4301742	705352	4308025	7110009	1
2012	216.00	Peruque Cr.	P	0.3	10.3	Mi.	Cause Unknown	Lake St. Louis Dam	AQL	LWW, SCR, WBC B	St. Charles	693918	4297117	694138	4297484	7110009	1
2002	217.00	Peruque Cr.	P	4.0	4.0	Mi.	Fishes Bioassessments/Unknown	Nonpoint Source	AQL	LWW, SCR, WBC B	St. Charles	686322	4296816	690798	4295430	7110009	3
2002	218.00	Peruque Cr.	C	10.9	10.9	Mi.	Fishes Bioassessments/Unknown	Nonpoint Source	AQL	LWW, SCR, WBC B	Warren/St. Charles	674302	4297979	686322	4296816	7110009	3
2006	1755.00	Pickle Cr.	P	7.8	7.8	Mi.	pH (W)	Atmospheric Deposition - Acidity	AQL	LWW, WBC B	Ste. Genevieve	738455	4187974	746104	4191429	7140105	1
2010	2815.00	Pike Cr.	C	6.0	6.0	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	IRR, LWW	Butler	727556	4074154	732529	4068029	11010007	1
2010	312.00	Platte R.	P	142.4	142.4	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, DWS, IRR, LWW, SCR	Worth/Platte	370620	4492569	341432	4347540	10240012	1
2012	1327.00	Pleasant Run Cr.	C	7.6	7.6	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Vernon	381362	4169529	376904	4174682	10290104	1
2006	3120.00	Pole Cat Slough	P	12.6	12.6	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Dunklin	763796	4013691	755748	3998563	8020204	1
2014	3120.00	Pole Cat Slough	P	12.6	12.6	Mi.	Temperature, water (W)	Source Unknown	AQL	LWW, WBC B	Dunklin	763796	4013691	755748	3998563	8020204	1
2014	1440.00	Pomme de Terre R.	P	69.1	69.1	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, LWW, SCR	Webster/Polk	506083	4131874	465307	4180755	10290107	1
2006	2038.00	Red Oak Cr.	C	10.1	10.0	Mi.	Oxygen, Dissolved (W)	Owensville WWTP	AQL	LWW, WBC B	Gasconade	631423	4239850	642015	4246717	7140103	2
2006	1710.00	River des Peres	P	2.6	2.6	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, SCR	St. Louis City	736562	4271521	738968	4268398	7140101	1
2010	1710.00	River des Peres	P	2.6	2.6	Mi.	Oxygen, Dissolved (W)	Municipal, Urbanized High Density Area, Urban Runoff/Storm Sewers	AQL	LWW, SCR	St. Louis City	736562	4271521	738968	4268398	7140101	1
2012	1710.00	River des Peres	P	2.6	2.6	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	SCR	AQL, LWW	St. Louis City	736562	4271521	738968	4268398	7140101	1
2006	3972.00	River des Peres	US	6.5	6.5	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	GEN		St. Louis	731228	4283842	734092	4282681	7140101	1,5
2006	655.00	S. Blackbird Cr.	C	13.0	13.0	Mi.	Ammonia, Total (W)	Source Unknown	AQL	LWW, WBC B	Putnam	503682	4475363	518712	4469745	10280201	2
2010	71.00	S. Fabius R.	P	80.6	80.6	Mi.	Escherichia coli (W)	Nonpoint Source	WBC B	AQL, IRR, LWW	Knox/Marion	572794	4444457	627750	4417637	7110003	1
1994	142.00	S. Fk. Salt R.	C	20.1	40.1	Mi.	Oxygen, Dissolved (W)	Mexico WWTP, Source Unknown	AQL	LWW, SCR, WBC B	Callaway/Audrain	600364	4322884	596694	4341638	7110006	1
2006	1249.00	S. Grand R.	P	66.8	66.8	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW, SCR	Cass/Henry	366728	4281000	429978	4242884	10290108	1
2008	3259.00	S. Indian Cr.	P	8.7	8.7	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, CDF, LWW	McDonald/Newton	399208	4067538	390081	4072821	11070208	1
2012	3259.00	S. Indian Cr.	P	8.7	8.7	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Source Unknown	AQL	CDF, LWW, WBC B	McDonald/Newton	399208	4067538	390081	4072821	11070208	1
2010	594.00	Salt Cr.	C	14.9	14.9	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Chariton	491540	4377934	485852	4365132	10280103	1
2014	893.00	Salt Fk.	P	13.3	26.7	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, SCR, WBC B	Saline	472648	4336520	486215	4328728	10300104	1
2012	2113.00	Salt Pine Cr.	C	1.2	1.2	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Barite tailings pond	AQL	LWW, WBC B	Washington	698656	4214467	697844	4216050	7140104	1
2008	91.00	Salt R.	P	29.0	29.0	Mi.	Oxygen, Dissolved (W)	Mark Twain Lake re-regulation dam	AQL	DWS, IRR, LWW, SCR, WBC A	Ralls/Pike	622770	4380470	654484	4376225	7110007	1
2012	103.00	Salt R. ¹	P1	9.3	9.3	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	DWS, IRR, LWW, SCR, WBC A	Ralls	616554	4375853	622770	4380500	7110007	1
2014	103.00	Salt R. ¹	P1	9.3	9.3	Mi.	Oxygen, Dissolved (W)	Cannon Dam	AQL	DWS, IRR, LWW, SCR, WBC A	Ralls	616554	4375853	622770	4380500	7110007	1
2014	2119.00	Shibboleth Br.	P	1.0	1.0	Mi.	Lead (S)	Mill Tailings	AQL	LWW, WBC B	Washington	705148	4210760	706311	4210501	7140104	1
2014	2119.00	Shibboleth Br.	P	1.0	1.0	Mi.	Zinc (S)	Mill Tailings	AQL	LWW, WBC B	Washington	705148	4210760	706311	4210501	7140104	1
2008	3222.00	Shoal Cr.	P	41.1	41.1	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CLF, DWS, IND, IRR, LWW, SCR	Newton	401984	4083455	356098	4099733	11070207	1
2014	3754.00	Slater Br.	C	3.7	3.7	Mi.	Escherichia coli (W)	Nonpoint Source	WBC B	AQL, LWW	Jasper	372935	4129976	369417	4127684	11070207	1
2006	399.00	Sni-a-bar Cr.	P	36.6	36.6	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, SCR, WBC B	Jackson/Lafayette	398859	4311016	416463	4333103	10300101	1,6
2012	224.00	Spencer Cr.	C	1.5	1.5	Mi.	Chloride (W)	St. Peters WWTP, Urban Runoff/Storm Sewers	AQL	LWW, SCR	St. Charles	708205	4298105	709432	4300121	7110009	1
2006	3160.00	Spring R.	P	61.7	61.7	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CLF, IND, IRR, LWW, SCR	Lawrence/Jasper	420405	4108691	356380	4117694	11070207	1

Year	WBID	Waterbody	Cl	Imp Size	WB Size	Units	Pollutant	Source	RI	OU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2010	3164.00	Spring R.	P	8.8	8.8	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CDF, IND, IRR, LWW, SCR	Lawrence	425936	4100897	420405	4108691	11070207	1
2010	3165.00	Spring R.	P	11.9	11.9	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, LWW, SCR	Lawrence	430983	4088423	425936	4100897	11070207	1
2012	2835.00	St. Francis R.	P	8.4	93.1	Mi.	Temperature, water (W)	Source Unknown	CLF	AQL, IRR, LWW, SCR, WBC A	St. Francois	725310	4181290	728440	4173621	8020202	1
2006	3138.00	St. Johns Ditch	P	15.3	15.3	Mi.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC B	New Madrid	807943	4079163	817828	4057590	8020201	1
2006	3138.00	St. Johns Ditch	P	15.3	15.3	Mi.	Escherichia coli (W)	Rural NPS, Urban Runoff/Storm Sewers	WBC B	AQL, LWW, SCR	New Madrid	807943	4079163	817828	4057590	8020201	1
2006	3135.00	Stevenson Bayou	C	6.4	6.4	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Mississippi	833337	4094443	831489	4086239	8020201	1
2006	959.00	Straight Fk.	C	6.0	6.0	Mi.	Oxygen, Dissolved (W)	Versailles WWTP	AQL	LWW, WBC B	Morgan	513048	4255154	514134	4262987	10300102	1
2006	2751.00	Strother Cr.	P	6.0	6.0	Mi.	Zinc (S)	Buick Lead Mine/Mill	AQL	CLF, LWW, WBC B	Iron/Reynolds	672401	4162649	680292	4163603	11010007	1
2008	2751.00	Strother Cr.	P	6.0	6.0	Mi.	Nickel (S)	Buick Lead Mine/Mill	AQL	CLF, LWW, WBC B	Iron/Reynolds	672401	4162649	680292	4163603	11010007	1
2008	2751.00	Strother Cr.	P	6.0	6.0	Mi.	Lead (S)	Buick Lead Mine/Mill	AQL	CLF, LWW, WBC B	Iron/Reynolds	672401	4162649	680292	4163603	11010007	1
2010	2751.00	Strother Cr.	P	6.0	6.0	Mi.	Lead (W)	Buick Lead Mine/Mill	AQL	CLF, LWW, WBC B	Iron/Reynolds	672401	4162649	680292	4163603	11010007	1
2010	2751.00	Strother Cr.	P	6.0	6.0	Mi.	Zinc (W)	Buick Lead Mine/Mill	AQL	CLF, LWW, WBC B	Iron/Reynolds	672401	4162649	680292	4163603	11010007	1
2014	2751.00	Strother Cr.	P	6.0	6.0	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Buick Mine	AQL	CLF, LWW, WBC B	Iron/Reynolds	672401	4162649	680292	4163603	11010007	1
2006	3965.00	Strother Cr.	US	0.9	0.9	Mi.	Zinc (S)	Buick Lead Mine/Mill	GEN		Reynolds/Iron	671143	4161738	672403	4162650	11010007	1
2008	3965.00	Strother Cr.	US	0.9	0.9	Mi.	Arsenic (S)	Buick Lead Mine/Mill	GEN		Reynolds/Iron	671133	4161733	672400	4162646	11010007	1
2008	3965.00	Strother Cr.	US	0.9	0.9	Mi.	Nickel (S)	Buick Lead Mine/Mill	GEN		Reynolds/Iron	671139	4161736	672405	4162651	11010007	1
2008	3965.00	Strother Cr.	US	0.9	0.9	Mi.	Lead (S)	Buick Lead Mine/Mill	GEN		Reynolds/Iron	671133	4161733	672402	4162649	11010007	1
2012	3965.00	Strother Cr.	US	0.9	0.9	Mi.	Zinc (W)	Buick Lead Mine/Mill	GEN		Reynolds/Iron	671137	4161735	672405	4162650	11010007	1
2006	686.00	Sugar Cr.	P	6.8	6.8	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Randolph	544656	4369584	538213	4368067	10280203	1
2014	7166.00	Sugar Creek Lake	L1	308.0	308.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	DWS, LWW, WBC B	Randolph	544675	4369570	544675	4369570	10280203	1
2006	7399.00	Sunset Lake	L3	6.0	6.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, WBC B	Cole	569901	4268413	569901	4268413	10300102	1
2002	7313.00	Table Rock Lake	L2	24218.0	41747.0	Ac.	Chlorophyll-a (W)*	Municipal Point Source Discharges, Nonpoint Source	AQL	LWW, SCR, WBC A	Taney	472136	4050038	472136	4050038	11010001	1
2002	7313.00	Table Rock Lake	L2	24216.0	41747.0	Ac.	Nitrogen, Total (W)*	Municipal Point Source Discharges, Nonpoint Source	AQL	LWW, SCR, WBC A	Taney	472138	4050042	472138	4050042	11010001	1
2002	7313.00	Table Rock Lake	L2	41747.0	41747.0	Ac.	Nutrient/Eutrophication Biol. Indicators (W)*	Municipal Point Source Discharges, Nonpoint Source	AQL	LWW, SCR, WBC A	Taney	472135	4050041	472135	4050041	11010001	1
2010	7297.00	Terre Du Lac Lakes	L3	103.0	371.4	Ac.	Chlorophyll-a (W)*	Terre du Lac Subdivision	AQL	LWW, SCR, WBC A	St. Francois	708570	4197156	708570	4197156	7140104	1
2010	7297.00	Terre Du Lac Lakes	L3	103.0	371.4	Ac.	Nitrogen, Total (W)*	Terre du Lac Subdivision	AQL	LWW, SCR, WBC A	St. Francois	708570	4197151	708570	4197151	7140104	1
2008	549.00	Thompson R.	P	5.2	70.6	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, DWS, IRR, LWW	Harrison	432172	4492124	430916	4488363	10280102	1
2012	3243.00	Thurman Cr.	P	3.0	3.0	Mi.	Escherichia coli (W)	Runoff from Forest/Grassland/Parkland, Rural, Residential Areas	WBC B	AQL, LWW	Newton	369319	4099003	367458	4097252	11070207	1
2010	2114.00	Trib. Old Mines Cr.	C	1.5	1.5	Mi.	Sedimentation/Siltation (S)	Barite tailings pond	GEN	AQL, LWW, WBC B	Washington	699696	4215163	698452	4216961	7140104	1
2012	3963.00	Trib. to Chat Cr.	US	0.9	0.9	Mi.	Cadmium (W)	Subsurface, Hardrock, Mining	GEN		Lawrence	437551	4092594	436381	4092419	11070207	1
2012	3963.00	Trib. to Chat Cr.	US	0.9	0.9	Mi.	Zinc (W)	Subsurface, Hardrock, Mining	GEN		Lawrence	437560	4092575	436381	4092418	11070207	1
2010	133.00	Trib. to Coon Cr.	C	2.0	2.0	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Randolph	552198	4364074	554325	4364132	7110006	2
2011	3938.00	Trib. to Flat R.	US	0.3	0.3	Mi.	Zinc (W)	Elvins Chat Pile	GEN		St. Francois	717153	4191147	717584	4190839	7140104	1
2010	1420.00	Trib. to Goose Cr.	C	3.0	3.0	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Lawrence	437166	4110190	440767	4112989	10290106	1
2006	3490.00	Trib. to L. Muddy Cr.	C	1.0	1.0	Mi.	Chloride (W)	Tyson Foods	AQL	LWW, WBC B	Pettis	473618	4290951	474708	4291640	10300103	1
2006	3360.00	Trib. to Red Oak Cr.	P	0.5	0.5	Mi.	Oxygen, Dissolved (W)	Owensville WWTP	AQL	LWW, WBC B	Gasconade	635575	4245150	636297	4244762	7140103	2
2006	3361.00	Trib. to Red Oak Cr.	C	1.9	1.9	Mi.	Oxygen, Dissolved (W)	Owensville WWTP, Source Unknown	AQL	LWW, SCR	Gasconade	632983	4245771	635575	4245150	7140103	2
2014	3981.00	Trib. to Shoal Cr.	US	1.6	1.6	Mi.	Cadmium (W)	Tanyard Hollow Pits	GEN		Jasper/Newton	360497	4102911	360999	4100170	11070207	1
2014	3981.00	Trib. to Shoal Cr.	US	1.6	1.6	Mi.	Zinc (W)	Tanyard Hollow Pits	GEN		Jasper/Newton	360493	4102902	360998	4100170	11070207	1
2014	3982.00	Trib. to Shoal Cr.	US	2.2	2.2	Mi.	Zinc (W)	Maiden Lane Pits	GEN		Jasper/Newton	363556	4103320	363401	4100264	11070207	1

