

2006 Assessment

For assessment of ambient waters, primary and secondary contact recreation will be evaluated using *Escherichia coli* bacteria criteria as outlined in Reg. 2.507. Fecal coliform data will only be used to determine point source discharge permit compliance. For bacteria sampling conducted during the primary contact period where it is impractical to conduct 12 sampling events, a minimum of eight (8) samples will be required to make an assessment determination. However, a minimum of six (6) samples, all of which must meet the standard, can be used to assess a “support” determination.

2008 Assessment

Reg. 2.507 - Pathogens

For assessment of ambient waters, primary and secondary contact recreation will be evaluated using *Escherichia coli* and fecal coliform bacteria criteria as outlined in Reg. 2.507. The period of record for the data will be from July 1, 2002 to June 30, 2007. For bacteria, a minimum of eight (8) samples will be required to make an evaluation of non-attainment. However, a minimum of six (6) samples, all of which must meet the criteria, can be used to make an evaluation of attainment.

The geometric mean will be calculated on a minimum of five (5) samples equally spaced over a 30-day period during either the primary contact recreation season and/or the secondary contact recreation season and should not exceed the criteria set forth in Reg 2.507.

In either case, if either the single sample criterion or the geometric mean is exceeded for the period of record, the waterbody will be listed as impaired. Data sets of less than those described above will be evaluated if they represent actual annual ambient conditions.

Statewide Bacteria Assessment Criteria

2010

<i>Escherichia coli</i>		STANDARD	SUPPORT	NON-SUPPORT
PRIM. CONTACT	Extraordinary Resource Waters Lakes, Reservoirs	298 col/100 ml (May-Sept)	< = 25%	>25%
		GM 126 col/100 ml	< = standard	> standard
	All other waters	410 col/100 ml (May-Sept)	< = 25%	>25%
SEC. CONTACT	Extraordinary Resource Waters Lakes, Reservoirs	1490 col/100 ml(anytime)	< = 25%	>25%
		GM 630 col/100 ml	< = standard	> standard
	All other waters	2050 col/100 ml(anytime)	< = 25%	>25%
<i>Fecal Coliform</i>		STANDARD	SUPPORT	NON-SUPPORT
PRIMARY CONTACT All Waters including ERW, ESW, NSW, Lakes, and Reservoirs		400 col/100 ml (May-Sept)	< = 25%	>25%
		GM 200 col/100 ml	< = standard	> standard
SECONDARY CONTACT All Waters including ERW, ESW, NSW, Lakes, and Reservoirs		2000 col/100 ml(anytime)	< = 25%	>25%
		GM 1000 col/100 ml	< = standard	> standard

Assessment

4.4.6 REG. 2.507 - BACTERIA

For assessment of ambient waters, contact recreation designated uses will be evaluated using *Escherichia coli* as outlined in Reg. 2.507. In the absence of *Escherichia coli* bacteria data, fecal coliform bacteria data will be utilized as outlined in Reg. 2.507. In either case, a minimum of eight (8) samples, all of which must be collected and equally spaced within one contact recreation season (May through September or October through April of contiguous months) to make an evaluation of non-attainment. However, a minimum of six (6) samples, all of which must meet the criteria, may be used to make an evaluation of attainment. The geometric mean will be calculated on a minimum of five (5) samples equally spaced over a 30-day period.

In either case, if either the single sample criterion or the geometric mean is exceeded for the period of record, the waterbody will be listed as impaired. Data sets of less than those described above will be evaluated if they represent actual seasonal or annual ambient conditions as discussed earlier. Listings prior to 2004 may have identified waterbodies as water quality impaired using fecal coliform data. These listings were, and will be retained unless additional data for *E. coli* becomes available. If data shows the current *E. coli* criteria are met, the waterbody will be de-listed.

