

Negotiated Rulemaking Docket No. 58-0102-2001

Revision of Idaho Bacteria Criteria

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Agenda

- Goal, Definitions, and Current Rule
- Comments
 - AIC
 - USGS
 - EPA
- Draft rulemaking language
- Discussion



Goal



- Relationship of rates of illness to concentrations of FIB
- 36 illnesses per 1,000 recreational users
- Protective of recreational use

Fecal Indicator Bacteria (FIB)

- Fecal indicator bacteria
 - *E. coli*
 - enterococci
- Detect & estimate level of fecal contamination
- Used to indicate presence of health risk



30-day Geomean

- Measures the average amount of *E. coli* or enterococci in a water source
- Concentration results in illness rates below 36 illnesses per 1,000 recreational users

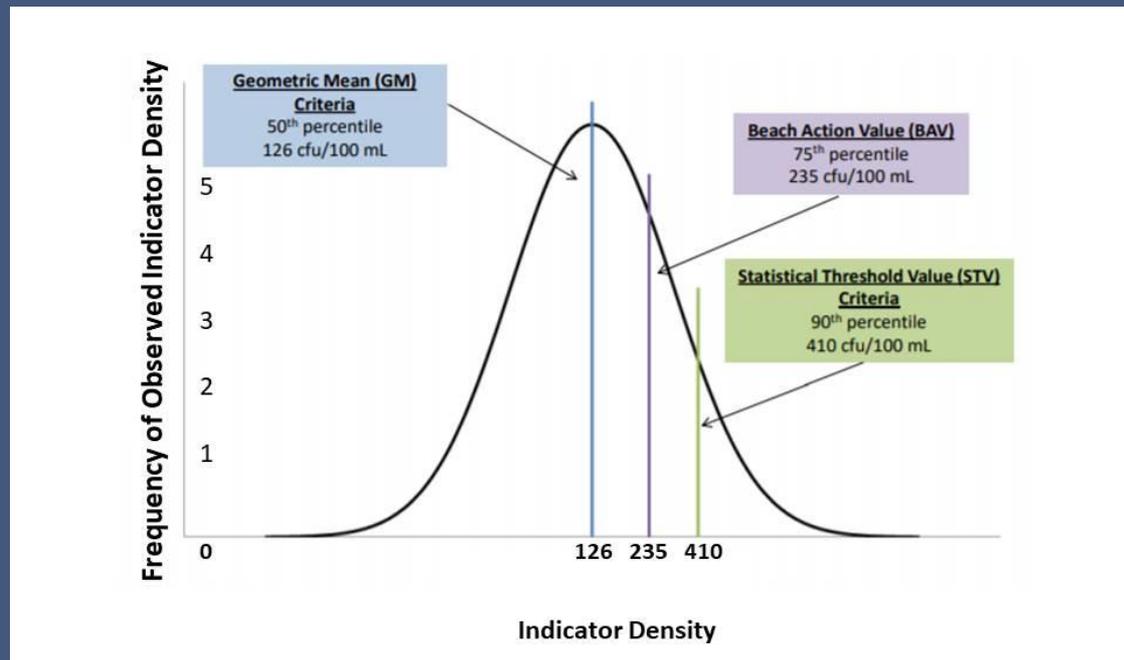
The Geometric Mean Formula:

$$\sqrt[n]{x_1 \cdot x_2 \cdot x_3 \cdots x_n}$$



Statistical Threshold Value

Measures expected deviations from the average and reflects amount of variation in *E. coli* levels