Year	WVID	Waterbody	Ch	Imp Size	WR Size	Units	Pollutant	Source	IU	QU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2014	3983.00	Trib. to Turkey Cr.	US	2.9	2.9	Mi.	Cadmium (S)	aban. smelter site -	GEN		Jasper	364260	4105805	364073	4108154	11070207	1
2014	3983.00	Trib. to Turkey Cr.	US	2.9	2.9	Mi.	Lead (S)	aban. smelter site	GEN		Jasper	364259	4105803	364073	4108154	11070207	1
2014	3983.00	Trib. to Turkey Cr.	US	2.9	2.9	Mi.	Zinc (S)	aban. smelter site	GEN		Jasper	364261	4105805	364069	4108156	11070207	1
2014	3983.00	Trib. to Turkey Cr.	US	2.9	2.9	Mi.	Zinc (W)	aban. smelter site	GEN		Jasper	364060	4108161	364262	4105804	11070207	1
2014	3984.00	Trib. to Turkey Cr.	US	2.2	2.2	Mi.	Zinc (W)	Leadwood Hollow pits	GEN		Jasper	362856	4108621	362494	4105702	11070207	1
2014	3985.00	Trib. to Turkey Cr.	US	1.6	1.6	Mi.	Zinc (W)	Chitwood Hollow pits	GEN		Jasper	361695	4107018	361609	4109130	11070207	1
2006	956.00	Trib. to Willow Fk.	C	0.5	0.5	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW	Moniteau	520018	4276045	520577	4275439	10300102	1
2006	3589.00	Trib. to Wolf Cr.	C	1.5	1.5	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	St. Francois	727181	4185394	729121	4184284	8020202	2
2006	74.00	Troublesome Cr.	C	6.1	41.3	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, SCR, WBC B	Knox	581617	4441608	586195	4437679	7110003	1
2012	3175.00	Truitt Cr.	C	6.4	6.4	Mi.	Escherichia coli (W)	Source Unknown	GEN	AQL, LWW	Lawrence	429512	4115867	424213	4108968	11070207	2
2012	751.00	Turkey Cr.	C	6.3	6.3	Mi.	Escherichia coli (W)	Source Unknown	WBC A	AQL, LWW	Boone	565489	4300829	560346	4298772	10300102	1
2006	3216.00	Turkey Cr.	P	7.7	7.7	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW	Jasper	366144	4107717	356267	4109959	11070207	1
2006	3216.00	Turkey Cr.	P	7.7	7.7	Mi.	Cadmium (S)	Tri-State Mining District	AQL	LWW, WBC B	Jasper	366144	4107717	356267	4109959	11070207	1
2006	3216.00	Turkey Cr.	P	7.7	7.7	Mi.	Zinc (S)	Tri-State Mining District	AQL	LWW, WBC B	Jasper	366144	4107717	356267	4109959	11070207	1
2006	3216.00	Turkey Cr.	P	7.7	7.7	Mi.	Cadmium (W)	Tri-State Mining District	AQL	LWW, WBC B	Jasper	366144	4107717	356267	4109959	11070207	1
2008	3216.00	Turkey Cr.	P	7.7	7.7	Mi.	Lead (S)	Tri-State Mining District	AQL	LWW, WBC B	Jasper	366144	4107717	356267	4109959	11070207	1
2006	3217.00	Turkey Cr.	P	6.1	6.1	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC A	AQL, LWW	Jasper	373143	4104208	366144	4107717	11070207	1
2006	3217.00	Turkey Cr.	P	6.1	6.1	Mi.	Cadmium (S)	Tri-State Mining District	AQL	LWW, WBC A	Jasper	373143	4104208	366144	4107717	11070207	1
2006	3217.00	Turkey Cr.	P	6.1	6.1	Mi.	Zinc (S)	Tri-State Mining District	AQL	LWW, WBC A	Jasper	373143	4104208	366144	4107717	11070207	1
2006	3282.00	Turkey Cr.	P	2.4	2.4	Mi.	Cadmium (W)	Bonne Terre chat pile	AQL	LWW, WBC B	St. Francois	715493	4200128	714636	4203638	7140104	1
2006	3282.00	Turkey Cr.	P	2.4	2.4	Mi.	Lead (W)	Bonne Terre chat pile	AQL	LWW, WBC B	St. Francois	715493	4200128	714636	4203638	7140104	1
2006	3282.00	Turkey Cr.	P	1.2	2.4	Mi.	Zinc (W)	Bonne Terre chat pile	AQL	LWW, WBC B	St. Francois	715072	4201827	715495	4200135	7140104	1
2010	1414.00	Turnback Cr.	P	19.9	19.9	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CDF, LWW, SCR	Lawrence/Dade	445684	4108548	432264	4127720	10290106	1
2008	2755.00	W. Fk. Black R.	P	2.1	32.3	Mi.	Lead (S)	West Fork Mine	AQL	CLF, LWW, WBC A	Reynolds	667310	4151001	669784	4151630	11010007	1
2008	2755.00	W. Fk. Black R.	P	2.1	32.3	Mi.	Nickel (S)	West Fork Lead Mine/Mill	AQL	CLF, LWW, WBC A	Reynolds	667305	4151008	669785	4151637	11010007	1
2006	1317.00	W. Fk. Dry Wood Cr.	C	8.1	8.1	Mi.	Oxygen, Dissolved (W)	Source Unknown	AQL	LWW, WBC B	Vernon	357350	4172196	363431	4175252	10290104	1
2006	2579.00	Warm Fk. Spring R.	P	13.8	13.8	Mi.	Fecal Coliform (W)	Source Unknown	WBC A	AQL, IRR, LWW, SCR	Oregon	627789	4054485	631878	4040300	11010010	1
2006	1708.00	Watkins Cr.	C	1.4	1.4	Mi.	Chloride (W)	Urban Runoff/Storm Sewers	AQL	LWW, WBC B	St. Louis/St. Louis City	744084	4294764	745936	4294861	7140101	1
2006	1708.00	Watkins Cr.	C	1.4	1.4	Mi.	Escherichia coli (W)	Urban Runoff/Storm Sewers	WBC B	AQL, LWW	St. Louis/St. Louis City	744084	4294764	745936	4294861	7140101	1
2010	7071.00	Weatherby Lake	L3	185.0	185.0	Ac.	Nitrogen, Total (W)*	Urban Runoff/Storm Sewers	AQL	LWW, SCR, WBC A	Platte	352918	4343554	352918	4343554	10240011	1
2012	7071.00	Weatherby Lake	L3	185.0	185.0	Ac.	Chlorophyll-a (W)*	Urban Runoff/Storm Sewers	AQL	LWW, SCR, WBC A	Platte	352913	4343568	352913	4343568	10240011	1
2012	7071.00	Weatherby Lake	L3	185.0	185.0	Ac.	Mercury in Fish Tissue (T)	Atmospheric Deposition - Toxics	AQL	LWW, SCR, WBC A	Platte	352918	4343569	352918	4343569	10240011	1
2014	7071.00	Weatherby Lake	L3	185.0	185.0	Ac.	Phosphorus, Total (W)*	Urban Runoff/Storm Sewers	AQL	LWW, SCR, WBC A	Platte	352909	4343562	352909	4343562	10240011	1
2006	560.00	Weldon R.	P	43.4	43.4	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Mercer/Grundy	448318	4492214	444714	4439341	10280102	1
2008	1504.00	Whetstone Cr.	P	12.2	12.2	Mi.	Oxygen, Dissolved (W)	Livestock, Grazing or Feeding Operations	AQL	CLF, LWW, WBC B	Wright	556418	4116032	553965	4129663	10290201	1
2010	3182.00	White Oak Cr.	C	18.0	18.0	Mi.	Escherichia coli (W)	Rural NPS runoff	WBC A	AQL, IRR, LWW	Lawrence/Jasper	415932	4124150	396440	4113581	11070207	1
2012	1700.00	Wildhorse Cr.	C	3.9	3.9	Mi.	Escherichia coli (W)	Runoff from Forest/Grassland/Parkland, Rural, Residential Areas	WBC B	AQL, LWW	St. Louis	699002	4276141	699384	4279922	10300200	1
2010	3171.00	Williams Cr.	P	1.0	1.0	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, CDF, LWW	Lawrence	421759	4107281	420777	4107593	11070207	1
2010	3172.00	Williams Cr.	P	8.5	8.5	Mi.	Escherichia coli (W)	Rural NPS	WBC A	AQL, LWW	Lawrence	432044	4105526	421759	4107281	11070207	1
2012	3594.00	Williams Cr.	P	1.0	1.0	Mi.	Escherichia coli (W)	Runoff from Forest/Grassland/Parkland, Rural, Residential Areas	WBC B	AQL, LWW	St. Louis	716804	4268162	716672	4269382	7140102	1
2010	3280.00	Willow Br.	P	2.2	2.2	Mi.	Escherichia coli (W)	Rural NPS	WBC B	AQL, LWW	Newton	366154	4086266	364028	4084114	11070206	1
2014	3280.00	Willow Br.	P	2.2	2.2	Mi.	Cadmium (S)	Mill Tailings	AQL	LWW, WBC B	Newton	366154	4086266	364028	4084114	11070206	1
2014	3280.00	Willow Br.	P	2.2	2.2	Mi.	Lead (S)	Mill Tailings	AQL	LWW, WBC B	Newton	366154	4086266	364028	4084114	11070206	1
2014	3280.00	Willow Br.	P	2.2	2.2	Mi.	Zinc (S)	Mill Tailings	AQL	LWW, WBC B	Newton	366154	4086266	364028	4084114	11070206	1
2006	955.00	Willow Fk.	C	6.8	6.8	Mi.	Oxygen, Dissolved (W)	Tipton WWTP, Source Unknown	AQL	LWW, WBC B	Moniteau	515565	4276527	522997	4273676	10300102	1
2006	2375.00	Wilson Cr.	P	11.9	14.0	Mi.	Escherichia coli (W)	Nonpoint Source	WBC B	AQL, LWW	Greene/Christian	468463	4116799	464366	4102525	11010002	1

Year	WBID	Waterbody	Cls	Imp Size	WB Size	Units	Pollutant	Source	IU	OU	U/D County	Up X	Up Y	Down X	Down Y	WBD #	Comments
2006	2375.00	Wilson Cr.	P	14.0	14.0	Mi.	Aquatic Macroinvertebrate Bioassessments/Unknown	Springfield SW WWTP	AQL	WBC B, LWW	Greene/Christian	468463	4116799	464366	4102525	11010002	1
2014	2429.00	Woods Fk.	C	5.5	5.5	Mi.	Fishes Bioassessments/Unknown	Source Unknown	AQL	LWW, WBC B	Christian	480105	4082576	483619	4077550	11010003	1

Water quality data summaries for waters on this list can be found on the department's 303(d) Web site at:
<http://www.dnr.mo.gov/env/wpp/waterquality/303d.htm>

Key to List

*Lakes listed for nutrients will be re-evaluated when new nutrient criteria are developed and promulgated.

¹ WBID 103 will be changed to 7566 in the next Standards Revision.

Yr= Year this water body/pollutant was added to the 303(d) List

WBID= unique water body identification number

WB Size: Size of the entire waterbody

CL= water body classification in state water quality standards: P= permanently flowing waters, C= intermittent streams, L1= Drinking water lakes, L2= large multi-purpose lakes, L3= other recreational lakes, US= unclassified stream, UL= unclassified lake

Pollutants = reason the water is impaired. Cd=Cadmium, Ni= Nickel, Pb= Lead, Zn = Zinc, SO4 = sulfate, Cl= chloride, FC = fecal coliform bacteria, NVSS = non-volatile (mineral) suspended solids, D.O. = dissolved oxygen, pH= degree of acidity or alkalinity of water, Hydromod.= Hydromodification, which is typically related to the operation of dams. (W) pollutant is in the water, (S) pollutant is in the sediment, (T) pollutant is in fish tissue. If none of these three options are shown, the pollutant is in the water.

Sources = the pollutant source causing the impairment. WWTP= wastewater treatment plant, PP= Power Plant, Unk.= Unknown, Aban. = Abandoned, Atmospheric Dep. = Atmospheric deposition (primarily rainfall), Mult.= Multiple, NPS= Non-point source, Pt.= Point Source, Rereg. Dam= Reregulation Dam - a low dam downstream of a larger hydroelectric dam.

IU = Impaired Beneficial Use(s). Those beneficial uses, assigned to this water in state water quality standards, that are not being met due to water pollution.

OU= Unimpaired Beneficial Use(s). Those beneficial uses assigned to this water in state water quality standard, that are not affected by the pollution.

Use codes for IU and OU columns are: G= General Criteria, 1G = General criteria pertaining to protection of aquatic life, 1= Protection of aquatic life, 2 = Whole Body Contact Recreation (swimming), 3= Public Drinking Water Supply, 4 = Livestock and Wildlife Watering, 5= Secondary Contact Recreation (Fishing and Boating), 6= Irrigation, 7= Industrial Water

Up X = X coordinate of upstream end of impaired water body (in UTM)

Up Y = Y coordinate of upstream end of impaired water body (in UTM)

Down X = X coordinate of downstream end of impaired water body (in UTM)

Down Y = Y coordinate of downstream end of impaired water body (in UTM)

County U/D = County the impaired segment is in. If the impaired segment is in more than one county, the county of the upstream and downstream ends of the impaired segment are given

Comment: 1= 2014 Assessment indicates impairment, 2= assessment shows existing data insufficient to show 'good cause' for de-listing.

3=Assessed as unimpaired but expected to be retained by EPA, 4= Listed as WBID 7196, Knob Noster St.Pk. Lakes on 2012 List,

5= Listed as WBID 3827, River des Peres on 2012 List, 6= TMDL only addressed Lake Lotawana WWTP.

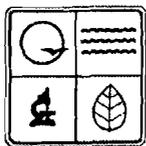
Missouri Department of Natural Resources, Water Protection Program



Missouri Department of Natural Resources
2014 Proposed Section 303(d) De-Listed Waters

Year	WBID	Water Body Name	Pollutant	Delisting Reason	Delisting Comment
2014	3966	Bee Fk.	Lead (S)	WQS attained; original listing incorrect	Reassessed based on geomean vs arithmetic mean as referenced in MacDonalds paper.
2014	2673	Big Cr.	Oxygen, Dissolved	WQS attained; recovery reason unknown	5/45 (11%) samples did not meet in 2012 listing, 2014 listing 5/68 (7.3%) did not
2014	2080	Big R.	Zinc (S)	WQS attained; original listing incorrect	Reassessed based on geomean vs arithmetic mean as referenced in MacDonalds
2014	968	Burris Fk.	Oxygen, Dissolved	WQS attained; new assessment method	Used binomial probability method instead of straight percent calculation.
2014	3168	Chat Cr.	Zinc	4A - TMDL approved or established by EPA	TMDL approved 2006
2014	3168	Chat Cr.	Cadmium	WQS attained; recovery reason unknown	Only one exceedence in last three yrs of data, 2003, 04,06. Addn. mon. scheduled 2013.
2014	1706	Coldwater Cr.	Oxygen, Dissolved	WQS attained; new assessment method	used binomial probability error rate for large sample sizes.
2014	222	Dardenne Cr.	Oxygen, Dissolved	WQS attained; new assessment method	used binomial probability error rate rather than straight percentage.
2014	221	Dardenne Cr.	Oxygen, Dissolved	WQS attained; new assessment method	used binomial probability error rate rather than straight percentage.
2014	690	Dark Cr.	Oxygen, Dissolved	WQS attained; new assessment method	Used binomial probability for large sample sizes rather than straight percent
2014	36	Des Moines R.	Escherichia coli	WQS attained; recovery reason unknown	2005,2006 and 2011 data show compliance with WQ standard
2014	3178	Dry Fk.	Aquatic Macroinvertebrate Bioassessments	Status unknown - Orig listing in error	stream too small to be assessed against regional ref. streams
2014	3964	East Whetstone Cr.	Ammonia, Total	4A - TMDL approved or established by EPA	TMDL for ammonia, BOD approved 2002.
2014	2184	Grand Glaize Cr.	Oxygen, Dissolved	WQS attained; recovery reason unknown	
2014	97	Hays Cr.	Aquatic Macroinvertebrate Bioassessments	WQS attained; original listing incorrect	Re-assessed based on small candidate reference stream scores, not Wadeable reference scores.
2014	7196	Knob Noster St. Park Lakes	Mercury in Fish Tissue	WQS attained; due to change in WQS	Lake Buteo was removed from this WBID and given a new WBID number (7469). That waterbody will be added to 2014 303d list.
2014	2171	Koen Cr.	Fishes Bioassessments	Status unknown - Orig listing in error	Invalid data used for listing.
2014	3839	Maline Cr.	pH	WQS attained; new assessment method	Re-evaluated using binomial probability, type one error rate on a decision of impaired was 0.457.
2014	1709	Maline Cr.	Chloride	WQS attained; recovery reason unknown	Addn. data 2010, 2011. Now meets LMD definition of unimpaired stream.
2014	2183	Meramec R.	Escherichia coli	WQS attained; recovery reason unknown	Most recent 3 yrs of data shows compliance with standard
2014	853	Muddy Cr.	Chloride	WQS attained; recovery reason unknown	Last 3 yrs of data do not exceed chloride standard
2014	170	N. Fk. Cuivre R.	Oxygen, Dissolved	WQS attained; new assessment method	used binomial probability rather than straight percent calculation.
2014	3827	River des Peres	Escherichia coli	Status unknown - Orig listing in error	This segment changed due to re-segmentation, no monitoring sites in this waterbody.
2014	3827	River des Peres	Chloride	Status unknown - Orig listing in error	segment changed due to re-segmentation, no monitoring sites in this waterbody
2014	2170	Shaw Br.	Cadmium (S)	WQS attained; original listing incorrect	Reassessed based on geomean vs arithmetic mean as referenced in MacDonalds paper.
2014	959	Straight Fk.	Chloride	4B - TMDL Alternative	PILO waiting EPA approval.
2014	3763	Tiff Cr.	Fishes Bioassessments	WQS attained; new assessment method	

2014	1225	Trib. to Big Otter Cr.	Oxygen, Dissolved	WQS attained; new assessment method	Used binomial probability rather than straight percent calculation.
2014	3943	Trib. to Foster Br.	Ammonia, Total	WQS attained; due to restoration action	Ashland has upgraded WWTP, are now running a lagoon and mech. plant hybrid
2014	74	Troublesome Cr.	Aquatic Macroinvertebrate Bioassessments	4C - Not caused by a pollutant	SHAPP scores indicate aq. habitat problems.
2014	3217	Turkey Cr.	Lead (S)	WQS attained; original listing incorrect	Reassessed based on geometric vs arithmetic mean as referenced in MacDonalds paper.
2014	1708	Watkins Cr.	pH	WQS attained; new assessment method	Used binomial probability rather than straight percent calculation to make assessment. Error rate was 0.25.
2014	3594	Williams Cr.	pH	WQS attained; new assessment method	used binomial probability error rate for large sample size instead of straight 10 percent.



Missouri
Department of
Natural Resources

Proposed 2014 303(d)
RESPONSES TO PUBLIC COMMENTS

Public Notice
October 15, 2013 – January 31, 2014

Missouri Department of Natural Resources
Water Protection Program
PO Box 176
Jefferson City, MO 65102-0176
800-361-4827 / 573-751-1300

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

The Missouri Department of Natural Resources posted the draft 303(d) list for public comment. The Department accepted written comments from October 15, 2013 through January 31, 2014.

Below is a summary of the public comments received regarding the Proposed 2014 303(d) List of Impaired Waters. All original written comments will also be saved to the public administrative record file and available from the Department's website.

General 303(d) Listing Comments

St. Louis Metropolitan Sewer District (MSD)

Submitted a comment that water bodies currently listed as impaired for water quality standards that are changing or may be changing in the near future (e.g., chloride, ammonia, losing stream bacteria, dissolved oxygen, and nutrients), should be considered a low priority for TMDL development.

MDNR Response and Action:

Currently, the Total Maximum Daily Load (TMDL) program develops the TMDL schedule that is submitted to the U.S. Environmental Protection Agency (EPA) annually. This comment will be shared with the TMDL program staff.

Newman, Comley and Ruth submitted the following comments:

Encourages the Department and the Clean Water Commission to remove all proposed nutrient impaired lake listings from the 303(d) list in their entirety [including specific lakes exceeding nutrient criteria previously approved by the EPA]. The approved criterion is not science based and not tied to the attainment of beneficial uses.

MDNR Response:

Table M of the 10 CSR 20-7.031 provides a list of twenty-five lakes that have site specific nutrient criteria. The proposed nutrient criteria for lakes, with the exception of Table M lakes, were disapproved by EPA. Currently, there are approximately 37 lakes that are proposed on the 2014 303(d) List of impaired waters. Twenty-eight of those lakes are listed as impaired for mercury in fish tissue, while nine lakes are listed for nutrient impairments (total nitrogen, total phosphorus and/or chlorophyll a). Because the Table M lakes maintain water quality criteria, the Department is required to complete water quality assessments on these waters.

The proposed 303(d) list has a column for the "pollutant" and "source." In some instances, the pollutant is unknown. In previous 303(d) lists, the Department used the term "unknown" under the pollutant column, but currently is including "fishes bioassessments" (see Buffalo Creek example). Fish bioassessments are a type of monitoring or test that is performed to support the impairment decision. In the case of bioassessments where the pollutant is

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

sometimes unknown, the pollutant column should (at minimum) include the word “unknown” in the pollutant column as follows “Unknown – fishes bioassessment.”

MDNR Response and Action:

The Department agreed and revisions were made to the proposed 2014 303(d) List following the November 2013 Public Availability meeting to include “Unknown/Aquatic Macroinvertebrates Bioassessments - to the pollutant column. “Unknown” was also added to the four Fish Bioassessments proposed on the 2014 303(d) List.

303(d) listing should be supported by transparent, reproducible, and independently verifiable information and assessments of data quality. The information provided on the 303(d) listing worksheets for each impaired water body is insufficient to make an independent assessment of the quality of the data being used to support impairment determinations.

MDNR Response and Action:

The Department tries to present information in a clear, concise manner that allows for transparency. The Department agrees additional explanation could be added to the assessment worksheets, within the listing methodology document (LMD) and/or 303(d) web site.

Water quality data and aquatic macroinvertebrate data and reports can be accessed from the Department’s website. This information has been available from the Department’s website for a number of years, but may not be widely known or easily located. The web links have been provided here for reference and will be added to the LMD and 303(d) website.