Statewide Bacteria Assessment Criteria

<i>Escherichia coli</i>		STANDARD	SUPPORT	NON-SUPPORT
PRIM. CONTACT	ERW, ESW, and NSW Waters Lakes, Reservoirs	298 col/100 ml (May-Sept)	< = 25%	>25%
		GM 126 col/100 ml	< = standard	> standard
	All other waters	410 col/100 ml (May-Sept)	< = 25%	>25%
SEC. CONTACT	ERW, ESW, and NSW Waters Lakes, Reservoirs	1490 col/100 ml(anytime)	< = 25%	>25%
		GM 630 col/100 ml	< = standard	> standard
	All other waters	2050 col/100 ml(anytime)	< = 25%	>25%
<i>Fecal Coliform</i>		STANDARD	SUPPORT	NON-SUPPORT
<u>PRIMARY CONTACT</u> All Waters including ERW, ESW, NSW, Lakes, and Reservoirs		400 col/100 ml (May-Sept)	< = 25%	>25%
		GM 200 col/100 ml	< = standard	> standard
<u>SECONDARY CONTACT</u> All Waters including ERW, ESW, NSW, Lakes, and Reservoirs		2000 col/100 ml(anytime)	< = 25%	>25%
		GM 1000 col/100 ml	< = standard	> standard

2012 Assessment

4.4.6 Reg. 2.507 - Bacteria

For assessment of ambient waters, contact recreation designated uses will be evaluated using *Escherichia coli* as outlined in Reg. 2.507. In the absence of *Escherichia coli* bacteria data, fecal coliform bacteria data will be utilized. A minimum of eight (8) samples, all of which must be collected and equally spaced within one contact recreation season (May through September or October through April of contiguous months) is required to make an evaluation. The geometric mean will be calculated on a minimum of five (5) samples equally spaced over a 30-day period.

Statewide Bacteria Assessment Criteria

<i>Escherichia coli</i>		STANDARD	SUPPORT	NON-SUPPORT
PRIM. CONTACT	ERW, ESW, and NSW Waters Lakes, Reservoirs	298 col/100 ml (May-Sept)	< = 25%	>25%
		GM 126 col/100 ml	< = standard	> standard
	All other waters	410 col/100 ml (May-Sept)	< = 25%	>25%
SEC. CONTACT	ERW, ESW, and NSW Waters Lakes, Reservoirs	1490 col/100 ml(anytime)	< = 25%	>25%
		GM 630 col/100 ml	< = standard	> standard
	All other waters	2050 col/100 ml(anytime)	< = 25%	>25%
<i>Fecal Coliform</i>		STANDARD	SUPPORT	NON-SUPPORT
<u>PRIMARY CONTACT</u> All Waters including ERW, ESW, NSW, Lakes, and Reservoirs	400 col/100 ml (May-Sept)	< = 25%	>25%	
	GM 200 col/100 ml	< = standard	> standard	
<u>SECONDARY CONTACT</u> All Waters including ERW, ESW, NSW, Lakes, and Reservoirs	2000 col/100 ml(anytime)	< = 25%	>25%	
	GM 1000 col/100 ml	< = standard	> standard	

In either case, if either the single sample criterion or the geometric mean is exceeded for the period of record, the waterbody will be listed as impaired. Listings prior to 2004 may have identified waterbodies as water quality impaired using fecal coliform data. These listings previously were retained, and will be retained unless additional data for *E. coli* becomes available. If data shows the current *E. coli* criteria are met, the waterbody will be delisted.

2014 Assessment

6.6 BACTERIA

This section establishes the protocol for assessment of ambient waters, primary and secondary contact recreation designated uses will be evaluated using *Escherichia coli* as outlined in Reg. 2.507:

The Arkansas Department of Health has the responsibility of approving or disapproving surface waters for public water supply and of approving or disapproving the suitability of specifically delineated outdoor bathing places for body contact recreation, and it has issued rules and regulations pertaining to such uses.

For the purposes of this regulation, all streams with watersheds less than 10 mi² shall not be designated for primary contact unless and until site verification indicates that such use is attainable. No mixing zones are allowed for discharges of bacteria.