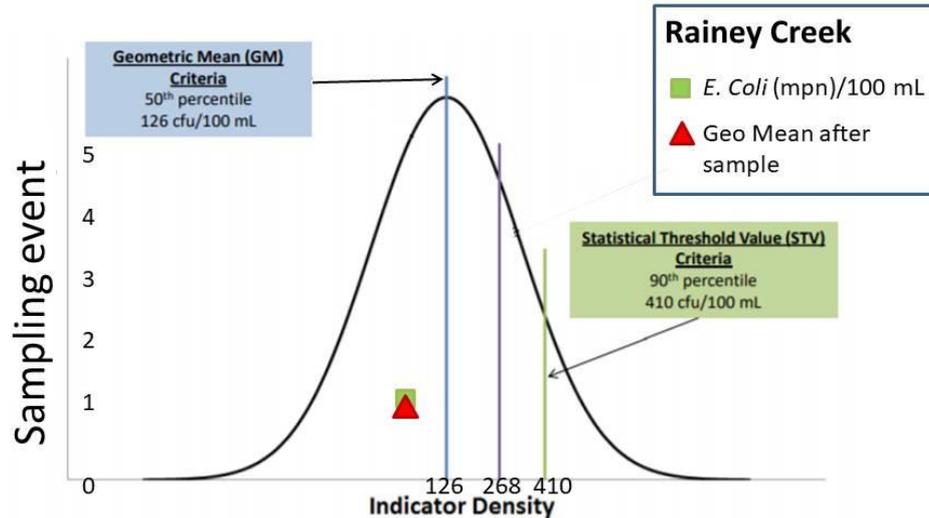
~~Instantaneous~~

10%

30 Days



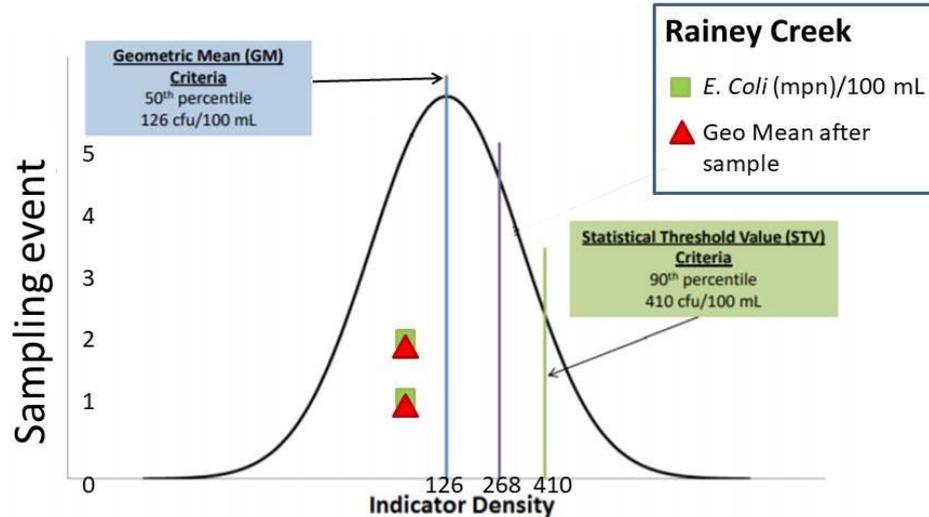
Example: Compliance with Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	70	70	No
2			
3			
4			
5			



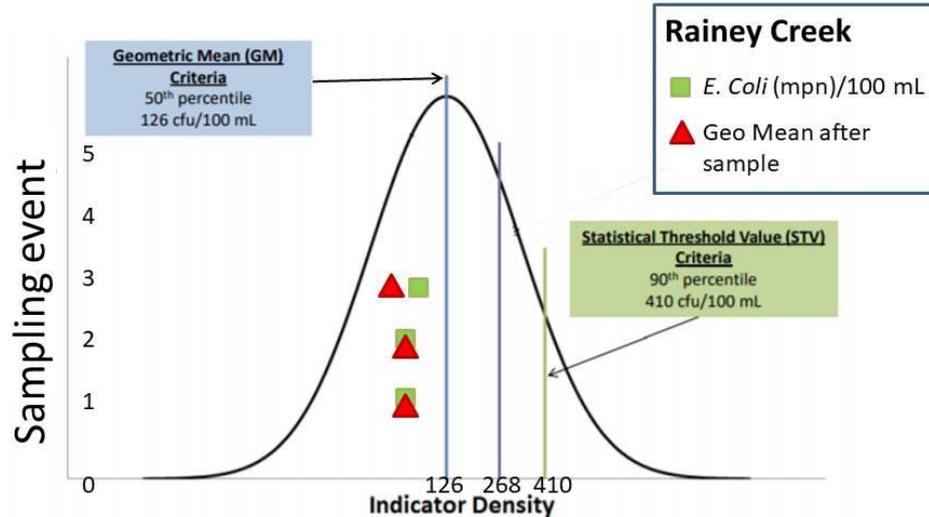
Example: Compliance with Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	70	70	No
2	70	70	No
3			
4			
5			