- *Weblink to the Department’s on-line searchable Water Quality Assessment Database.
http://dnr.mo.gov/mocwis_public/wqa/waterbodySearch.do*
- *Weblink to the Department’s Environmental Services Program, Water Quality Monitoring Section. From the below link, you will find links to Aquatic Macroinvertebrates Bioassessment Reports, and on-line database.
<http://dnr.mo.gov/env/esp/wqm/biologicalassessments.htm>*

If information is unclear, the public may contact the Department at the meetings convened to discuss the proposed list, or offer comments to that effect, and the Department will respond.

Water Body Specific Comments

Bee Tree Lake (WBID 7309)

MSD submitted a comment regarding the mercury impairment for Bee Tree Lake. They suggest since the mercury impairment results from atmospheric deposition and given the widespread nature of the problem and diffuse source, the Department should consider the development of a TMDL be low or medium priority.

MDNR Response and Action:

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

Currently, the TMDL program develops the TMDL schedule that is submitted to EPA annually. This comment will be shared with the TMDL program staff.

Big Creek (WBID 2673)

The Missouri Department of Conservation (MDC) submitted a comment regarding the 10% rule assessment on Big Creek. It was recommended, for consistency, the binomial method should be followed.

MDNR Response:

Big Creek was first listed as impaired during the 2012 listing cycle for low dissolved oxygen resulting from unknown sources. The initial listing was based upon 45 samples collected between 2000 and 2008 by the National Park Service. Since the original listing, additional samples have been collected providing a total of 63 samples to be utilized for data analysis. Twenty-four additional samples were collected between 2009 and 2011 (noting no exceedences within this time frame). Based upon the entire 87 sample data set (sample size greater than 30) the frequency of exceedence of the dissolved oxygen standard was less than 10%. Therefore, a binomial method was not required, and Big Creek was requested to be delisted.

Brush Creek (unclassified tributary), Blue River (WBID 0419 and 0418), Line Creek (WBID 3575), Shoal Creek (WBID 0397), East Fork Shoal Creek (WBID 0398), Wilsons Creek (WBID 2375), North Branch Wilsons Creek (WBID 3745), Jordan Creek (WBID 3374), and Jones Branch (unclassified tributary of Pearson Creek)

EPA submitted comments regarding the above streams stating urban stream monitoring completed by the U.S. EPA Region VII Environmental Services Division has identified streams that should be listed for toxic bottom sediments according to the state's methodology. Majority of the data is available on STORET and from KCWaters.org or can be provided by EPA.

MDNR Response:

The Department has downloaded the data provided by EPA into the Department's water quality assessment database. However, due to timing and receipt of the data, the Department does not have adequate time to assess the data and allow appropriate time for stakeholder review, discussion, and comment. The Department requests the assessment and/or listing of these streams be postponed until the 2016 listing cycle.

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

Center Creek (WBID 3203)

EPA submitted a comment regarding Center Creek stating the impairment for zinc is covered by a TMDL.

MDNR Response and Action:

The Department agrees. The information in the Department's database will be corrected for Center Creek and it will be removed from the proposed 303(d) list.

Chat Creek (WBID 3168)

EPA submitted comments on Chat Creek stating the TMDL proposed to delist the stream is for cadmium and not zinc. Therefore, this water body should remain on the 303(d) list for cadmium.

MDNR Response:

The data for Chat Creek was evaluated as per the 2014 LMD. There was only one exceedance of cadmium during stable flow conditions in the last three years of data, and thus it was not listed as impaired. However, the tributary that delivers most of the cadmium and zinc to Chat Creek is Baldwin Park Tributary, which is on the proposed 2014 303(d) List for cadmium.

Coldwater Creek (WBID 1706)

EPA submitted a comment regarding Coldwater Creek stating that not all available data was assessed. Additional chloride samples are available and should be included in the assessment. The chloride concentration on 2/21/2012 was 274 mg/L which exceeds the chronic water quality criterion. This data is available from the Department's website data search site (http://www.dnr.mo.gov/mocwis_public/wqa/waterbodySearch.do). With the sample taken on 1/5/2010 identified in the assessment spreadsheet for this water body, there was more than one exceedance of the chronic chloride criterion in the last three years.

MDNR Response and Action:

The Department agrees this was an assessment error. The additional chloride samples were included in the data set and reassessed.

Fox Creek (WBID 1842) and Dardenne Creek (WBID 0221)

EPA submitted a comment regarding Fox Creek asking if the unknown listing from 2012 is being replaced with an aquatic macroinvertebrate bioassessment.

MDNR Response:

Yes.

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

Grindstone Creek (WBID Hinkson1009), Hinkson Creek (WBID 1008), and Hominy Creek (WBID 1011)

The City of Columbia submitted a comment stating the data used by the Department to judge the streams as impaired for Grindstone Creek, Hinkson Creek and Hominy Branch to be old and does not believe the data is representative of current conditions due to removal of five wastewater treatment plants from the watershed since 2004. In addition, the proposed 303(d) list assumes the sources of the pollutants (*E. coli*) are due to urban and rural nonpoint sources, and storm sewers. The City of Columbia states that since there is no solid proof of the sources, the sources should be listed as “unknown.”

MDNR Response:

Grindstone Creek was first listed as impaired for E. coli during the 2006 listing cycle. A water body will be maintained on the impaired waters list until significant improvements have been completed in the watershed that addresses the impairment, and follow-up monitoring has been completed and data analysis indicates the beneficial use(s) is(are) now being met. At that time, the Department will request the water body be delisted.

Hinkson Creek was first listed as impaired for E. coli during the 2010 listing cycle. As previously discussed, a water body will be retained on the impaired waters list until significant improvements have been completed in the watershed that address the impairment, follow-up monitoring has been completed, and data analysis indicates the beneficial use(s) is(are) being met. At that time, the Department will request the water body be delisted.

Hominy Branch was first listed as impaired for E. coli during the 2012 listing cycle. As previously discussed, a water body will be maintained on the impaired waters list until significant improvements have been completed in the watershed that addresses the impairment, follow-up monitoring has been completed, and data analysis indicates the beneficial use(s) is(are) now being met. At that time, the Department will request the water body be delisted.

There may be data collected after the date certain wastewater treatment facilities were taken off-line. If water quality data analysis indicates improvement resulting from the removal of these facilities, and the beneficial use is now being met, then the Department will request the water body be delisted for E. coli impairment during the 2016 listing cycle.

The presence of E. coli is an indicator of fecal contamination. E. coli is present in the intestines of warm blooded animals which is related to both point or nonpoint sources. In the absence of known point sources in the watershed, nonpoint sources are considered the major contributing factor to fecal contamination. Nonpoint source pollution can occur from several diffuse sources and cannot be pin-pointed to one single contributor. Aerial photos of the watershed are referenced to determine the major landuses contributing to the impairment.

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

*As part of its adaptive management approach, the Department is currently collecting samples from all three of the aforementioned streams. The data collection efforts are still occurring and the data will be available and assessed during the 2016 listing cycle. To aid in the assessment process, the Department requests information regarding the management practices that have been implemented since these streams were initially listed as impaired. This will help the Department understand any improvements that may be indicated through data analysis and will provide added justification to request the water bodies be delisted for *E. coli* impairments.*

Hays Creek (WBID 0097) and Dry Fork (WBID 3178)

EPA submitted comments regarding Hays Creek and Dry Fork. EPA reviewed the biological assessment worksheets and stated statistical significance was not calculated to show that reference streams in the same ecoregions were significantly larger. In addition, the state used control streams instead of the reference streams identified in Table I as directed in the state's water quality standards.

MDNR Response:

Over the last couple years, the Department biologists monitored 2nd order to small 3rd order streams to gain a better understanding of an impairment or extent of impairment. These streams are often smaller than the reference streams listed in Table I of 10 CSR 20-7.031. In order to make an appropriate and accurate stream comparison, it is extremely important to assess small streams against others of similar size and features. Therefore, several small control streams are chosen based upon similar Valley Stream Types (VST) characteristics as the study stream. The Department biologist thoroughly reviews the VST database and ground-truths all the control streams. The Department is confident the control streams are appropriately selected through thorough investigation and comparison using the best available methods (VST, ground-truthing, etc.).

Koen Creek (WBID 2171)

EPA submitted a comment on Koen Creek assessment worksheet. The 1995 EPA REMAP was discounted because of questions about its quality. This data should be considered valid. If there is no additional data to change the assessment, then this water should remain on the 303(d) list.

MDNR Response:

The Department chose not to use the REMAP fish community data because the collection method differed somewhat from the methods used by the RAM program, and the Department was concerned the differences may have had an effect on the IBI scores. The Department also had some concerns that despite being a third order stream, there was very little water in this stream most of the year.

Little Beaver Creek (WBID 1529)

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

EPA submitted a comment regarding Little Beaver Creek questioning if both sediment and macroinvertebrate community impairments should be on the 303(d) list.

MDNR Response:

There is significant amount of fine sediment deposition downstream of the Smith Sand and Gravel site, and the Department is assuming this is the reason for the low macroinvertebrate scores.

Little Blue River (WBID 0422)

The City of Independence submitted comments regarding the proposed listing for Little Blue River. It was mentioned that data collected by the USGS at 39th Street was not provided on the assessment worksheets and this data is available from the USGS website. In addition, the data summary sheet (assessment worksheet) indicates that a statistical procedure was used to adjust *E. coli* data to give greater weight to non-storm events, given the USGS data set was biased toward stormwater influenced sampling. The city wanted to let the Department know that extended periods of high flow can largely be attributed to the upstream reservoir releases, not stormwater runoff. Other information and comments provided by the city related to TMDL development considerations.

MDNR Response and Action:

The Department has re-assessed the water body to take into account the upstream reservoir releases mentioned. The Department also provided an explanation of the statistical adjustment procedures that were followed (the documents were provided to the city of Independence on 01/23/2014 via e-mail correspondence). The assessment outcome remains the same.

Regarding the USGS site at 39th Street: As mentioned, the Department will need to obtain this information from the USGS website. However, it will take a considerable amount of time to import the data into the Department's database and reassess within this public comment period. The Department would like to include this data during the 2016 assessment cycle. However, with that said, according to the LMD, the Department will conduct a bacteriological assessment on the most recent 3 years of data. Therefore, the addition of the site data from 39th Street between 2006-2009 will provide historical information, but will not be used for assessment purposes because of the availability of newer information.

North Fork Cuivre River (WBID 0170), Williams Creek (WBID 3594), Burris Fork (0968), Coldwater Creek (WBID 1706), Dardenne Creek (WBID 0221 and WBID 0222), Dark Creek (0690), Grand Glaize Creek (WBID 2184), Maline Creek (WBID 1709), Tributary to Big Otter Creek (WBID 1225), and Watkins Creek (WBID 1225).

The EPA submitted comments regarding the use of the binomial probability calculations for the above water bodies. EPA reviewed the assessment worksheets and stated the assessments conducted on the above water bodies were not consistent with the 2014 Listing Methodology Document procedures.

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

MDNR Response:

The Department has used the binomial probability distribution to assess the “ten percent rule” pollutants with more than 30 samples. The Department has done so because the binomial is a better method than a straight ten percent calculation.

The Department only uses the last three years of data when evaluating toxics, however, for “ten percent rule” pollutants, the Department uses older data as long as it appears to remain representative of current conditions. For instance, Coldwater Creek, the last three years of data were assessed for chloride, while the entire data set (182 data points) for dissolved oxygen was used for the assessment. MDNR requested clarification from EPA: Should the state be only looking at the last three years of data for the “ten percent rule” pollutants?

MDC submitted a comment regarding the delisting of Dardenne Creek (WBID 0221 and WBID 0222). It was recommended the new data be assessed using the binomial statistical method. MDC also recommends additional comprehensive dissolved oxygen monitoring be conducted.

MDNR Response:

Both water body segments were listed for low dissolved oxygen resulting from unknown sources.

- *Dardenne Creek WBID 0221 was originally listed as impaired during the 2010 listing cycle. The initial listing for WBID 0221 was based upon approximately 58 data points collected between 2000 and 2009. During the 2014 listing cycle, no additional data was available.*
- *Dardenne Creek WBID 0222 was originally listed during the 2006 listing cycle. The initial listing for WBID 0222 was based upon 52 data points collected between 2000 and 2005. For the 2008 listing cycle, approximately 25 additional data points were available for assessment (2006 and 2008). During the 2014 listing cycle, no additional data was available.*

Based upon the entire data set of each water body segment, it was determined that neither water body segment exceeded the 10% rule. Therefore, according to the 2014 LMD, the binomial method was not necessary.

Additional monitoring is scheduled for Dardenne Creek in the upcoming monitoring year, which will include dissolved oxygen measurements. The new data will be assessed to determine if conditions have changed since the last data collection efforts.

North Fork Cuivre River (WBID 0170)

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

EPA submitted a comment regarding North Fork Cuivre River data collected from WBID 0170. The data collected from the North Fork Cuivre River (WBID 0158) below the confluence with Indian Creek (WBID 0171) shows the North Fork Cuivre (WBID 0158) is not impaired, but it does not show just cause that the upstream segment of the North Fork Cuivre River (WBID 0170) is not impaired.

MDNR Response and Action:

The Department agrees. The North Fork Cuivre River (WBID 0170) will be removed from the proposed delist and retained on the 303(d) list of impaired waters list until additional data is collected.

Middle Fork of the Black River (WBID 2744)

Newman, Comley and Ruth provided a comment regarding the aquatic macroinvertebrate assessment. The listing worksheet indicated the impairment is based on crayfish densities at a site below Strother Creek. However, no assessment of the impact of habitat on crayfish density was presented. Sediment chemistry and water chemistry do not indicate impairment, a USGS study on Middle Fork sediments found 99 percent survival, and the invertebrate assessment was 17. The weight of evidence at this site points to attainment of aquatic life beneficial use, and the listing should be removed.

MDNR Response and Action:

The Department agrees, the crayfish data suggests possible impairment but the sediment and water chemistry do not indicate acute/chronic problems. The Department will place the Middle Fork of the Black River (WBID 2744) in Category 2B until additional data is available.

Newman, Comley and Ruth submitted a comment regarding the proposed listing of Strother Creek. The bioassessment worksheet was provided on the Department's website and wondered if the creek listing was in error.

MDNR Response and Action:

The Department inadvertently missed including the Strother Creek's macroinvertebrate assessment worksheet to the zip file located on the Department's website. Upon notification, the worksheet was added to the website and an electronic copy forwarded to the commenter via e-mail communication.

Peruque Creek (WBID 0217 and 0218)

EPA submitted a comment regarding the Peruque Creek delisting. EPA indicated the delisting for inorganic sediment is not accompanied by any data files showing inorganic sediment is no longer exceeding the narrative translator. In addition, there are no fish assessment data provided on the Department's website for the newly listed impairments on these two segments.

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

MDNR Response and Action:

The Department agrees. The sediment deposition worksheets will be included on the Department's 303(d) website. The Department did not include an assessment for the fish community because the Department does not have one. The listing for Peruque Creek was added to the list by the EPA and the rationale was included in their final decision document for one of the earlier 303(d) lists. The fish bioassessment replaces the inorganic sediment impairment.

Salt River below Clarence Cannon Dam (WBID 0091 and WBID 103)

The Department of Energy, Southwestern Power Administration submitted a comment regarding the proposed listing of the Salt River below Clarence Cannon Dam. The Southwestern Power Administration stated the lake stratification and watershed nonpoint source loading should be listed as causes of the low dissolved oxygen impairment in the Cannon Dam Re-Regulation Pool. They also request that the Department implement a site-specific dissolved oxygen water quality standard for the Cannon Dam Re-Regulation Pool that is seasonally lower than 5.0 mg/L.

MDNR Response and Action:

The Department believes that listing the dam as the source is a more general term that also includes the sources noted by the Southwestern Power Administration. The request for site specific criteria will be forwarded to our Water Quality Standards staff.

Table Rock Lake (WBID 7313)

The City of Branson submitted a comment regarding the county listed for Table Rock Lake. The proposed 303(d) list shows the county as "Taney County." However, only a small portion of the lake is located in Taney County, and wondered if the county should be listed as "Stone County."

MDNR Response:

When we assign GPS (UTM) data points for impaired lakes we give the location of the dam. If only an arm of the lake is impaired, we would give the downstream point of the impairment and assume everything in the upstream direction from that point is impaired. Since the location of the dam is in Taney County, that county name is used.

Tiff Creek (WBID 3763)

MDC submitted a comment to suggest changing the delisting reason to be more consistent with the worksheet statement "suspected impairment – no habitat data."

MDNR Response and Action:

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

The Department agrees with your comment regarding the Tiff Creek delisting comment. The delisting comment will be revised to align with the statement provided on the 2014 assessment worksheet.

Troublesome Creek (WBID 0074)

EPA submitted comments on Troublesome Creek regarding the biological assessment worksheet. EPA states that sediment is itself a pollutant and if sediment is preventing the stream biota from meeting full compliance, the water body should be 303(d) listed for sediment.

MDNR Response:

The section of Troublesome Creek in question is in a lower gradient upland setting near the upper end of the watershed. This portion of the stream channel is developed in glacial till and will naturally have a significant amount of fine sediments regardless of current landuse. The Department views this as a natural condition of the stream that limits habitat quality, rather than a pollutant that can be abated. Because of this the Department believes it was appropriate to re-categorize Troublesome Creek as a category 4C.

Turkey Creek (WBID 3282)

EPA submitted a comment regarding the Turkey Creek assessment worksheet. The worksheet indicates impairment for lead in the water but not in the sediment.

MDNR Response:

The Department would like to clarify. There are two Turkey Creek assessment worksheets, one covering WBIDs 3216 and 3217 located in Jasper County, while the other WBID 3282 is located in St. Francois County. WBID 3216 and 3217 assessment worksheet provides information on the impairment for lead in sediment, and WBID 3282 assessment worksheet provides information on the impairment for lead in water.

Salt River (WBID 0103)

EPA submitted a comment regarding the Salt River to indicate there isn't a dissolved oxygen assessment sheet for this site.

MDNR Response and Action:

The WBID was changed to 7556 and it should have been noted on the new worksheet. This worksheet will be updated and reposted on the Department's 303(d) website.

Shibboleth Branch (WBID 2119)

EPA submitted a comment regarding Shibboleth Branch to indicate it has an EPA approved TMDL for lead and zinc in sediment. EPA provided a follow-up response stating they commented in error. The TMDL was approved for a different segment of Shibboleth Branch.

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

On 12/30/2013, EPA noted an error in their comments for Shibbleth Branch. The approved TMDL segment for Shibbleth Branch is located upstream of the proposed impaired segment.

Weatherby Lake (WBID 7071)

The Kessinger Law Firm submitted a comment regarding Weatherby Lake, stating it does not believe the lake should be classified as a water of the state because the Clean Water Act does not apply to this lake under 33 U.S.C §1315. Weatherby is an artificial private lake. There is no regular flow of water from the lake, and does not empty into any waters of the United States (above or beneath ground). It is believed the lake is not “navigable waters” as defined under the Clean Water Act.

The lake owners conduct private testing of its waters on a consistent basis to ensure the water quality. The tests of the Department that rely overwhelmingly on “nutrient data by the University of Missouri” from 1996-2010 which are likely inaccurate.

A request to the Department was made to remove the Weatherby Lake from the list of impaired waters, or as an alternative, provide information as to the Department’s procedures to remove the Lake from the impaired waters list.