- (A) Primary Contact Waters - Between May 1 and September 30, the maximum allowable fecal coliform criteria, calculated as a geometric mean, shall be 200 col/100 ml and the single-sample maximum shall be 400 col/100 ml. Alternatively, in these waters, the maximum allowable *Escherichia coli* criteria, calculated as a geometric mean, shall be 126 col/100 ml and the single-sample maximum shall be 298 col/100 ml in lakes, reservoirs, Extraordinary Resource Waters ("ERW"), Ecologically Sensitive Waterbodies ("ESW"), and Natural and Scenic Waterways ("NSW") or 410 col/100 ml in all other rivers and streams. During the remainder of the calendar year, these criteria may be exceeded, but at no time shall these counts exceed the level necessary to support secondary contact recreation (below).
- (B) Secondary Contact Waters - The maximum allowable fecal coliform criteria, calculated as a geometric mean, shall be 1000 col/100 ml and the single-sample maximum shall be 2000 col/100 ml. Alternatively, the maximum allowable *E. coli* criteria, calculated as a geometric mean, shall be 630 col/100 ml and the single-sample maximum shall be 1490 col/100 ml for lakes, reservoirs, ERWs, ESWs, and NSWs or 2050 col/100 ml for all other rivers and streams.
- (C) For assessment of ambient waters as impaired by bacteria, the above listed applicable values for *E. coli* shall not be exceeded in more than 25% of samples in no less than eight (8) samples taken during the primary contact season or during the secondary contact season.

ASSESSMENT METHODOLOGY FOR BACTERIA

In the absence of *Escherichia coli* (*E. coli*) bacteria data, fecal coliform bacteria data will be utilized. For the assessment of ambient waters, the geometric mean is calculated on a minimum of five samples spaced evenly and within a 30-day period during either contact season. For all other standards, as per APC&EC Reg. 2.507, at least eight data points must be taken during the primary contact season (May 1 through September 30) or during the secondary contact season (October 1 through April 30) of contiguous months to make an evaluation.

In either case, the most recent complete dataset (as described above) will be utilized for assessment evaluation.

LISTING METHODOLOGY:

Stream and river monitoring segments will be listed as non-support when the geometric mean for the applicable contact season is exceeded, or when the applicable standard is exceeded in greater than 25 percent of the samples collected during contiguous months within the applicable contact season (as described above).

DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when the geometric mean for the applicable contact season is not exceeded, or when the applicable standard is exceeded in 25 percent or less of the samples collected during contiguous months within the applicable contact season (as described above).

Table XI. Statewide Bacteria Assessment Criteria

<i>Escherichia coli</i>		STANDARD	SUPPORT	NON-SUPPORT
PRIMARY CONTACT	ERW, ESW, and NSW Waters	GM 126 col/100 mL	≤ standard	> standard
	Lakes, Reservoirs	298 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
	All other waters	410 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
SECONDARY CONTACT	ERW, ESW, and NSW Waters	GM 630 col/100 mL	≤ standard	> standard
	Lakes, Reservoirs	1490 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance
	All other waters	2050 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance
FECAL COLIFORM		STANDARD	SUPPORT	NON-SUPPORT
PRIMARY CONTACT		GM 200 col/100 mL	≤ standard	> standard
All Waters including ERW, ESW, NSW, Lakes, and Reservoirs		400 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
SECONDARY CONTACT		GM 1000 col/100 mL	≤ standard	> standard
All Waters including ERW, ESW, NSW, Lakes, and Reservoirs		2000 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance

ERW: Extraordinary Resource Water **NSW:** Natural and Scenic Waterway **ESW:** Ecologically Sensitive Water

2016 Assessment

6.6 BACTERIA

This section establishes the protocol for assessment of ambient waters, primary and secondary contact recreation designated uses will be evaluated using *Escherichia coli* as outlined in Reg. 2.507:

For the purposes of this regulation, all streams with watersheds less than 10 mi² shall not be designated for primary contact unless and until site verification indicates that such use is attainable. No mixing zones are allowed for discharges of bacteria.