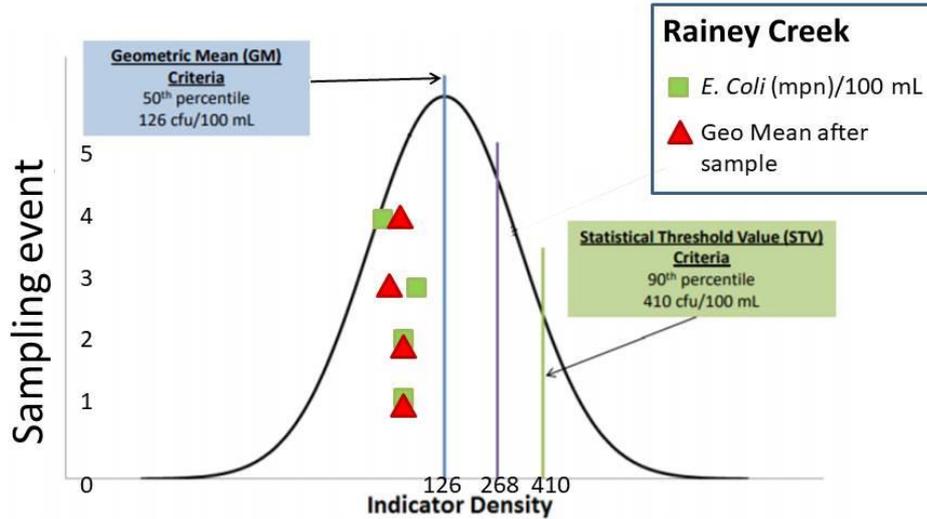
Example: Compliance with Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	70	70	No
2	70	70	No
3	86	75	No
4			
5			



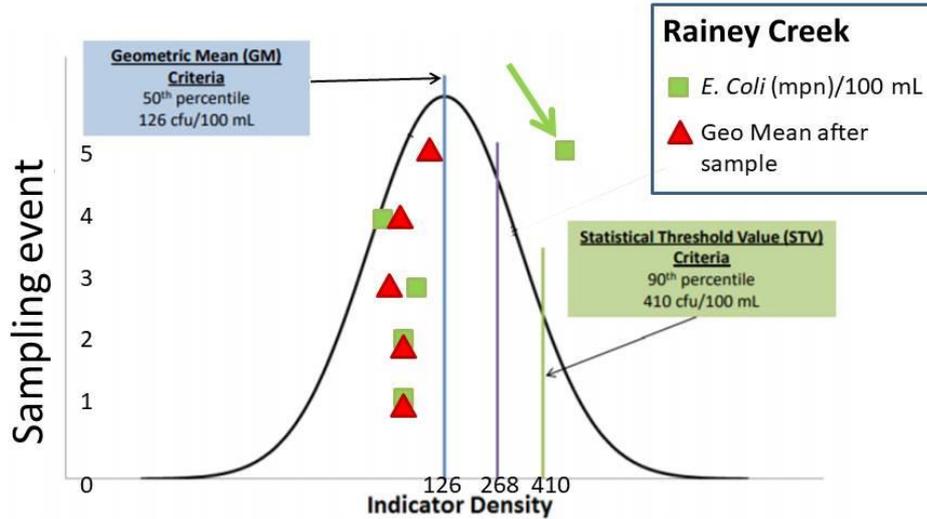
Example: Compliance with Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	70	70	No
2	70	70	No
3	86	75	No
4	56	70	No
5			