MDNR Response:

According to 10 CSR 20-7.031, Weatherby Lake is 185 acres and a Class L3 lake. According to 10 CSR 20-7.031, a Class L3 lake is defined as “Other lakes which are waters of the state. These include both public and private lakes.” 10 CSR 20-7.031 further states Weatherby Lake has the following designated uses: Livestock and Wildlife Watering, Protection of Warm Water Aquatic Life, Human Health Fish Consumption, Whole Body Contact Recreation-Category A, and Secondary Contact Recreation. Additional information can be found within the 10 CSR 20-7.031. The Code of State Regulations is available electronically from the Missouri Secretary of State’s website

<http://www.sos.mo.gov/udrules/csr/current/10csr/10c20-7a.pdf>

Because Weatherby Lake is considered waters of the state with assigned beneficial uses, the Department is responsible for assessing the health of the lake to ensure the uses are meeting water quality standards. Table M of 10 CSR 20-7.031 provides information regarding the criteria set for specific lakes within the state. Weatherby Lake water quality criteria can be found in this table. The information has been summarized here for convenience.

<i>Lake Ecoregion</i>	<i>Lake</i>	<i>County</i>	<i>Site-Specific Criteria (ug/L)</i>		
			<i>TP</i>	<i>TN</i>	<i>Chl</i>
<i>Plains</i>	<i>Weatherby Lake</i>	<i>Platte</i>	<i>16</i>	<i>363</i>	<i>5.1</i>

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

As previously mentioned, Weatherby Lake data has been collected through the Lakes of Missouri Volunteer Program (LMVP) since 1998. The program is sponsored by the University of Missouri Columbia and supported by the Department. Data collection efforts are documented through a quality assurance project plan (QAPP) that is developed in accordance to EPA's requirements and guidance procedures. Additional information about QAPP procedures can be viewed from EPA's website:

<http://www.epa.gov/quality/qapps.html>, <http://www.epa.gov/quality/qapps.html>. Data generated by the LMVP is shared with the Department.

If other water quality data of quality and quantity are available, the Department would like the opportunity to review the data. The data package, at minimum, should include the sample dates, time, site locations, field sample collection type: grab, depth integrated, composite, etc.), QC information (field and laboratory), sample collector training and experience, name of analytical lab, and methods and detection limits used during analysis.

Currently, the processes for removing the lake from the impaired waters list would include the implementation of land management practices or education outreach efforts to reduce nutrient inputs to the lake system. The process for removing the lake from the waters of the state designation is beyond the 303(d) listing process and will involve other Department staff.

West Fork of the Black River (WBID 2755)

Newman, Comley and Ruth submitted a comment regarding the proposed listing of the West Fork of the Black River. There are three different listing years under column "Year First Listed" for lead and nickel in sediment impairment, and therefore, would like the Department to explain the date discrepancies.

MDNR Response and Action:

Yes, the Department agrees. This is an error, and will be corrected to reflect that nickel in sediment was first listed in 2008, the same year that lead was also listed.

Additional comments were received regarding the assessment worksheets. A review of the sediment assessment worksheet data showed inconsistencies with information received during an open records request. Clarification was requested regarding several inconsistencies.

MDNR Response and Action:

The Department edited and re-assessed all sediment chemistry worksheets handling all duplicate samples in a consistent manner and recalculated averages as geometric mean. A summary of the updates were provided to the commenter via e-mail.

- *Bills Creek data was removed for it did not contain any nickel, lead, or zinc metals information (Manganese data only).*
- *All duplicate samples were merged per stream location to provide a single average sample value. The mean data are noted with an asterisk (*).*

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

- *Any previously missing data were included in the new assessment.*
- *The new assessment did not change the status of the water body.*

Wilsons Creek (WBID 2375), Jordan Creek (WBID 3374), and Pearson Creek (WBID 2373)

The City of Springfield and EPA submitted comments on the above streams for not being on the proposed list, nor was information available for these streams. EPA indicated the TMDL has been withdrawn so these waters again need a TMDL and should be relisted.

The City of Springfield indicates the age of the bacteria data for Pearson Creek is 9 to 13 years old. The city has recent data on Jones Branch, which indicates levels are good within this tributary and believes conditions have improved in Pearson Creek. The water body should be assigned to Category 2B or 3B and the potential impairment not include “urban runoff/storm sewers” as currently proposed.

The City of Springfield commented that Wilsons Creek was originally listed for bacteria impairment for losing stream protection in 2010 and contends the losing stream *E. coli* criterion is not scientifically supported.

EPA stated the TMDL for Wilsons, Jordan, and Pearson creeks has been withdrawn so these waters again need a TMDL and should be relisted.

MDNR Response and Action:

During the 1998 listing cycle Wilsons and Pearson creeks were listed as impaired for unknown pollutants from unknown sources. It was during the 2010 listing cycle when both of these streams were removed from the impaired list due to TMDLs developed by EPA. These TMDLs have since been withdrawn and, therefore, the waters returned to the 2014 303(d) list of impaired waters.

During the 2004/2006 listing cycle, both Wilsons and Pearson creeks were listed as impaired for bacteria. A water body will be maintained on the impaired waters list until significant improvements have been completed in the watershed that addresses the impairment listing or water quality data indicates improvements.

During the 2004/2006 listing cycle, Jordan Creek was impaired for low dissolved oxygen due to unknown reasons. It was during the 2010 listing cycle, Jordan Creek was removed from the impaired waters list due to the water body meeting water quality standards.

The City of Springfield also commented the toxicity data for Wilsons Creek is no longer representative of current conditions and conditions have greatly improved since the data were collected. In addition, the city states the Department should reevaluate habitat conditions for Wilsons, Pearson, and Jordan creeks. The city believes the study stream segments may be smaller than those of reference stream orders, and under Missouri’s new rule these sections of Wilsons, Jordan, and Pearson Creek will be classified as headwater streams.

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

MDNR Response:

The Department does not understand this concern at this time. Currently, Wilsons and Pearson creeks are not listed due to toxic conditions. However, as stated by EPA in a previous comment (page 3), EPA Region VII Environmental Services Division has recently identified streams [Wilsons Creek (WBID 2375), North Branch Wilsons Creek (WBID 3745), Jordan Creek (WBID 3374), and Jones Branch (unclassified tributary of Pearson Creek)] that should be listed for toxic bottom sediments according to the state's methodology. A majority of this data is available on STORET or can be provided by EPA.

EPA requested the Department assess this data for incorporation into the proposed 2014 303(d) list. The Department has downloaded the data provided by EPA into the Department's water quality assessment database. However, due to timing and receipt of the data, the Department did not have adequate time to assess the data and allow appropriate time for stakeholder review, discussion, and comment. The Department requests the assessment and/or listing of these streams be postponed until the 2016 listing cycle.

Whetstone Creek (WBID 1505U)

EPA submitted comments on Whetstone Creek to indicate the TMDL used to delist the creek was not approved for the upstream unclassified segment. The TMDL does not target a loading capacity which would result in meeting water quality standards.

MDNR Response:

The Department does not understand EPA's decision or statement for East Whetstone Creek 1505U (previous numbered as WBID 3964) and the justification for leaving this segment on the proposed 2014 303(d) list. The original TMDL allocated a point source ammonia load of zero pounds for this segment of the creek, which is currently impaired by ammonia solely by the Mountain Grove lagoon discharge. It would seem that correction of the problem lies in the setting and enforcing water quality based permit limits, not with correcting a deficiency in the TMDL.

Woods Fork (WBID 2429)

Newman, Comley and Ruth submitted comments regarding the proposed listing of Woods Fork. It was noted that the IBI score chart has a stream order of 1 and 2 with corresponding IBI scores for categories of unimpaired, inconclusive, suspected impairment and impairment. In previous meetings with MDC and MDNR, there was consensus that it is not appropriate to utilize fish IBI for first and second order streams. Therefore, why is this column included in the data sheet?

MDNR Response:

First through fifth order streams will be assessed when available data allows. Assessing all stream orders provides the Department an overall view of the health of a water. The RAM

Proposed 2014 303(d) List of Impaired Waters – Summary of Public Comments

data may be used to show 1st and 2nd order streams are unimpaired but the LMD does not allow use of the RAM data to rate these streams as impaired.

The bioassessment data sheet states that “a review of concurrent habitat scores indicate habitat was not impaired at the time of each fish survey.” However, there was no habitat data/information included in the data sheet. It has been requested the Department revise and supplement its data sheets to include habitat data/information for both the test stream/study and local reference streams.

MDNR Response and Action:

The habitat scores for Woods Fork and reference streams were provided by MDC. The QCPH1 (habitat) scores were added to the assessment worksheet for Woods Fork (an electronic copy was provided to the commenter via e-mail communication).

ORIGINAL

**BEFORE THE MISSOURI DEPARTMENT OF NATURAL
RESOURCES
MISSOURI CLEAN WATER COMMISSION**

**PUBLIC HEARING
OF
303(d) IMPAIRED WATERS LISTING
And
2016 LISTING METHODOLOGY DOCUMENT**

HEARING HELD ON JANUARY 22, 2014

NATIONWIDE SCHEDULING

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BEFORE THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION HEARING

PUBLIC HEARING
OF
303(d) Impaired Waters Listing and 2016 Listing Methodology
Document

January 22, 2014
Missouri Department of Natural Resources
Lewis and Clark State Office Building
1101 Riverside Drive
Jefferson City, MO 65102

THE COURT REPORTER:
Jenna Petree, CCR #1347
MIDWEST LITIGATION SERVICES
401 Locust Street
Columbia, MO 65201
573-449-0561

1 MR. MADRAS: Good morning. I would like to
2 welcome everyone to the public hearing on the 2014 303(d)
3 impaired waters list. I'm John Madras of the Water
4 Protection Program and I would like to welcome everyone who
5 is here to testify and speak their thoughts today. First I
6 would like to introduce Marshall Wilson, our hearing
7 officer who is with us today and we'll go from there.
8 Marshall, if you could proceed.

9 MR. MARSHALL: Good morning. The Department
10 will now begin the public hearing on the proposed 2014
11 impaired waters list and the 2015 listing methodology
12 document. My name, as John said, is Marshall Wilson and I
13 have been assigned with the task of conducting this hearing.

14 This hearing is being conducted pursuant to
15 Section 644.036.5 of the Revised Statutes of Missouri. The
16 purpose of this public hearing is to provide the Department
17 an opportunity to present testimony and to provide the
18 public the opportunity to comment on the proposed list and
19 the listing methodology.

20 This public hearing is not a forum for debate
21 or resolution issues. The Department asks that those
22 commenting be concise and not repeat the comments that have
23 already been made by others. We will first hear testimony
24 from the Department. Following the Department's testimony
25 the public will have the opportunity to comment. We ask

1 that all individuals present fill out an attendance card so
2 that our records are complete. If you wish to present
3 testimony, please indicate that on your attendance card.
4 When you come forward to present testimony please speak
5 into the microphone and begin by identifying yourself for
6 the court reporter.

7 Following the public hearing today, the
8 Missouri Clean Water Commission will review the testimony
9 submitted and make appropriate modifications to the
10 proposed 2014 impaired waters list and the 2016 listing
11 methodology documents. The Commission plans to take final
12 action at the April 2, 2014 meeting.

13 The court reporter will now swear in anyone
14 wishing to testify at this public hearing today. Will all
15 those planning to comment, please stand.

16 The following witness were sworn: Trish
17 Rielly, Trent Stover, Robert Brundage, Leslie Holloway, of
18 lawful age have been produced and sworn and testified as
19 follows:

20 MR. MARSHALL: All right. I believe Ms. Rielly
21 from the Department will start us off.

22 MS. RIELLY: Good morning. I would like to
23 thank you everyone for setting up this hearing. My name is
24 Trish Rielly, I'm the supervisor with the monitoring and
25 assessment unit within the Water Protection Program and

1 today I will provide information on the proposed 2014
2 303(d) list of impaired waters and then the 2016 listing
3 methodology that are currently posted on the Department's
4 website for public comment.

5 So first I would like to provide some
6 information on the 2014 303(d) list of impaired waters and
7 those waters proposed for delisting. So a little bit of
8 background, the federal Water Pollution Control Act,
9 Section 303(d) requires states to biannually or once every
10 two years submit to the US EPA Protection Agency, a list of
11 impaired waters for which adequate pollution controls have
12 not yet been required. The Commission approved the 2014
13 listing methodology back in May 2, of 2012, which was
14 followed to assess the waters on the proposed 2013 303(d)
15 list that's being discussed today. The list was placed on
16 public notice on October 15 and will continue through
17 January 31 of 2014.

18 The Department has held to two public
19 availability meetings to discuss the draft 303(3) list.
20 These meetings were held on November 13 of 2013 and
21 December 11 of 2013. A list of attendees and summary of
22 meetings can be found on the Department's website. As of
23 January 21 of 2014, the Department has received and
24 responded to five written comments on the proposed 303(d)
25 list. I would like to provide a summary of the 2014 303(d)

1 list of impaired waters.

2 The proposed list being presented today is
3 composed of 386 water body pollutant pairs. And 56 of
4 those are new to the 2014 proposed list and the remaining
5 320 listings are carried over from the EPA approved 2012
6 303(d) list. The six most common pollutant categories on
7 the list are bacteria, which there is a 112 listings; heavy
8 metals and water sediment, there are 90 listings; dissolved
9 oxygen, 65 listings; mercury and fish tissue, 42 listings;
10 biological impairments based on bio-monitoring, 19
11 listings; and chloride, 17 listings. The five most common
12 pollutant sources were: mining and smelting, which were 91;
13 unknown, 79; rural nonpoint source, 62; atmospheric
14 deposition, 43; and urban runoff, 36.

15 The summary of the proposed waters for
16 delisting, there is a total of 31 water body pollutant
17 pairs from the 2012 list are being proposed for delisting.
18 Of the 31 proposed for delisting, ten now meet water
19 quality standards. Eleven are due to new assessment
20 methods, two now either have an approved TMDL or permanent
21 in lieu of a TMDL, and five are due to being originally
22 listed in error, and three due to changes in definition of
23 the pollutant or re-sedimentation of the water body. So
24 that's a summary of the 2014 303(d) list, the proposed
25 303(d) list. Now I'm going to talk about the proposed 2016

1 listing methodology.

2 A little bit of background, the listing
3 methodology is a document that describes how the Department
4 will use water quality data to determine if waters of the
5 state are impaired. The Department meet with staff and
6 stakeholders and other interested members of the public and
7 we meet once every two years to revise the document as
8 needed. The proposed 2016 listing methodology was placed
9 on public notice of October 15, 2013 and runs concurrently
10 with the public notice for the 303(d) list. The Department
11 held two public availability meetings again in concurrent
12 with the 303(d) list and those again were held on November
13 13 of 2013, December 11 of 2013 and again the list of a
14 attendees and summary of the public availability meeting
15 discussions are -- can be found on the Department's
16 website.

17 So as of January 21, 2014, the Department has
18 responded to one written comment on the proposed listing
19 methodology. The summary of the changes that have
20 occurred, a majority of the revisions made to the 2014
21 listing methodology that was approved by the Commission in
22 May of 2012 related to the addition of clarifying
23 statements or information related to biological assessments
24 and then minor corrections to some of the tables within
25 that document.

1 The updates to the biological assessment
2 included the recommendations provided by the biological
3 assessment group to consult with the Missouri Department of
4 Conservation on the evaluation on habitat scores and other
5 considerations when looking at streams with low fish
6 community scores. We also included an appendix
7 describing -- included in the appendix describing for using
8 fish community data for listing and assessment purposes.
9 And then we added clarifying -- to clarify that fish
10 community data will only be assessed on third to fifth
11 order streams and then added clarification regarding the
12 weighted evidence approach.

13 Minor corrections or clarifications included
14 the expansion of the statistical functions using Microsoft
15 Excel, the processes followed for sediment quote
16 calculations, correcting information in tables that were
17 inadvertently missed during previous methodology revisions
18 and then there were several places in the document where
19 language has been added or modified, but only for purposes
20 of clarification and it did not represent any modification
21 of the assessment process.

22 We recommend -- or actually the purpose of
23 today's hearing is to introduce both the 2014 303(d) list
24 of impaired waters and the draft of the 2016 listing
25 methodology and to allow the public to provide comments.

1 The Department requests the Commission's approval of the
2 document in the April Commission meeting. And then in
3 closing I would just like to note what information is
4 available on the Department website.

5 We have the proposed 2013 303(d) list and the
6 assessment worksheets, a list of the waters on the 2012 303
7 (d) list that are proposed for removal from the 2014 list,
8 along with the corresponding assessment worksheets. The
9 proposed 2016 listing methodology document is available
10 online and within that document we have noted where all the
11 corrections or updates have been made and those are made in
12 the comment section of the document. And then also summary
13 of the public availability meeting discussions that were
14 held on November 13 and December 11 of 2013 are also posted
15 on the website.

16 And then we encourage the public to provide
17 written comments on the proposed 303(d) list and the
18 listing methodology, which we'll receive through January 31
19 of 2014. All public comments along with the Department's
20 responses will become part of the Public Administrative
21 record and will be made available on the Department's
22 website in the future. Thank you very much.

23 MR. MARSHALL: Thank you, Ms. Rielly. All
24 right. Our first public comment will be Leslie Holloway.
25 Ms. Holloway, if you would identify yourself for the

1 reporter please.

2 MS. HOLLOWAY: Leslie Holloway representing
3 Missouri Farm Bureau. My comments today are primarily on
4 the listing methodology document. And I was able to attend
5 one of the public stakeholder meetings that the Department
6 held. I was involved with the biological data work group
7 that was convened to consider several issues in conjunction
8 with the listing methodology. And I would like to today go
9 through a few of specifics to the revised proposed listing
10 methodology document where my particular interest lie and
11 will be part of my written comment submitted to the
12 Department at a later date.

13 On page 15 under, "Other Quality
14 Assurance/Quality Control" -- excuse me -- "Other Data
15 Quality Considerations," the data age section. This is an
16 issue that I have raised previously before the Clean Water
17 Commission and in written comments and that will be
18 something that I will ask for the Department to review
19 further with stakeholders. On page 16 the, data type and
20 amount and information content had had some discussions
21 previously with staff who were very willing to sit down and
22 review those and would like to have further discussion on
23 how that is addressed formerly in the listing methodology.
24 Specifically about the amount of samples upon which some of
25 the impairment listings are based.

1 On page 17, how water quality data is
2 evaluated to determine whether or not waters are impaired
3 for 303(d) listing purposes. The language in that section
4 relative to weight, specifically the sentence that reads,
5 "Examples of other relevant data might include biological
6 data on fish or aquatic invertebrate animals." And the new
7 language reading which will be giving greater weight on the
8 other types. The sentence continues to read, "or toxicity
9 testing of water sediments."

10 On page 25, getting into the tables towards
11 the end of the document, "Protection of aquatic life." The
12 discussion of the aquatic invertebrates, DNR protocol and
13 the NBC ram protocol have been part of subjects of
14 extensive discussions with the biological data work group
15 and it is unclear yet to me and to others who participated
16 in the work group how some of the decisions were reached.
17 And it's difficult to interpret exactly what these tables
18 are, how these tables will be translated into listing
19 waters. So again, we'll be asking for additional
20 stakeholder discussion with the biological data work group
21 and those same comments apply to Tables B1 and B2 relative
22 to biological monitoring.