For assessment of ambient waters as impaired by bacteria, the below listed applicable values for E. coli shall not be exceeded in more than 25% of samples in no less than eight (8) samples taken during the primary contact season or during the secondary contact season.

The following standards are applicable:

<u>Contact Recreation Seasons</u> <u>Primary Contact¹</u>	<u>Limit (col/100mL)</u> <u>E. coli</u>		<u>Fecal Coliform</u>	
	<u>IS³</u>	<u>GM⁴</u>	<u>IS³</u>	<u>GM⁴</u>
ERW, ESW, NSW, Reservoirs, Lakes ²	298	126	400	200
All Other Waters	410	-	400	200
<u>Secondary Contact⁵</u>				
ERW, ESW, NSW, Reservoirs, Lakes ²	1490	630	2000	1000
All Other Waters	2050	-	2000	1000

¹ May 1 to September 30

² Applicable at 1.0 meter depth in Reservoirs and Lakes

³ For assessment of Individual Sample Criteria– at least eight (8) data points

⁴ For calculation and assessment of Geometric Mean – calculated on a minimum of five (5) samples spaced evenly and within a thirty (30)-day period.

⁵ October 1 to April 30

The Arkansas Department of Health has the responsibility of approving or disapproving surface waters for public water supply and of approving or disapproving the suitability of specifically delineated outdoor bathing places for body contact recreation, and it has issued rules and regulations pertaining to such uses.

ASSESSMENT METHODOLOGY FOR BACTERIA

In the absence of *Escherichia coli* (*E. coli*) bacteria data, fecal coliform bacteria data will be utilized.

For the assessment of ambient waters:

- Individual samples: per APC&EC Reg. 2.507, at least eight data points must be taken during the primary contact season (May 1 through September 30) or during the secondary contact season (October 1 through April 30) of contiguous months to make an evaluation.
- Geometric mean: calculated on a minimum of five samples spaced evenly and within any 30-day period during either the primary contact season (May 1 through September 30) or during the secondary contact season (October 1 through April 30), when such data are available.

In either case, the most recent complete dataset (as described above) will be utilized for assessment evaluation.

LISTING METHODOLOGY:

Stream and river monitoring segments will be listed as non-support when the geometric mean for the applicable contact season is exceeded, or when the applicable standard is exceeded in greater than 25 percent of the samples collected during contiguous months within the applicable contact season (as described above).

DELISTING METHODOLOGY:

Stream and river monitoring segments will be listed as support when the geometric mean for the applicable contact season is not exceeded, or when the applicable standard is exceeded in 25 percent or less of the samples collected during contiguous months within the applicable contact season (as described above).

Table XIII. Statewide Bacteria Assessment Criteria

		<i>Escherichia coli</i>		
		STANDARD	SUPPORT	NON-SUPPORT
PRIMA RY CONTACT	ERW, ESW, and NSW Waters Lakes, Reservoirs	GM 126 col/100 mL*	≤ standard	> standard
		298 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
	All other waters	410 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
SECONDA RY CONTACT	ERW, ESW, and NSW Waters Lakes, Reservoirs	GM 630 col/100 mL*	≤ standard	> standard
		1490 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance
	All other waters	2050 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance
FECAL COLIFORM		STANDARD	SUPPORT	NON-SUPPORT
<u>PRIMARY CONTACT</u>		GM 200 col/100 mL*	≤ standard	> standard
All Waters including ERW, ESW, NSW, Lakes, and Reservoirs		400 col/100 mL (May-Sept)	≤ 25% exceedance	>25% exceedance
<u>SECONDARY CONTACT</u>		GM 1000 col/100 mL*	≤ standard	> standard
All Waters including ERW, ESW, NSW, Lakes, and Reservoirs		2000 col/100 mL (anytime)	≤ 25% exceedance	>25% exceedance

ERW: Extraordinary Resource Water **NSW:** Natural and Scenic Waterway **ESW:** Ecologically Sensitive Water

*Geometric mean can be calculated for any 30-day period within a season (primary season May 1 through September 30; secondary season October 1 through April 30).