23 So in summary, generally we have commented on
24 more than one occasion and are reiterating our comments
25 that there is increased reliance on Missouri Department of

1 Conservation data and we would urge caution in the use of
2 that data which has not been formatted or collected
3 specifically for the purpose of water quality regulation
4 but rather for the purposes the Department of Conservation
5 is charged with in protecting wildlife, forestry and fish
6 resources, which we believe in some cases may coincide with
7 what the 303(d) listing is all about and in other cases may
8 not. But we don't think that it's clear yet exactly how
9 some of those thresholds are being determined. So we are
10 asking DNR to reconvene the biological data work group in
11 advance of the Commission taking action on the listing
12 methodology document. I appreciate the opportunity to
13 testify.

14 MR. MARSHALL: Thank you, ma'am. All right.
15 Next would be Mr. Brundage. Good morning, Robert. Please
16 identify yourself for the record.

17 MR. BRUNDAGE: Robert Brundage, I'm with the
18 law firm of Newman, Comley and Ruth here in Jefferson City.
19 Thank you for the opportunity to testify. Mr. Wilson, no
20 offense to you, sir, however when I same came here today. I
21 was curious if the Clean Water Commission was going to be
22 here today and I did not understand or appreciate that the
23 history of having this public hearing in front of the Clean
24 Water Commission has changed. I would hope that there
25 would be an opportunity to speak to the Clean Water

1 Commission face-to-face. Again, no offense to you, sir.

2 MR. MARSHALL: None taken.

3 MR. BRUNDAGE: So I guess that was one of my
4 comments here today that I would hope there would be an
5 opportunity to testify in front of the Clean Water
6 Commission because these are extremely important decisions.

7 Like Leslie Holloway, I too was --
8 participated in many of the biological subcommittee
9 meetings, if that's what we're going to call that group.
10 At the conclusion of those meetings, there was some areas
11 of consensus and some areas where there was no consensus.
12 I was never exactly clear how some of those areas or how
13 the conclusion of those meetings were all rolled into the
14 new listing methodology document. I guess you have to just
15 read it and try to piece it back together and I haven't
16 completely done that yet, but I guess I'll try to do so
17 before the end of the comment period.

18 I, like Leslie Holloway, I would appreciate
19 the opportunity to have another meeting of that biological
20 committee to kind of review some of those things and also
21 to review some of the areas of testimony that I have today
22 and some the comments that I made during the two public
23 availability sessions that I attended.

24 Another overarching comment that I made during
25 the public availability session was concerning the

1 Department of Natural Resources increasing reliance upon
2 the data and expertise of the Missouri Department of
3 Conservation. My comment was that the Clean Water
4 Commission and the DNR staff, they have the authority over
5 the 303(d) listing process and they should be ones to make
6 all the decisions. They should not defer completely to the
7 Missouri Department of Conversation and say they have the
8 expertise, whatever they say goes. That's kind of the
9 direction we are going on some of this information and I
10 think the Department of Natural Resources needs to do their
11 own independent review of those areas and have their own
12 staff take ownership of all these issues to decrease the
13 reliance on the conservation department.

14 I want to offer some comments on the use of
15 macro-invertebrate data on page 25 of the draft listing
16 methodology. There is the reference to biological aquatic
17 invertebrates under the DNR protocol and I wanted to
18 discuss the issue of comparing appropriate reference
19 streams or local control streams. The document says that,
20 "The results must be statistically similar to
21 representative reference or control stream." Okay. So
22 what is that? There is a footnote, footnote 18 talks
23 about, "The test streams that are significantly smaller
24 than bio-reference streams." I won't read the rest of it
25 but the term significantly smaller and I think it should be

1 written a different way and there should be a different
2 standard. There shouldn't be any significant difference
3 between the type of streams. There should be significantly
4 similar or -- and I will borrow some other words from the
5 listing methodology previously on page 19 under the
6 definition of Overall Use Protection. It talks about
7 evaluating data based on "similar land use/geology with the
8 stream of the water quality data." So I think there should
9 be similar land uses, there should be similar geology,
10 there should be similar watershed size and there should be
11 similar habitat. We need to make sure we are comparing
12 apples to apples when we have this kind of data because
13 habitat has a -- well it's either habitat issues or it's
14 water quality issues that affect macro-invertebrates. If
15 we don't have and we don't compare the exact same type of
16 habitat and streams, then there is a possibility there
17 would be some listing that are not appropriate one way or
18 the other.

19 In the same band on habitat on page 15 in the
20 narrative of the methodology, there is a discussion that --
21 bear with me. "For the interpretation of biological data
22 where habitat assessments data indicates a habitat scores
23 are less than 75 percent of referenced or appropriate
24 stream scores -- controlled stream scores." So the DNR
25 will use macro-invertebrate data if the subject stream has

1 habitat and is at least 75 percent of the reference stream
2 of the control stream. And I inquired to the Department of
3 where that number came from and in reviewing that, it
4 appeared that the NCSI score of 16 and the research to come
5 up with that score was not exactly the same study to come
6 up with the 75 percent figure. And looking at that
7 research, I think the 75 percent number is probably too
8 low. What it should be I'm not exactly sure but it could
9 be, and possibly should be, more like 90 percent. That
10 needs to be studied further to tie those numbers together.

11 Some of the research or discussion from the
12 Department said, "Although there is a likely variability in
13 habitat quality versus biological condition, we do not have
14 sufficient information at this time to justify departure
15 from the 75 percent number." Well, if you don't have
16 justification to depart from it, you don't have
17 justification for that 75 percent number in the first
18 place. So I think that needs to be looked at and that
19 number possibly needs to be adjusted.

20 The reason I'm bouncing back and forth between
21 documents is because during the public comment period the
22 Department revised the listing methodology and I guess I
23 became aware of that during the second public availability
24 session and so I'm trying to go off of the new document at
25 this point in time.

1 In table 1.2 on page 25, again on
2 macro-invertebrate samples, it talks about for seven or
3 fewer samples. So the Department looks at this data in one
4 way for seven or fewer samples or for eight or more
5 samples. I guess that would apply that if there was a
6 single sample that didn't meet the NCSI of 16, I suppose
7 the Department could 303(d) list based on a single sample.
8 And that is obviously and I would hope everyone agree that
9 is not enough data to 303(d) list a stream. So that issue
10 should be addressed somewhere in the document. In case I
11 haven't found it, it should be addressed somewhere.

12 The other thing is it talks about if there are
13 seven or fewer samples, then it says 75 percent of the
14 stream condition and their scores must be 16 or greater.
15 But if there is more than seven then 75 percent -- let me
16 make sure I try to get this right, bear with me. Well, I
17 think I will defer my comment on that and make sure that I
18 I'm accurate in what I say. I will include that in my
19 written comments.

20 Next thing I want to talk about is the fish
21 IDI and go back to the issue of habitat. That was one of
22 the issues of discussion during the last year or so in the
23 biological subcommittee. And on page 24 if I get this
24 right -- nope page 26 now. Footnote 20, I believe. It
25 talks about if habitat is a "likely problem." And the next

1 footnote 21, talks about habitat is determined to be a
2 significant possible cause for impairment. So the words
3 likely problem or significant possible cause are not
4 adequately defined. And I think that's kind one of the
5 crux of the issues is that during the biological committee
6 meetings, one of my comments was is that when the fish IDI
7 was developed it was not developed for the purpose of
8 making stream impairment decisions. And that there was not
9 a -- when that fish IDI index was tested scientifically, it
10 was not tested against streams that were only impaired by
11 poor water quality. There were streams in there that had
12 poor habitat too. So I know the Department has done some
13 additional work on that, but I don't know if it's really
14 made its way into these footnotes appropriately because if
15 habitat is a likely problem or a significant possible
16 cause, what is that and how is that defined. It's unclear
17 to me at this point in time.

18 Something else I'm going to include in my
19 written comments is concerning the sediment data for
20 probable effects concentration. I corresponded with Trish
21 Rielly and some of the staff that she works with about some
22 of the data and the Department has revised one of the data
23 sheets for a subject stream that I was looking at. I will
24 probably look at some other streams. I guess one of the
25 reasons that the data sheet was revised is because the data

1 was not exactly -- it was not transparent or clear how some
2 of the calculations were made to come of the numbers and
3 the averaging. So how things were averaged, how duplicates
4 were used was not exactly clear and I think the listing
5 methodology document could be clarified in that regard so
6 everyone will understand how all that data is going to be
7 interpreted.

8 The other thing is some of the data that's
9 based upon these decisions was not all available and I did
10 an open records request to request that information, so
11 there should be probably more data included in these data
12 sheets and then a better explanation of how it's used and
13 how the calculations are made.

14 Kind of that same vain on quality
15 assurance/quality control data. Several years ago there
16 was a discussion in front of the Clean Water Commission
17 that I was involved with that it seemed that the Department
18 doesn't archive the quality assurance/quality control data
19 that supports the data in which 303(d) listing is made.
20 It's apparently looked at at the time the data results are
21 reported and that is not maintained or archived or kept
22 with the actual data. So at a later date if nobody -- if
23 no third parties or people in the public looked at the data
24 at the time, if you wait long enough it's not going to be
25 available for you to look at later on. So there is no way

1 for you to corroborate whether the data was reliable in the
2 first place. I think the Department should consider some
3 means to be able to keep it archived all of the QA/QC data
4 together with the data results.

5 Finally on the 303(d) list, there is several
6 listings for new listings for lakes that were apparently
7 impaired by nutrients. During the last several years when
8 the lake nutrient criteria had going through the rule
9 making process and gone to EPA and EPA rejected a majority
10 of the nutrient criteria of the lakes, one of my comments
11 was is that remaining criteria were not really in hindsight
12 based upon or tied to the beneficial uses. And that I
13 suggested to the Department and the Clean Water Commission
14 should rescind temporarily the lake nutrient criteria that
15 were approved by EPA. The Department at the time chose not
16 to do so and now we have going forward with this 303(d)
17 list, listings for lakes that are impaired by nutrients
18 based upon nutrient criteria that in hindsight are flawed.
19 And I would hope that the Department would withdraw those
20 proposed listing before the Clean Water Commission votes on
21 those and that they wait until the entire package of new
22 lake nutrient criteria are adopted by the Clean Water
23 Commission and approved by the EPA before proceeding to
24 list any more lakes on the 303(d) list based on nutrient
25 impairments. That concludes my remarks.

1 MR. MARSHALL: Thank you, sir. Our next
2 comments will come from Trent Stover. Mr. Stover, if you
3 would identify yourself for the record.

4 MR. STOVER: Good morning. I'm Trent Stover
5 with HDR Engineering in our Columbia, Missouri office. I'm
6 also here to make comments on behalf of the City of
7 Springfield, Missouri as well. And I echo several of the
8 comments that Leslie and Robert made. One, to start with
9 the public notice process. There has been revisions and
10 unfortunately I wasn't able to attend some of the other
11 stakeholders meetings, I apologize for that. But there has
12 been a bit of fluidity I guess during this public notice
13 process. Some of that has caused apparent inconsistency
14 within the document which makes it difficult to comment
15 upon. So we'll bring forward the comments that we think
16 are appropriate and speak to those, but I do urge the
17 Department to convene a public meeting and a stakeholders
18 group to discuss some of those comments prior to moving
19 this forward for decision at the Clean Water Commission
20 meeting.

21 In particular some of the inconsistencies that
22 I believe that I saw and again it would be worth sitting
23 down but there appears to be some inconsistency between
24 Tables 1.2, B1 and B2, which are some different tables that
25 apply to either listings or delisting of specific water

1 bodies. For example, there was some changes to the sample
2 size requirements for the macro-invertebrate data analysis
3 and it appears that some of those were inconsistently
4 applied between B1 and B2. B1 doesn't necessarily
5 address -- to me it doesn't appear to address how to deal
6 with sample sizes less than eight for example as well. So,
7 there is some clarification that probably needs to be made
8 within those tables.

9 With respect to data availability and use, the
10 303(d) listing methodology has had for several years some
11 criteria based on data age, in particular I believe it's
12 seven years of data that are set older than seven years
13 have to be evaluated to insure that they're representative
14 of current conditions. In looking at some of the listing
15 data sheets from 2014 data, I haven't seen where there is
16 any of the documentation on whether those data are still
17 representative based on the requirements of the listing
18 methodology.

19 Again, I agree with Robert the data quality
20 information should be supplied with any of the 303(d)
21 listings. I will also note that the association of the
22 Missouri Clean Water Agency and specifically to data
23 availability and use will be providing comments with
24 respect to the sample size compared to the 10 percent rule
25 for 303(d) listings and that more than 10 samples should be

1 used in comparison of the 10 percent rule. So small data
2 sets should not be used against those rules and should
3 probably lead to a Category 3 listing or a Category 3
4 designation rather than jumping to Category V until
5 additional data are collected. The requirements that
6 trigger with the development of TMDL etc. and some of the
7 permeating complications that can incur warrant I think the
8 greater use of Category 3 so that we ensure the state
9 resources are adequately assigned where there is true water
10 quality problems and so additional data should be collected
11 in some of these waters that might may be more
12 questionable.

13 Now, with respect to the biological data or
14 impairment decisions, we strongly support the Department's
15 further occlusion of habitat consideration into the
16 evaluation process. The Department along with MDC have
17 done some more work with the habitat thresholds that should
18 be used to determine whether water should go into Category
19 4c or habitat impairments versus Category 5, which include
20 impairments. You know, I specifically haven't had a change
21 to read through all the documentation on those thresholds
22 but I support having a threshold in place that is
23 reproducible and so forth. But it would be nice if we
24 could get together again to discuss how the habitat
25 threshold was developed and so forth.

1 There has been a longstanding requirement or
2 process to evaluate habitat for macro-invertebrates and it
3 appears -- and I make be wrong with the older 303(d)
4 list -- but it appears that it actually had a delisting
5 based on habitat and assigned it over to Category 4c,
6 particularly for Troublesome Creek. But I'm unaware of
7 whether those assessments have been performed on all of the
8 rest of the Category 5 waters to see whether those are
9 justified. And maybe that's been done, but it's not within
10 the data sheets with the 2014 303(d) list and so forth.
11 And I urge also the Department to go back and look at
12 Category 3 and Category 4 waters that were originally
13 listed for macro-invertebrate impairment and see whether
14 those were assigned to the right category rather than maybe
15 to a 4c or a 3 or maybe not even impaired at all.

16 With respect to that, the macro-invertebrate
17 habitat evaluations rely upon the environmental service
18 programs, habitat protocols. I suggest that while that's a
19 good reproducible habitat evaluation, it doesn't
20 necessarily apply all the way into the in stream habitat.
21 So at times the impairment decisions were made on waters
22 that maybe didn't have the three habitats that were
23 available for macro-invertebrate sampling. Maybe it would
24 be based on two of those habitats because there was one of
25 those habitats was not available for sampling. That would

1 greatly skew your score, potentially with respect to
2 diversity and total tax time and so forth. So that should
3 be another consideration in addition to the shaft process.
4 And that would also indicate a Category 4c listing
5 potentially rather than a Category 5.

6 I did like the MDC's I guess in the
7 Department's recommendation on not considering loosing
8 stream characteristics with respect to fish data
9 assessments. And I would urge the Department to also
10 evaluate whether that should be a consideration for
11 macro-invertebrate evaluation as well.

12 And lastly again, with respect to habitat
13 scores, those should be included within the 303(d) listing
14 documentation for all of the list of waters not just the
15 ones that are delisted for that situation.

16 Now, with fish data comparisons still within
17 the biological impairment portion, I appreciate the thought
18 and the process that's gone in with the Department of
19 Conservation and DNR to evaluate when those fish metrics
20 should be applicable to the water body and when they should
21 not. One of those cases is in first and second order
22 streams when those plateau and then evaluation of only
23 third to fifth order streams. Now, with that I understand
24 those developments and so forth. I would urge that we use
25 the proposed valley segment type classification to dial

1 this in a little bit better or make it more clear when
2 those apply and when those do not. And it appears to me
3 the first and second order streams are likely the head
4 water classifications that the Department recently adopted
5 into the water quality standards classifications and I'm
6 not sure about the third to fifth, but that's probably the
7 creek classification. So I would suggest that we modify it
8 so that when the public and EPA, DNR, MDC or whoever is
9 evaluating the applicability to those biological criteria
10 that apply, that we can look at it with respect to the GIS
11 system and the classifications that the Department has been
12 working on very hard.

13 With respect to that classification as well
14 with macro-invertebrates data analysis, I appreciate the
15 Department's evaluation. It looks like there was a couple
16 of delisting that were made because of the size of the
17 stream and so forth and with respect to whether it's
18 appropriate to compare to the regional bio-criteria or
19 reference streams. I would urge you to go further. The
20 original proposed rule in the water quality standards
21 package had within the definition of bio-criteria that it
22 would apply to the valley segment types and the
23 classification system that was developed by the Department.
24 I would urge that the macro-invertebrate analysis be first
25 reviewed in accordance with those classifications so head

1 water streams are compared to head water control or
2 reference streams and that should be the first step. And
3 then there should be an assessment from there on whether or
4 not the next order is representative. There was a -- when
5 the final rule was adopted, that specificity in the
6 bio-criteria you portion was removed and my understanding
7 was that was primarily to allow the Department to use data
8 that were maybe within the next larger classification type.
9 And if that's the case, then we should take it within the
10 303(d) listing methodology and try to make that more
11 specific.

12 Lastly with respect to the biological data
13 evaluations in the other category, the other biological
14 data. I think it should be clarified with respect to fish
15 and macro-invertebrates that we're relying on the
16 Department's protocols rather than some other type of
17 analysis after the investment that our state has made into
18 those metrics and many times those are multi-metrics. And
19 with respect to the biologic -- I'm sorry -- the
20 macro-invertebrate criteria and they were multi-metric for
21 a purpose and I would hate to see lack of definition in
22 that section be used to support a listing based on one of
23 those single metrics. Potentially -- although and in
24 addition I would think other biological input should be
25 considered again with respect to our multi-metric. It may

1 be a similar case where we went and evaluated some of these
2 others and so forth that it would be similar to, you know,
3 just relying on EPT for macro-invertebrates or something
4 like that with respect to another type of organism. And I
5 would suggest if there are other organisms that are
6 considered for analysis the weight that the 303(d) list
7 carries on, I would suggest that the Department rely on
8 Category 3 more often and then collect additional data for
9 analysis that again the state has developed resources in
10 with respect to macro-invertebrates and fish in particular.
11 And then if there is conflicting biological data that one
12 type of -- let's say the macro-invertebrates pass and the
13 fish fail -- that should lead to Category 3 designation
14 rather than necessarily going into Category 5 so that we
15 can have additional evaluation.

16 Now moving onto bacteria. One small issue
17 with respect to the E-Coli criteria. Right now that's
18 assigned to -- that's a groundwater criteria. You know, I
19 understand sort of what the thought process was with that
20 but that really technically is just applied to losing
21 streams not to the groundwater. So I think it should be
22 clarified that's only related to losing streams rather than
23 groundwater protection since it's not listed for that in
24 the Missouri Water Quality Standards.

25 Now with respect to the narrative criteria

1 translation. I know there is a lot of the biologic of
2 information that suggest -- and I appreciate the Department
3 working some more on the weighted evidence approach that
4 was sort of thrown into the listing methodology probably
5 six years or so. And I think there is some additional
6 detail that could be put together and particularly in
7 considerations on bio-availability of certain parameters
8 and so forth. So we'll provide some comments with respect
9 to that.

10 With respect to the probable effect
11 concentrations and quotations, I agree with Robert that
12 this should be better clarified, particularly in averaging
13 procedures. Typically a lot of these sediment
14 concentrations and so forth follow a log normal
15 distribution. The protocol isn't specific or the listing
16 methodology isn't specific on what types of means to use,
17 but I would suggest that should follow the distribution of
18 the data. And in most times I believe it's most
19 appropriate to use geometric means rather for the probable
20 effect not concentrations. The document should also
21 probably consider the averaging that occurs over a reach,
22 let's say. So if there is multiple sets that are collected
23 in reach, I believe it would be most appropriate to combine
24 all of those into the averaging process as well rather than
25 picking specific creek points within a specific reach

1 segment. And with a lot of these sediment data come along
2 with inherently quality assurance considerations. And so
3 there is a lot of scatter in a lot of these sediment data
4 and so the quality assurance data should be available for
5 those data sets.

6 And another issue with those is the way that
7 we manage non-detects. And then also levels below the
8 recording limits and that should be clarified. And I would
9 suggest that zero pollutant is used below those protection
10 limits because in some of these cases, the protection limit
11 is greater than the criteria. And so if you use either the
12 detection limit or even after the detection limit,
13 sometimes you trigger a false positive impairment decision
14 based on the way that you just manage the non-detect
15 values.

16 With respect to -- I'll wrap it up here
17 shortly. With respect to the statistical analysis and the
18 bars for delisting considerations included within the table
19 B-2. I need to look at it in more detail but it appears
20 there is a handful of delisting considerations that either
21 carry greater weight of evidence to trigger a delisting
22 than a 303(d) listing and I believe that's likely
23 appropriate for human health considerations. But with
24 respect to I believe nutrients and the biological data have
25 a higher bar for delisting. The state really needs to look

1 at that because that could trigger an inordinate number of
2 samplings to come back with a non-impairment and meeting
3 the criteria before a delisting can occur. And many times
4 that original listing was developed on a relatively small
5 data set. So I think we need to take a hard look at
6 considering for system of these parameters an equal bar for
7 listing and delisting.

8 Lastly once a listing is made I think there
9 should be some additional clarification on prioritization
10 of TMDL. In particular with listings that have criteria
11 and beneficial uses that -- pardon me -- that are in
12 upcoming rule changes. Those should be considered lower in
13 priority. I would suggest that for parameters such as
14 chloride. I would hope at some point we are going to
15 reevaluate dissolved oxygen criteria. Ms. Rielly said we
16 have a number of dissolved oxygen 303(d) listings and I
17 think the state realize that the current statewide criteria
18 is problematic and therefore the TMDL development should be
19 prioritized for those. I would say that's the same for
20 lake nutrients as well.

21 And as we made comments during the last water
22 quality standards package, the losing stream criteria that
23 I mentioned earlier is one of those that really needs to be
24 evaluated with respect to its appropriateness. So I would
25 also suggest the state assign those 303(d) listings low

1 priority for TMDL development. So with that I appreciate
2 your time and opportunity to comment.

3 MR. MARSHALL: Thank you, Mr. Stover. All
4 right. Is there anyone else present this morning that
5 would like to offer testimony or comments on these record?
6 Seeing none. The Department will receive written testimony
7 on the proposed 2014 impaired waters list and the 2016
8 listing methodology document until 5:00 p.m. on January 31,
9 2014. You may submit this written testimony to Ms. Trish
10 Rielly, Water Protection Program, Missouri DNR Water
11 Protection Program at P.O. Box 176 Jefferson City, Missouri
12 65102 or by e-mail to Ms. Rielly at trish.rielly@dnr.mo.gov
13 or by fax to (573)526-6802 prior to that 5:00 on January 31
14 deadline. On behalf of the Department I thank everyone who
15 has participated in this process and this hearing is now
16 closed. Thank you.

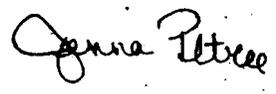
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<p>13:14 14:6,25 21:9,23 22:8 24:24 26:7 28:16,19 29:11 uses 14:9 19:12 30:11 use/geology 14:7</p> <hr/> <p style="text-align: center;">V</p> <hr/> <p>V 22:4 vain 18:14 valley 24:25 25:22 values 29:15 variability 15:12 versus 15:13 22:19 votes 19:20</p> <hr/> <p style="text-align: center;">W</p> <hr/> <p>wait 18:24 19:21 want 13:14 16:20 wanted 13:17 warrant 22:7 wasn't 20:10 water 1:1 2:3 3:8 3:25 4:8 5:3,8 5:16,18,23 6:4 9:16 10:1,9 11:3,21,24,25 12:5 13:3 14:8 14:14 17:11 18:16 19:13,20 19:22 20:19,25 21:22 22:9,18 24:20 25:4,5,20 26:1,1 27:24 30:21 31:10,10 waters 1:5 2:3,11 3:10 4:2,6,7,11 4:14 5:1,15 6:4 7:24 8:6 10:2 10:19 22:11 23:8,12,21 24:14 31:7 watershed 14:10 way 14:1,17 16:4</p>	<p>17:14 18:25 23:20 29:6,14 website 4:4,22 6:16 8:4,15,22 weight 10:4,7 27:6 29:21 weighted 7:12 28:3 welcome 2:2,4 went 27:1 we'll 2:7 8:18 10:19 20:15 28:8 we're 12:9 26:15 wildlife 11:5 willing 9:21 Wilson 2:6,12 11:19 wish 3:2 wishing 3:14 withdraw 19:19 witness 3:16 32:5 32:7 words 14:4 17:2 work 9:6 10:14 10:16,20 11:10 17:13 22:17 working 25:12 28:3 works 17:21 worksheets 8:6,8 worth 20:22 wrap 29:16 written 4:24 6:18 8:17 9:11,17 14:1 16:19 17:19 31:6,9 wrong 23:3</p> <hr/> <p style="text-align: center;">Y</p> <hr/> <p>year 16:22 years 4:10 6:7 18:15 19:7 21:10,12,12 28:5</p> <hr/> <p style="text-align: center;">Z</p> <hr/>	<p>zero 29:9</p> <hr/> <p style="text-align: center;">#</p> <hr/> <p>#1347 1:20 #1347(T) 32:5</p> <hr/> <p style="text-align: center;">1</p> <hr/> <p>1.2 16:1 20:24 10 21:24,25 22:1 11 4:21 6:13 8:14 1101 1:8 112 5:7 13 4:20 6:13 8:14 15 4:16 6:9 9:13 14:19 16 9:19 15:4 16:6 16:14 17 5:11 10:1 176 31:11 18 13:22 19 5:10 14:5</p> <hr/> <p style="text-align: center;">2</p> <hr/> <p>2 3:12 4:13 20 16:24 2012 4:13 5:5,17 6:22 8:6 2013 4:14,20,21 6:9,13,13 8:5 8:14 2014 1:7 2:2,10 3:10,12 4:1,6 4:12,17,23,25 5:4,24 6:17,20 7:23 8:7,19 21:15 23:10 31:7,9 2016 1:5 2:11 3:10 4:2 5:25 6:8 7:24 8:9 31:7 21 4:23 6:17 17:1 22 1:7 24 16:23 25 10:10 13:15 16:1 26 16:24</p>	<p style="text-align: center;">3</p> <hr/> <p>3 22:3,3,8 23:12 23:15 27:8,13 303 8:6 303(d) 1:5 2:2 4:2,6,9,14,24 4:25 5:6,24,25 6:10,12 7:23 8:5,17 10:3 11:7 13:5 16:7 16:9 18:19 19:5 19:16,24 21:10 21:20,25 23:3 23:10 24:13 26:10 27:6 29:22 30:16,25 303(3) 4:19 31 4:17 5:16,18 8:18 31:8,13 320 5:5 36 5:14 386 5:3</p> <hr/> <p style="text-align: center;">4</p> <hr/> <p>4 23:12 4c 22:19 23:5,15 24:4 401 1:21 42 5:9 43 5:14</p> <hr/> <p style="text-align: center;">5</p> <hr/> <p>5 22:19 23:8 24:5 27:14 5:00 31:8,13 56 5:3 573)526-6802 31:13 573-449-0561 1:22</p> <hr/> <p style="text-align: center;">6</p> <hr/> <p>62 5:13 644.036.5 2:15 65 5:9 65102 1:9 31:12 65201 1:22</p>	<p style="text-align: center;">7</p> <hr/> <p>75 14:23 15:1,6,7 15:15,17 16:13 16:15 79 5:13</p> <hr/> <p style="text-align: center;">9</p> <hr/> <p>90 5:8 15:9 91 5:12</p>
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Attorneys and Counselors at Law

James A. Kessinger †*

Luke A. Demaree †*

Natig R. Guseynov †

Melika T. Harris †

RECEIVED

Licensed in Missouri †

Licensed in Kansas *

DEC 02 2013

November 27, 2013

WATER PROTECTION PROGRAM**Via: Regular Mail & Fax: (573) 522-9920**

Department of Natural Resources

Water Protection Program

Attn: Trish Riley

P.O. Box 176

Jefferson City, MO 65102

- Re: -Missouri Department of Natural Resources Proposed 2014 Section 303(d) Impaired Waters List (hereinafter "List")
-Weatherby Lake – WBID 7071.00 (hereinafter "Lake")
-Weatherby Lake Improvement Company (hereinafter "Company")

Dear Ms. Riley:

This firm represents the above-referenced Company. The Company is the owner of the Lake and all the surrounding community lake access areas. We are writing in regards to your aforementioned proposed List.

It is our understanding that the List includes the Lake, alleging the Lake as being "impaired" and not meeting the water quality standards under the federal Clean Water Act (hereinafter "Act").

It is our position that the Act does not apply to the Lake. Under 33 U.S.C. § 1315, each state is required to provide a report regarding the discharge of pollutants from point sources only to the waters of the United States and navigable waters. The Act defines "point source" as a point from which pollutants are discharged, and it is intended to ensure the protection of receiving waters.

Please be advised that the Lake is an artificial private lake. It is a dam and there is no regular flow of water. There are also no receiving waters to protect from the Lake. It does not empty into any waters of the United States, both above or beneath ground. Finally, the Lake is not "navigable waters" as defined under the Act.

Please be further advised that the Lake conducts private testing of its waters on a consistent basis to ensure the water quality. Your tests that rely overwhelmingly on "Nutrient Data by Univ. of Missouri" from 1996-2010 are likely inaccurate.

As such, please accept this letter as our objection to you including the Lake in the List and ask that you remove the Lake from it. In the alternative, we ask that you please provide us with information as to your procedure to remove the Lake from the List.

Please contact the undersigned to discuss this matter.

Sincerely,

Natig R. Guseynov,
Attorney & Counselor at Law

EPA Comments to MoDNR on 2014 Draft 303(d) List

Bruce Perkins, Region 7 Integrated Reporting Coordinator

December 16, 2013

In the assessment of causes like dissolved oxygen and pH; the binomial is only applicable when there are 30 or fewer samples according to the 2014 listing methodology. There are instances in the proposed delistings where this methodology is not followed. These include the North Fork Cuivre River (WBID 0170) and Williams Creek (WBID 3594). There are some water bodies where the binomial is used with greater than 30 samples but that there are less than 30 samples in the last three years and an application of the binomial shows the water body is meeting water quality standards for the last three years. These include Burris Fork (WBID 0968), Coldwater Creek (WBID 1706), Dardenne Creek (WBID 0221), Dardenne Creek (WBID 0222), Dark Creek (WBID 0690), Grand Glaize Creek (WBID 2184), Maline Creek (WBID 1709), Tributary to Big Otter Creek (WBID 1225) and Watkins Creek (WBID 1708).

Hays Creek (WBID 0097) and Dry Fork (WBID 3178) Using watershed size to assess biological samples is allowed in the MO water quality standards [MO 10 CSR 20-7.031(4) (R)] where the size is not significantly different than reference streams in the same ecoregion. For these two streams the statistical significance was not calculated to show that reference streams in the same ecoregion were significantly larger. Additionally, for Hays Creek the state used control streams instead of reference streams identified in Table I as directed by the state's water quality standards.

Urban stream sampling by the U.S. EPA Region 7 environmental services division has identified streams which should be listed for toxic bottom sediments according to the state's methodology. These include Brush Creek (Jackson County, unclassified tributary to Blue River, USGS Reach Code 10300101000565 and 10300101000566) for numerous PAH compounds (These findings are consistent with USGS studies performed in the earlier portions of the 2000's), Blue River (WBID 0419 and 0418), Line Creek (WBID 3575), Shoal Creek (WBID 0397) and East Fork Shoal Creek (WBID 0398) for cadmium, Wilsons Creek (WBID 2375) for lead and numerous PAH compounds, North Branch Wilsons Creek (WBID 3745) for zinc, Jordan Creek (WBID 3374) for numerous PAH compounds and Jones Branch (unclassified tributary to Pearson Creek, USGS Reach Code 11010002001683) for lead. This data is available in the EPA on-line data management program STORET. Data for Brush, Line, Shoal and East Fork Shoal creeks for the years 2010 and 2011 were not successfully uploaded to STORET and are included with this comment for consideration. The data is also available on the web site KCWaters.org.

The TMDL for Wilsons, Jordan and Pearson creeks has been withdrawn so these waters again need a TMDL and should be relisted.

For Troublesome Creek (WBID 0074) the habitat is stated as not being acceptable for the bioassessment to yield acceptable results. In this case one reason stated for poor habitat is sediment. Sediment is itself a pollutant and if sediment is preventing the stream biota from meeting full compliance, it would seem that the water body segment should be 303(d) listed for sediment.

The TMDL used to delist Whetstone Creek (WBID 1505U) was not approved for the upstream unclassified segment. The TMDL does not target a loading capacity which would result in meeting water quality standards. Further information on this can be obtained from the final EPA action on the 2012 Missouri 303(d) List where this water body was added back to the list.

The TMDL proposed to delist Chat Creek (WBID 3168) for cadmium was only approved for zinc. As such this water body should remain listed for cadmium.

Fox Creek (WBID 1842), is the unknown listing from 2012 being replaced with the aquatic macroinvertebrate bioassessment new to the 2014 listing cycle?

Dardenne Cr (WBID 0221) does the Aquatic Macroinvertebrate bioassessment replace the unknown cause from 2012?

Koen Creek (WBID 2171), the data collected in 1995 was discounted because of questions about its quality. As the data was collected under the EPA REMAP program according to the EPA QAPP for data collection it should be considered valid if that program's requirements meet the state's methodologies. As such, if there is no additional data to change the assessment done for the 2012 list and this water should remain listed as impaired.

For Coldwater Creek (WBID 1706) all available data was not assessed. The chloride concentration on 2/21/2012 was 274 mg/L which exceeds the chronic water quality criterion. This data is available from the state's web data search site (http://www.dnr.mo.gov/moewis_public/wqa/waterbodySearch.do) With the sample taken on 1/5/2010 identified in the assessment spreadsheet for this water body, there were greater than one exceedance of the chronic chloride criterion in the last three years.

The *E. coli* data used to delist the North Fork Cuivre River (WBID 0170) was collected in a different segment of the stream below the confluence with Indian Creek (WBID 0171). As such this shows North Fork Cuivre River (WBID 0158) is not impaired but does not provide good cause that the upstream segment is not impaired.

For Turkey Creek (WBID 3282) the assessment sheet indicates impairment for lead in water not sediment. Additionally, this water body was listed as impaired for lead in water for 2012.

Peruque Creek (WBID 0217 and 0218) The delisting of inorganic sediment is not accompanied by any data files that show the inorganic sediment is no longer exceeding the narrative translator. MDNR water quality data search does not indicate that any new sediment samples have been collected since the 2012 list. Additionally, there is no fish assessment data provided on the review web site for the new listed impairment for these two segments.

Center Creek (WBID 3203) The impairment for zinc is covered by a TMDL.

Little Beaver Creek (WBID 1529) Is the sediment impairment being used as a pollutant for the macroinvertebrate community impairment. Should it be listed for both?

Salt River (WBID 0103) No DO data in assessment sheet for this site.

Shibboleth Branch has an EPA approved TMDL for lead and zinc in sediment and need not be listed in category 5 (303(d)) but category 4a (TMDL).

Is there an available site where WBIDs and the water body are identified and geolocated up to date with this proposed list?

Comments on the Draft 2016 Listing Methodology

In the 2016 methodology the state proposes to modify the bioassessment procedure to apply a different narrative translation to headwater streams from other wadeable streams. Using watershed size to assess biological samples is allowed in the Missouri water quality standards [MO 10 CSR 20-7.031(4) (R)] where the size is significantly different than reference streams in the same ecoregion. For these two streams the statistical significance was not calculated to show that reference streams in the same ecoregion were significantly larger. Additionally, the state proposes to use control streams instead of reference streams identified in Table I as directed by the state's water quality standards. Missouri's bioassessment procedure for fish is limited to stream orders of 3-5; presumably because this type of statistical significance process was integrated into the assessment methodology. The proposed demarcation is that a stream is "significantly smaller" than reference streams. There is no procedure outlined to identify such significance nor do the state's water quality standards make a reference to using control streams. The state's reference streams are outlined in Table I in the state's water quality standards. If a watershed size cutoff statistical methodology is defined for significantly smaller streams, then the public can meaningfully comment of the state's assessment of a water body's biological condition. Meaningful public comment is difficult to obtain if the methods used by the state to determine the results of bioassessment are not identified.

Has monitoring of raw water from drinking water reservoirs been discontinued or is it no longer being used for assessment?

Is the RAM monitoring program by MDC integrated into the DNR bioassessment web site? Is it available for stakeholder review?

In the discussion of toxic chemicals in Table 1.1 there is an exclusion for fish kills due to natural causes. Is there information to indicate that natural toxic chemicals are released at a frequency of more than once every three years on average?

In Table 1.1 the compliance column for dissolved oxygen references a footnote which states that the data is only used for wide scale 305(b) assessments and not 303(d) listing. If that reference is a typographical error and instead should reference footnote 10, then that footnote should not apply to dissolved oxygen either. If samples taken during a critical period of the year, for example high temperature low flow summer samples, and all of the samples show an excursion of the state's water quality standards, that data should not be averaged out over an annual period. An aquatic life use is not being met if there is a seasonal period where no life can exist in the assessment unit.

There is a reliance on appropriate or representative control streams for many assessments. There is no guidance on how the characteristics of such a control stream are determined. As there are many reference streams listed in the state water quality standards should there be an emphasis to shift from those reference streams to control streams. For small streams bioassessment targets see the first listing methodology comment above.

In relation to footnote 16 in Table 1.2, there are only two Mississippi Alluvial Plains reference streams identified in the state's water quality standards; these are Main Ditch and Maple Slough Ditch. This is to cover three Ecological Drainage Units. Because of the limited number of reference streams it is even more important that a method for choosing appropriate control streams is outlined in the state's listing methodology where the use of control streams is allowed in the state's water quality standards.

Table B-1 methods use a two-sided test for bottom deposits. Since the goal is to determine if the deposits are too high not just different from the control site, the test should be single-sided.

Table B-1 redefines how the binomial probability will be assessed for greater than 30 samples but there is no note or comment that this is being changed from the commission approved 2014 methodology. In later discussion in that appendix this change is identified in comment D42. The previous methodology, and the deleted text here, states that the use of a binomial is “difficult for larger sample sizes.” How has the state’s reconsideration of this difficulty led to the removal of the sample size mediated analysis?

For toxic sediments in Table B-1 the sample mean is identified as the assessment number. If this is the mean at a site it is appropriate. However, if it is the mean of multiple sites along a segment it could result in one site, of many sampled, being toxic but being averaged out by cleaner sites above and/or below that site. This could result in a portion of a segment being undeniably impaired but the segment not being listed. To alleviate this, the table should identify the site mean rather than the sample mean to eliminate any confusion.

Rielly, Trish

From: Perkins, Bruce <Perkins.Bruce@epa.gov>
Sent: Monday, December 30, 2013 11:49 AM
To: Rielly, Trish; Ford, John
Subject: RE: EPA comments on the proposed 2014 303(d) list

This message has been archived. Click on the archive banner at the top of this message to open this item. If you are a Mac or Entourage User click here to view the original item.

Trish and John,

I was looking over my comments again and found an error. The proposed listing of Shibleth Branch is for the segment downstream of the approved TMDL. As such my statement that there was a TMDL was in error and segment 2119 is not covered.

Bruce

Bruce Perkins

Re

Rielly, Trish

From: Mona Menezes <mmenezes@bransonmo.gov>
Sent: Tuesday, January 14, 2014 8:56 AM
To: Rielly, Trish
Subject: RE: Comment on the 2014 Proposed Section 303(d) List

Thanks Trish. That makes sense. I will inform our MS4 team.

Mona Menezes

Environmental Specialist
City of Branson

110 W. Maddux St., Suite 310
Branson, MO 65616

mmenezes@bransonmo.gov

Phone (417) 337-8566 Fax (417) 337-8181

Visit [HERE](#) to view our [Environmental Programs](#) [Facebook](#) page. [Tweets by @MonaM](#)

From: Rielly, Trish [<mailto:trish.rielly@dnr.mo.gov>]
Sent: Tuesday, January 14, 2014 8:54 AM
To: Mona Menezes
Cc: Rielly, Trish; Bloomer, Susan
Subject: Comment on the 2014 Proposed Section 303(d) List

Good Morning Ms. Menezes,

I was forwarded your comment regarding the 303(d) listing for Table Rock Lake. When we assign GPS (UTM) data points for impaired lakes we give the location of the Dam. If only an arm of the lake is impaired, we would give the downstream point of the impairment and assume everything in the upstream direction from that point is impaired.

Hope this helps.

Trish Rielly | Water Quality Monitoring and Assessment Unit | 1101 Riverside Drive, Jefferson City, Missouri | Phone: 573-526-5297 | E.mail: trish.rielly@dnr.mo.gov | Water Protection Program URL: <http://dnr.mo.gov/env/wpp/wp-index.html>

The Department of Natural Resources envisions a Missouri where people live and work in harmony with our natural and cultural resources; make decisions that result in a quality environment and a place where we can prosper today and in the future.

From: Mona Menezes [<mailto:mmenezes@bransonmo.gov>]
Sent: Wednesday, January 08, 2014 11:51 AM
To: Bloomer, Susan
Subject: Comment on 2014 Proposed Section 303d list

Hello

I noticed that on the 2014 proposed list, Table Rock Lake is listed as "Taney County." However, only a very small percentage of Table Rock Lake is located in Taney County. It should probably be listed as "Stone County." More of

Table Rock Lake is located in Barry County than Taney County, but the largest portion of it is Stone County. Can this be corrected?

Mona Menezes

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CATHLEEN A. MARTIN



STEPHEN G. NEWMAN
JOHN A. RUTH
THOMAS C. SMITH
NICOLE L. SUBLETT
ALICIA EMBLEY TURNER

January 9, 2014

Via Email Only

Trish Rielly
Unit Chief, Water Protection Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176
trish.rielly@dnr.mo.gov

Re: Proposed 2014 303(d) List

Dear Trish:

I was reviewing the public notice of the proposed 2014 303(d) list. I noted a proposed listing for Strother Creek for 2014. The name of the pollutant is "unknown/aquatic macroinvertebrate bioassessments." I decided to review the bioassessment worksheets. However, when I reviewed the "303(d) list assessment worksheets" on the MDNR website, I could not find any macroinvertebrate bioassessments for Strother Creek. Without this data, is the proposed Strother Creek listing for macroinvertebrate bioassessments an inadvertent, errant proposed listing?

Sincerely,

By:



Robert J. Brundage
rbrundage@ncrpe.com

RJB:la

ROBERT J. BRUNDAGE
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STEPHEN G. NEWMAN
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NICOLE L. SUBLETT
ALICIA EMBLEY TURNER

January 14, 2014

VIA EMAIL ONLY

Trish Rielly
Chief, Water Quality and Monitoring Unit
Water Protection Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102-0176
trish.rielly@dnr.mo.gov

Re: Comments on Use of Sediment Data for 303(d) Listing of Nickel in West Fork Black River

Dear Trish:

In an October 29, 2013 open records request, I asked for the data sheets and results of sample analysis and QA/QC for lead and nickel in sediment samples taken from the West Fork Black River. These samples were used by DNR to make a determination of impairment for the 303(d) List of Impaired Waters. In email correspondence dated November 12, 2013, DNR provided me an Excel spreadsheet with analytical results of sediment samples from the West Fork Black River. In cooperation with LimnoTech, I have reviewed the data provided and have identified the following concerns with respect to the analysis of nickel in the sediments:

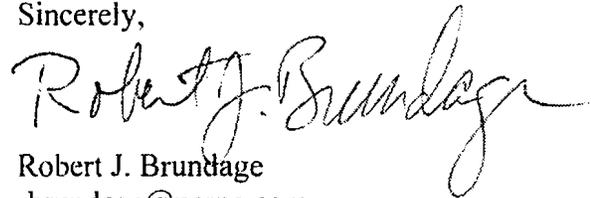
- Two samples (Sample ID 183646 and 184200) are included in the results provided in response to the open records request but are not included in the 303(d) worksheet. No information is provided for why these samples were not included or considered. The results of both samples are low values that fall below the sediment threshold value (12.5 and 32.25 mg/kg).
- The results from two samples (Sample ID 184201 and 184203) appear to be averaged and then included in the 303(d) worksheet (107 and 116.7 mg/kg, for an average of 112 mg/kg). No information or explanation is provided why these samples may have been averaged.
- Note that a number of samples have the same location as defined by the easting and northing. Also, many samples are indicated to be field duplicates by the Sample Type identifier "FieldDupl." If samples are collected from the same location and are actual field duplicates, results for all duplicate samples should be averaged before being used in a 303(d) determination. Were these samples averaged? If not, why not?

- Samples 184195 and 184196 did not include results for nickel in the file provided in response to the open records request. However, these two samples were included in the 303(d) worksheet with values of 0 mg/kg. If no analysis was performed for these samples, they should not be included in the 303(d) assessment.
- Some samples are collected from the same location but at a later date. It appears the 303(d) determination did not handle samples from the same location but collected in different years consistently. For the location at 667353/4150904, the older sample (Sample ID 183646) was not included in the 303(d) worksheet. This sample had a result of 12.5 mg/kg. However, for the location at 667558/4150808, the most recent sample (Sample ID 184200) was not included in the 303(d) worksheet. This sample had a result of 32.25 mg/kg. In both cases, the lower value was not included in the 303(d) worksheet.

The 303(d) listing process and subsequent impairment determination and associated TMDL development can have a profound impact on the protection of Missouri's water resources and the regulated entities within the watershed of an impaired waterbody. Therefore, the data and assessment process should be conducted with a high level of rigor. Our initial review of the data provided through the open records request as compared to the data used in the 303(d) worksheet raises a number of concerns. I would look forward to an opportunity to work with DNR to clarify the concerns expressed above.

Sincerely,

By:



Robert J. Brundage
rbrundage@ncrpc.com

RJB:la

c: LimnoTech (via email)



City of Independence

WATER POLLUTION CONTROL DEPARTMENT

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JAN 14 2014

January 9, 2014

WATER PROTECTION PROGRAM

Ms. Trish Rielly
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, Missouri 65102

Re: Proposed 2014 303(d) listing for Little Blue River - WBID 0422

Dear Ms. Rielly:

The following comments regarding the proposed 303(d) listing for the Little Blue River are submitted on behalf of the City of Independence Water Pollution Control Department.

The Department of Natural Resources (DNR) bacterial data table for the Little Blue River does not include U.S. Geological Survey (USGS) *E. coli* data collected at the Little Blue River at 39th Street from 2006 to 2009. USGS has been sampling the Little Blue River and other waters under a cooperative agreement with the City of Independence to satisfy requirements of the City's Municipal Separate Storm Sewer System (MS4) permit. USGS data for the Little Blue River at 39th Street, sample site number 06893910, are available on the USGS website. This site is located upstream from most of the Independence MS4.

DNR's Little Blue River data summary indicates that a statistical procedure was used to adjust *E. coli* data to give greater weight to non-storm water flows, given that the data set was biased toward storm water influenced sampling. However, the assumed storm water flow frequency of 45 percent may be unrealistically high. Extended periods of high flow can largely be attributed to upstream reservoir releases, not storm water runoff.

The following comments relate more to total maximum daily load (TMDL) development than to the listing process itself. We are concerned about future TMDL requirements that may be established for the Independence MS4.

In *Water Quality and Ecological Condition of Urban Streams in Independence, Missouri, June 2005 through December 2008*, USGS reported that storm water samples at all sites had greater median *E. coli* densities than base-flow samples. This is true of the Little Blue River before it enters the City of Independence as well as at the downstream sampling site. The USGS report states that the increased bacteria density is likely the result of increased suspended sediment

Ms. Trish Rielly
Missouri Department of Natural Resources
January 9, 2014

during storms. USGS cites studies that have shown that *E. coli* can survive for extended periods in bottom sediments. During a storm, these bottom sediments can be re-suspended resulting in increased bacteria densities. USGS found a positive relation at all sample sites between *E. coli* concentrations and suspended sediment.

USGS has been evaluating Independence streams using Microbial Source Tracking (MST) methods to identify the host organisms (sources) of bacteria in the stream. Preliminary MST results indicate multiple sources of bacterial contamination to the Little Blue River, with substantial fecal bacteria from other than human sources.

When DNR develops the Little Blue River TMDL, please keep the following in mind:

- If storm water influenced sample data are included, the Little Blue River exceeds the bacteria standard for whole body contact recreation before the river enters the City of Independence.
- TMDL development efforts may require a broader scope beyond the MS4 to address non-human sources of bacteria.

We hope to work DNR as the TMDL is developed, and we will continue to implement our Storm Water Management Program Best Management Practices to reduce the discharge of pollutants from the MS4 to the maximum extent practicable.

If you have any questions regarding our comments, please feel free to contact me.

Sincerely,



Dorris L. Bender
Environmental Compliance Manager

c: Dick Champion, Jr.
Eric Christensen, USGS

Rielly, Trish

From: Perkins, Bruce <Perkins.Bruce@epa.gov>
Sent: Thursday, January 23, 2014 11:31 AM
To: Rielly, Trish; Ford, John
Subject: Re: EPA comments

Follow Up Flag: Follow up
Flag Status: Flagged

Trish and John,

In response to your request for clarification on the use of the binomial for longer than a three year period. The answer is not necessarily, I was only suggesting a way that the state could use its CWC approved methodology to assess using the binomial. That methodology states that for more than 30 samples the binomial will not be used.

As a further comment on the second point raised by the EPA in its comment letter. The state's response explains the reasoning behind the assessment of watersheds of similar size. It does not however, address the requirement of significance required by the state's water quality standards. The EPA is commenting on the lack of a significance test showing the reference streams are of differing size.

In response to the state's comment that urban water data supplied by the EPA was received too late for assessment in this listing cycle, the EPA notes that the state is required to consider all readily available data in the preparation of its Section 303(d) list.

The sediment impairment for Troublesome Creek being assessed as a Category 4c, impaired but not by a pollutant, will need to have an assessment showing that this is appropriate. A comparison to other water bodies in the same glacial till soil type would be needed to show that this is a condition applicable to all water bodies in this condition. If other water bodies with the same parent soils are able to meet the translator for macroinvertebrate community assessment the classification of this water body in Category 4c would seem to be in error.

The TMDL for Whetstone Creek does allocate a load of zero for nonpoint sources. However, the waste load allocation is not zero as stated in the state's response to the EPA's comment. the TMDL states:

$WLACBOD = 194.2 - 19.4 = 174.8 \text{ lb/day}$

$WLANH3-N = 29.1 - 2.9 = 26.2 \text{ lb/day}$

Winter:

$WLACBOD = 291.3 - 29.1 = 262.2 \text{ lb/day}$

$WLANH3-N = 48.55 - 4.85 = 43.7 \text{ lb/day}$

The waste Load Allocation for the West Plant is 174.8 lb/day for summer. The WLA for the East Plant is zero lb/day.

The East plant was to be combined with the West plant, hence the zero WLA for the West Plant.

Thank you for your response to the EPA comments. I hope the information here provides further clarification of the previous comments

Bruce Perkins
Regional Integrated Report Coordinator
US EPA Region 7

Water Wetlands and Pesticides Division
Water Quality Management Branch
11201 Renner Blvd.
Lenexa, KS 66219
(913) 551 7067

Rielly, Trish

From: Steve Hunt <sshunt@gocolumbiamo.com>
Sent: Wednesday, January 29, 2014 3:58 PM
To: Rielly, Trish
Cc: David Sorrell
Subject: Fwd:
Attachments: 20140129154137686.pdf

Ms. Rielly,

Please see attached comment letter from City of Columbia Public Works Department regarding the proposed 2014 303(d) list.

Hard copy of this letter has been placed in the mail.

Please confirm receipt of this email and comment letter.

r/

Steve Hunt, P.E.
Engineer Supervisor
Sanitary Sewer and Stormwater Utilities
City of Columbia, MO
sshunt@GoColumbiaMO.com
Phone: 573-874-7264

----- Forwarded message -----

From: <pw1copier@gocolumbiamo.com>
Date: Wed, Jan 29, 2014 at 2:41 PM
Subject:
To: "Hunt, Steve" <sshunt@gocolumbiamo.com>

This E-mail was sent from "RNPDDBFBD" (Aficio MP 4000).

Scan Date: 01.29.2014 15:41:37 (-0500)
Queries to: pw1copier@gocolumbiamo.com



CITY OF COLUMBIA, MISSOURI

PUBLIC WORKS DEPARTMENT

January 29, 2014

Trish Rielly
Missouri Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO

RE: Proposed 2014 303(d) List

Dear Ms. Rielly:

The purpose of this letter is to make comment on MDNR's proposed 2014 303(d) list as follows.

GRINDSTONE CREEK:

MDNR is proposing to place the Grindstone Creek on the 303(d) list for E-Coli. Data used to by MDNR to judge the stream impaired is from 2004 - 2011. Portions of this data are 10 years old and are not believed to be representative of the current conditions in the Grindstone Creek. Five wastewater treatment plants have been removed from this watershed since 2004.

The proposed 2014 303(d) list identifies the E-Coli source as "Runoff from Forest/Grassland/Parkland, Rural, Residential Areas, Urban Runoff/Storm Sewers." Given the very limited water quality data, it is quite unclear how MDNR has determined the source of the E-Coli. It is respectfully requested that MDNR provide written explanation on how it made this determination. Furthermore, MDNR should not make assumptions of the source. If no solid proof of a specific source, then the source should be listed as "unknown".

HINKSON CREEK:

MDNR is proposing to place the Hinkson Creek on the 303(d) list for E-Coli. Data used to by MDNR to judge the stream impaired is from 2004 - 2006. This data is 8 to 10 years old and is not believed to be representative of the current conditions in the Hinkson Creek. 5 wastewater treatment plants have been removed from this watershed since 2004.

The proposed 2014 303(d) list identifies the E-Coli source as "Suburban and Rural Nonpoint Source." It is quite unclear how MDNR has determined the source of the E-Coli. It is respectfully requested that MDNR provide written explanation on how it made this determination. Furthermore, MDNR should not make assumptions of the source. If no solid proof of a specific source, then the source should be listed as "unknown".

HOMINY BRANCH:

MDNR is proposing to place the Hominy Creek on the 303(d) list for E-Coli. Data used to by MDNR to judge the stream impaired is from 2004 & 2005. This data is 10 years old and is not believed to be representative of the current conditions in the Hominy Branch.

The proposed 2014 303(d) list identifies the E-Coli source as "Runoff from Forest/Grassland/Parkland, Rural, Residential Areas, Urban Runoff/Storm Sewers." Given the very limited amount of water quality data for this stream, it is quite unclear how MDNR has determined the source of the E-Coli. It is respectfully requested that MDNR provide written explanation on how it made this determination. Furthermore, MDNR should not make assumptions of the source. If no solid proof of a specific source, then the source should be listed as "unknown".

Lastly, Columbia Public Works does not feel that MDNR has used current and valid data to place the Grindstone Creek, Hinkson Creek and Hominy Branch on the 303(d) list and respectfully requests that these three streams be removed until further data can be collected to determine if the streams are truly impaired.

Respectfully



John D. Glascock, P.E.
Director

Cc: Dave Sorrell, Engineering Manager, Public Works Department
Steve Hunt, Engineering Supervisor, Public Works Department



Department of Energy
Southwestern Power Administration
One West Third Street
Tulsa, Oklahoma 74103-3502

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JAN 30 2014

JAN 27 2014

WATER PROTECTION PROGRAM

Trish Rielly
Water Protection Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Re: Missouri's 2014 303(d) List of Impaired Waters
Salt River, Waterbody Identification Number 103, Hydrologic Unit Code 07110007

Dear Ms. Rielly:

This is in response to the Missouri Department of Natural Resources publication of Missouri's 2014 Proposed Section 303(d) Impaired Waters List (commonly called the 303(d) List). In particular, Southwestern Power Administration (Southwestern) would like to comment on the proposed listing of the Salt River immediately below Clarence Cannon Dam (Cannon Dam) (Waterbody Identification Number [WBID] 103, Hydrologic Unit Code [HUC] 07110007), which is the re-regulation pool below Cannon Dam (Cannon Dam Re-Regulation Pool), for low dissolved oxygen (DO) with the source cited as Cannon Dam.

Southwestern has a clear and direct interest in this proceeding; Southwestern markets and schedules hydroelectric power from Cannon Dam. Cannon Dam and the Cannon Dam Re-Regulation Pool are features of the Mark Twain Lake project that was designed and constructed, and is owned and operated, by the U.S. Army Corps of Engineers (Corps). The Mark Twain Lake project was completed in 1984, and hydroelectric power production began in 1985. Southwestern, a Power Marketing Administration under the U.S. Department of Energy, is authorized by Section 5 of the Flood Control Act of 1944 to market the power and energy from Cannon Dam to publicly owned bodies, such as municipalities and rural electric cooperatives, at cost-based rates established to recover all the associated costs and expenses (including those attributed to the hydroelectric power features as well as an allocated percentage of joint-use costs of the Mark Twain Lake project) with interest. Therefore, Southwestern is concerned about any proposed actions that could increase the cost of the electricity to the customers.

The hydroelectric power discharge from Cannon Dam can be, seasonally and under certain hydrologic conditions, below the Missouri state water quality standard of 5.0 milligrams per liter (mg/L) for warm-water and cool-water fisheries. Seasonal temperature stratification, a naturally occurring phenomenon, occurs in deep lakes and reservoirs like Mark Twain Lake. In this climate region, temperature stratification causes the deep water in the lake to remain colder than the surface waters and become oxygen deficient (typically beginning in summer and lasting through early fall). In order to reduce the impact of temperature stratification in the hydroelectric power releases, Mark Twain Lake has a water temperature control weir with a crest of elevation 580 feet that is located in the lake 400 feet upstream of Cannon Dam. The hydroelectric power turbine intake structure at Cannon Dam has an invert elevation of 520 feet.

Therefore, as lake temperature stratification begins in the summer, the height of the water temperature control weir allows the highly oxygenated (and warmer) lake surface waters from the upper thermocline to be pulled into the turbine bay during hydroelectric power generation, which provides for better DO concentrations in the releases downstream into the Cannon Re-Regulation Pool. However, in years when the lake elevation is higher than normal (in the flood pool), temperature stratification in the lake can occur at an elevation above the crest of the water temperature control weir. When this occurs, colder oxygen deficient water from the lower thermocline of the lake is pulled into the turbine bay during hydroelectric power generation and released into the Cannon Dam Re-Regulation Pool. It should be clear that the process of hydroelectric power generation itself does not introduce any pollutants or deplete DO, but rather is a water transfer from one waterbody (Mark Twain Lake) to another (Cannon Dam Re-Regulation Pool).

Additionally, the activities in the upstream and lake watersheds appear to have a major influence on the DO concentrations of stratified lakes and reservoirs. A lake has a limited amount of oxygen in its deep waters. As nutrient loading increases from upstream watershed development and increased organics in the runoff (non-point source loading), the oxygen in the deep portion of the lake is consumed by the naturally occurring biological action and the water becomes anoxic. That impact is made more obvious during wet years when high inflows cause more of the upstream and lake area nutrients and pollutants to wash into the lake and result in extremely low DO concentrations in the lower thermocline once the lake stratifies. Therefore, Southwestern believes that **lake stratification and watershed non-point source loading should be listed as causes of the low DO impairment in the Cannon Dam Re-Regulation Pool.**

Recognizing the low DO issue in the Cannon Dam Re-Regulation Pool after a particularly difficult high water and low DO season in 2010, Southwestern joined with the Corps and the Missouri Departments of Natural Resources and Conservation to form the Mark Twain Lake / Cannon Dam DO Working Group (DO Working Group). The purpose of the DO Working Group is to voluntarily address the low DO issue in the Cannon Dam Re-Regulation Pool while preserving the flood control and hydropower benefits of the project by: monitoring DO conditions; cooperating on planning, evaluating, and implementing operations to increase DO concentrations; and cooperatively investigating and implementing long-term solutions to low DO concentrations as funding allows. Toward that effort, in 2010 Southwestern provided funding to the Corps for an initial investigation into short-term and long-term solutions; however, the feasible solutions presented were not pursued due to extremely high installation costs, prohibitive annual operation and maintenance costs, and/or unacceptable operational constraints. The DO Working Group has continued to function effectively by annually preparing and implementing an operational action plan for the potential low DO season affecting the Cannon Dam Re-Regulation Pool. Operational actions include monitoring DO concentrations and effecting tainter gate (spill) and/or hydroelectric power releases as conditions warrant to improve the DO concentration in the Cannon Dam Re-Regulation Pool. As spilling water instead of using it for hydroelectric power generation equates to lost energy, the DO improvement operations have resulted in the loss of an average 4 million kilowatt-hours of hydroelectric power generation, an over \$200,000 benefit, annually. If more expensive solutions or more restrictive operations are implemented and costs are attributed to the Federal hydropower purpose at Cannon Dam, that could increase the cost of the electricity to the customers as well as reduce the

benefit of Federal hydropower further.

Southwestern has also reviewed the Missouri Water Quality Standards (10 CSR 20-7.031) "Rules of Department of Natural Resources, Division 20 – Clean Water Commission, Chapter 7 – Water Quality, Water Quality Standards" (Missouri WQS). The Missouri WQS state that "...For all waters of the state, if existing water quality is better than applicable water quality criteria established in these rules, that existing quality shall be fully maintained and protected. Water quality may be lowered only if the state finds, after full satisfaction of the intergovernmental coordination and public participation requirements, that the lowered water quality is necessary to allow important economic and social development in the geographical area in which the waters are located..." The value of Federal hydropower at Cannon Dam and human activity in the upstream Mark Twain Lake watershed is undeniably important to economic and social development. Additionally, per the Corps design of the Mark Twain Lake project, the Cannon Dam Re-Regulation Pool is a hydropower feature for the purpose of attenuating flows, providing a permanent afterbay for pump-back operations, and providing for the required continuous water quality release from the re-regulation dam downstream. Realizing the economic and social impacts (reduction in Federal hydropower benefits and reduced human development in the watershed), as well as the design intent, Southwestern suggests that the Cannon Dam Re-Regulation Pool should be designated as a transition zone that is needed for mixing and water aeration. Therefore, it is reasonable to **implement a site-specific DO water quality standard for the Cannon Dam Re-Regulation Pool that is seasonally lower than 5.0 mg/l.**

The clean, renewable hydroelectric power generation at Cannon Dam, with an estimated annual energy production of 90 million kilowatt-hours, reduces the need for burning 47 thousand tons of coal, 154 thousand barrels of fuel oil, or 768 million cubic feet of natural gas each year. In addition, the electricity produced at the project annually prevents the emission of 75 thousand tons of greenhouse gases. Southwestern has worked with the Corps and the DO Working Group to improve the DO concentration in the Cannon Re-Regulation Pool in a cost effective manner and which protects the Federal hydropower purpose of the project that, through our customers, serves over eight million electric consumers in Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas.

Southwestern appreciates the opportunity to provide comments on the 303(d) List. If you have any questions, please contact Ms. Fritha Ohlson at (918) 595-6684 or Fritha.Ohlson@swpa.gov.

Sincerely,


Stephanie Bradley
Acting Director
Division of Resources and Rates

cc:

Ted Coombes
Executive Director
Southwestern Power Resources Association
3840 South 103rd East Avenue, Suite 117
Tulsa, OK 74146

Kevin P. Slattery
Chief, Environmental & HTRW Section
Environmental & Munitions Branch
St. Louis District
U.S. Army Corps of Engineers
1222 Spruce Street
St. Louis, MO 63103-2833

Rielly, Trish

From: Mike McKee <Mike.McKee@mdc.mo.gov>
Sent: Thursday, January 30, 2014 12:50 PM
To: Rielly, Trish
Cc: Bataille, Karen; O'Hearn, Rebecca; Matt Combes
Subject: DNR's proposed 2014 303(d) List and 2016 Listing Methodology

Follow Up Flag: Follow up
Flag Status: Flagged

Trish,

Please find below comments from MDC regarding the proposed 2014 303(d) impaired waters list and 2016 proposed listing methodology. Thanks for the opportunity to comment and let me know if you have questions.

MDC Comments

2014 303(d) impaired waters list

De-listed waters-

- Big Creek- The 10% rule was used for the assessment of Big Creek (45 samples), but the binomial method was used for other water bodies. For consistency, the Big Creek delisting should be confirmed using the binomial method.
- Dardenne Creek- Dardenne Ck WBIDs 221 (above and below Hwy 40) and 222 are recommended for delisting for DO impairment based on a new assessment of the data using the binomial statistical method. Dardenne Ck crosses through St. Charles County which is one of the most rapidly developing counties in Missouri. There have been 4 fish kills in these two WBIDs, or their tributaries, over the past 10 years (MDC Fish Kill database). According to the worksheets, WBID 221 and 222 have each been sampled for DO on only 4 separate days since 2003. Given the high degree of development in St. Charles County and occurrences of fish kills, MDC recommends that a more recent and comprehensive DO assessment be developed before delisting these particular WBIDs.
- Tiff Creek- In the "Delisting Reason" suggest changing "WQS attained; new assessment method" to "Suspected Impairment- no habitat data". This change will make consistent with the Worksheet.

Newly listed waters-

- No comments

2016 Listing methodology

- No comments

Thanks
Mike McKee
Resource Scientist

Missouri Department of Conservation Central Office and Research Center
3500 Gans Road
Columbia, MO 65201

573-815-7901 ext 3923



**Metropolitan St. Louis
Sewer District**

2350 Market Street
St. Louis, MO 63103

January 31, 2014

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FEB 05 2014

Ms. Trish Rielly
Water Protection Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, Missouri 65102

WATER PROTECTION PROGRAM

RE: Public Comments for Missouri's proposed 2014 303(d) List

Ms. Rielly:

The Metropolitan St. Louis Sewer District (MSD) is offering this letter into the public record during the public notice period associated with the Missouri Department of Natural Resources (MDNR or Department) proposed 2014 303(d) List of impaired waters. We have reviewed the waters in our service area MDNR has identified as impaired and believe there are two issues that should be addressed before the list is finalized and total maximum daily loading (TMDL) studies are scheduled. These issues are outlined below.

Waterbodies currently listed as impaired for water quality standards that are changing or may be changing in the near future should be considered a low priority.

A number of new water quality standards regulations were adopted following the recent triennial review. These new regulations represent a significant change in how water quality standards will be administered in the state. Additionally, several existing water quality criteria may be changing in the near future. Stakeholders have requested that MDNR evaluate the implementation issues related to these changes and if necessary, modify the regulations during the next one to three triennial reviews to address any uncertainties. MSD is concerned that these new and changing regulations introduce significant uncertainty into the water quality standards and assessment process. Based on our understanding of planned and potential water quality standards changes, we request that MDNR identify existing impairments for chloride, ammonia, losing stream bacteria, recreational bacteria, dissolved oxygen, and nutrients as low TMDL priorities. Water quality improvement continues to be made in the MSD service area, as MSD implements a multi-billion dollar and decades long capital improvement program for its sanitary system, and as MSD and its municipal co-permittees carry out stormwater quality requirements (pursuant to the small MS4 stormwater permit). This would allow MDNR to concentrate resources on waters where impairment thresholds are more certain.

The Department should indicate that the mercury impairment for Bee Tree Lake (WBID 7309) is considered a low or medium TMDL priority.

Bee Tree Lake was added to the draft 303(d) list because MDNR judged it to be impaired for mercury. The cause of the impairment was listed as atmospheric deposition. As the Department knows, elevated mercury levels are a common issue in waters across the State. In 2009, MDNR produced a fact sheet which indicated waterbodies impaired for mercury by atmospheric deposition were considered a "medium" TMDL priority. We agree that, given the widespread nature of the problem and diffuse source, the Department should not devote significant resources to developing TMDLs for these waters. We therefore request that MDNR revise the listing to clearly indicate that Bee Tree Lake is a low or medium TMDL priority.

Thank you for the opportunity to comment on the proposed 2014 303(d) list. Please contact John Lodderhose, Assistant Director of Engineering, at (314) 436-8714 or jlodderhose@stlmsd.com if you have any questions or would like to discuss these issues further.

Sincerely,



Susan M. Myers
General Counsel

cc: Jay Hoskins, MSD
John Lodderhose, MSD
Rich Unverferth, MSD
Kristol Whatley, MSD

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FEB 04 2014

WATER PROTECTION PROGRAM

January 31, 2014

Ms. Trish Rielly
Water Protection Program
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Subject: Public Comments Regarding the Proposed 2014 Section 303(d) List

Ms. Rielly:

The City of Springfield, Missouri (City) submits these comments regarding the proposed 2014 303(d) List of impaired waters placed on public notice by the Missouri Department of Natural Resources (MDNR or Department) on October 15, 2013. Our primary comments pertain to assignment of Wilsons, Jordan, and Pearson Creeks on various categories within the 2014 305(b) Report and 303(d) List. In addition to the 2014 303(d) listings and delistings, we assert that MDNR should provide public notice for waters considered impaired or potentially impaired within the 305(b) Report (i.e., Categories 2B, 3B, and 4). The City also offers comments regarding the proposed Methodology for the Development of the 2016 Section 303(d) List in Missouri under separate correspondence.

Potential Biological Impairments. MDNR originally listed Wilsons and Pearson Creeks for biological impairments in 1998 and Jordan Creek in 2008. The data used to make the original listing decisions are not readily available on MDNR's website; however, worksheets are available for the 2010 and 2012 303(d) Lists. MDNR apparently relied on fish, macroinvertebrate, and toxicity data for the 2010 and 2012 biological impairment decisions.

We assume that MDNR has now assigned these potential impairments to Category 4A after the US Environmental Protection Agency developed total maximum daily loads for these streams; however, this record is not available for our review. We assert that these waters and potential impairments should be considered suspect and included in Categories 2B or 3B since the 2014 LMD states that these categories are appropriate if "data are insufficient to support a statistical test or to qualify as representative data to assess any of the designated beneficial uses". Our rationale for this assertion is provided below.

Office of the Director
Busch Municipal Building • 840 Boonville Avenue
Springfield, Missouri 65802 • 417-864-1919 • springfieldmo.gov/recycling


CITY OF
Springfield
ENVIRONMENTAL
SERVICES

Old data is no longer representative of current condition. Much of the data used for the previous 303(d) listings are very old. In fact, Wilsons Creek toxicity data from 1989 and 1991 were used for some of the basis. We contend that water quality conditions have greatly improved since these data were collection, with significant improvements to the Southwest Wastewater Treatment Plant. Therefore, previous toxicity data are no longer representative and should be removed from consideration based upon the data age limitations included in Section II.C.3.1 of the 2014 Listing Methodology Document.

Macroinvertebrate and fish data should also be carefully considered when placing these potential biological impairments into the appropriate 305(b) category. Habitat considerations should be taken into account for both fish and macroinvertebrate data analyses. MDNR and the Missouri Department of Conservation have recently chosen a habitat metric (QCPH1) and threshold value (0.39) to determine if habitat limitations lead to fish community impairments. We contend that MDNR should evaluate these habitat metrics prior to evaluating the fish community data in question. In addition, MDC contends that the fish Index of Biotic Integrity (IBI) should only be applied to third to fifth order streams. Therefore, we believe that fish community data should be screened since some of the study stream segments may be smaller than these stream orders.

Biocriteria reference streams present an inappropriate comparison. We are also concerned with the previous macroinvertebrate community comparisons. The previous impairment decisions were made using Missouri Stream Condition Index methodology with comparisons of Wilsons, Jordan, and Pearson Creeks to the ecoregional biocriteria reference streams. The City believes that the current MDNR biocriteria reference streams present an inappropriate and unachievable biological target due to the marked differences in watershed and stream characteristics (e.g. size, morphology, land use, hydrology, etc.). For example, the watershed areas of the current reference streams are up to 40 times greater than the study streams. We also believe that habitat quality differences should be taken into account in accordance with the Section II.D.

Lastly, Missouri's recently adopted water quality standards regulation contains a new aquatic life use framework that would require future comparisons to streams of more similar size. Under the Missouri Resource Assessment Partnership's (MoRAP) Valley Segment Type (VST) mapping layer (now referenced by rule in Missouri's water quality standards), the ecoregional reference waters are classified as ___ rivers compared to the Wilsons, Jordan, and Pearson headwater and creek classifications. Therefore, we contend that MDNR should not use the available macroinvertebrate data for an affirmative impairment decision, rather these data should only be used to categorize these impairments as suspect (Categories 2B or 3B).

Potential Bacteria Impairments. MDNR originally listed Pearson Creek for impairment of Whole Body Contact Recreation – Class A (WBCR-A) in 2006. This impairment is continued within MDNR's proposed 2014 303(d) List. However, the data used for this decision are nine (9) to thirteen (13) years old. MDNR should evaluate whether these data should be removed from consideration based upon the data age limitations included in Section II.C.3.1 of the 2014 Listing Methodology Document. The City does have *E. coli* data within Jones Branch which is tributary to Pearson Creek. These data were collected as part of the City's Municipal Separate Storm Sewer System monitoring program and demonstrate that bacteria levels are relatively good within this tributary (Table 1). Given data age considerations and the Jones Branch water quality observations, the City believes that the potential WBCR-A impairment in Pearson Creek should be assigned to Categories 2B or 3B. At minimum, the source of potential impairment should not include "Urban Runoff/Storm Sewers" as currently proposed.

TABLE 1. Jones Branch *E. coli* Data.

Site	Date	<i>E.coli</i> (col/100 mL)
Jones Branch at Jones Mill Lane (UTM 15 S Northing 4115912 Easting 481195)	5/25/10	31
	6/14/11	84
	6/13/13	166

Wilson's Creek was originally listed for bacteria impairment for losing stream protection in 2010. We contend that the losing stream *E. coli* criterion (i.e., no more than 10% of *E. coli* samples may exceed 126 colonies/100 mL) is not scientifically supported. In fact, this criterion is likely not met in Missouri streams. To illustrate this point in 2010, we reviewed *E. coli* data from USGS stations 07053810 (Bull Creek near Walnut Shade) and 07057500 (North Fork River near Tecumseh). Both these stations are ecoregional reference. Samples collected from the Bull Creek and North Fork stations since 2003 exceeded the losing stream criterion of 126 colonies/100 mL 20.8% and 13.8% of the time, respectively (**Table 2**).

The City again asserts that Missouri's losing stream criterion is not justified by sound science as this value was meant to be a long-term geometric mean for protection of swimming. We urge MDNR to reevaluate this criterion during the next triennial review of water quality standards.

TABLE 2. Summary of *E. coli* Data from USGS Reference Stream Stations.

USGS Water Quality Station	Date Range	Count	Max <i>E. coli</i> (cfu/100 mL)	Count >126 cfu/100 mL
Bull Creek nr. Walnut Shade	10/11/06 – 9/3/2008	24	2,900	5 (20.8%)
North Fork River nr. Tecumseh	1/21/2003-7/27/2010	58	7,900	8 (13.8%)

The City appreciates the opportunity to provide public comment and looks forward to your thoughtful consideration of these comments. Please feel free to contact me at anytime to discuss any of these issues.

Sincerely,



Errin Kemper, P.E.
 Assistant Director – Environmental Services
 Springfield Missouri

cc: Steve Meyer, P.E. – Director
 Jan Y. Millington – Assistant City Attorney
 Paul Calamita - Aqualaw