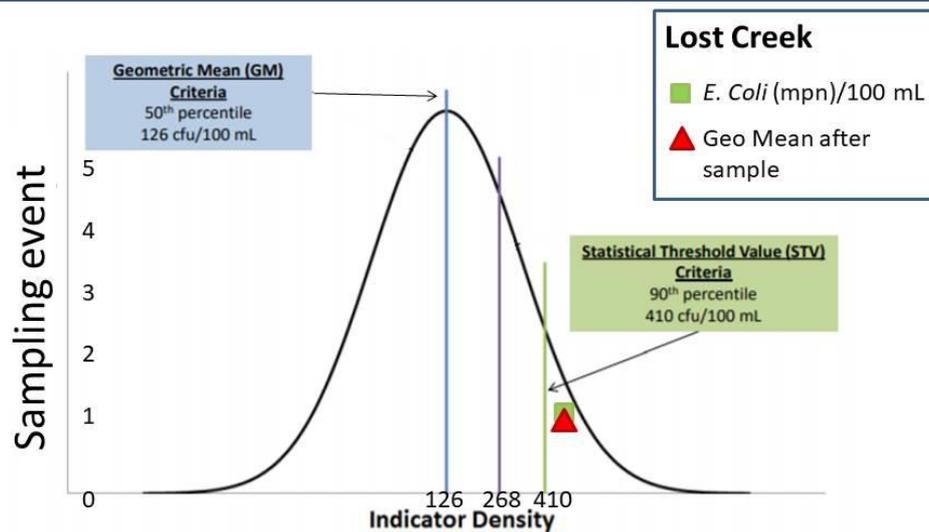
Example: Compliance with Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	70	70	No
2	70	70	No
3	86	75	No
4	58	70	No
5	579	107	No



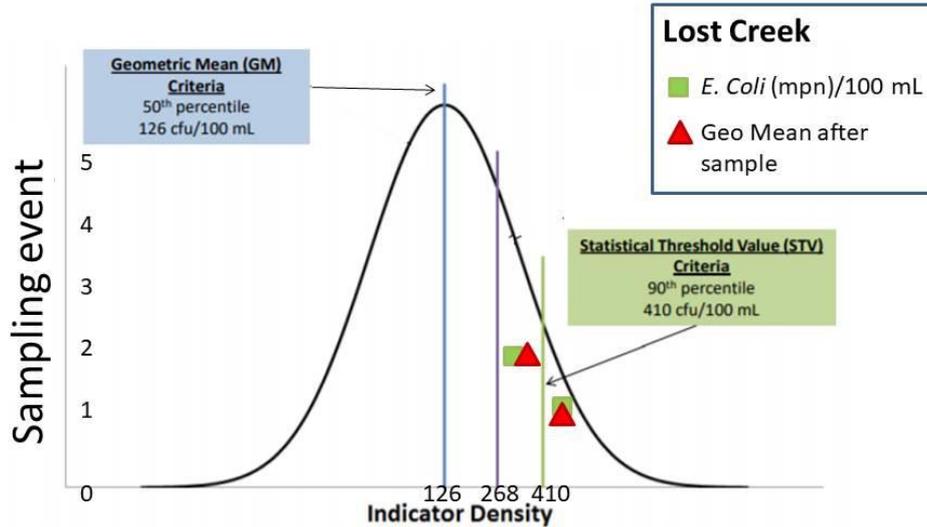
Example: Exceedance of Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	440	440	Yes
2			
3			
4			
5			



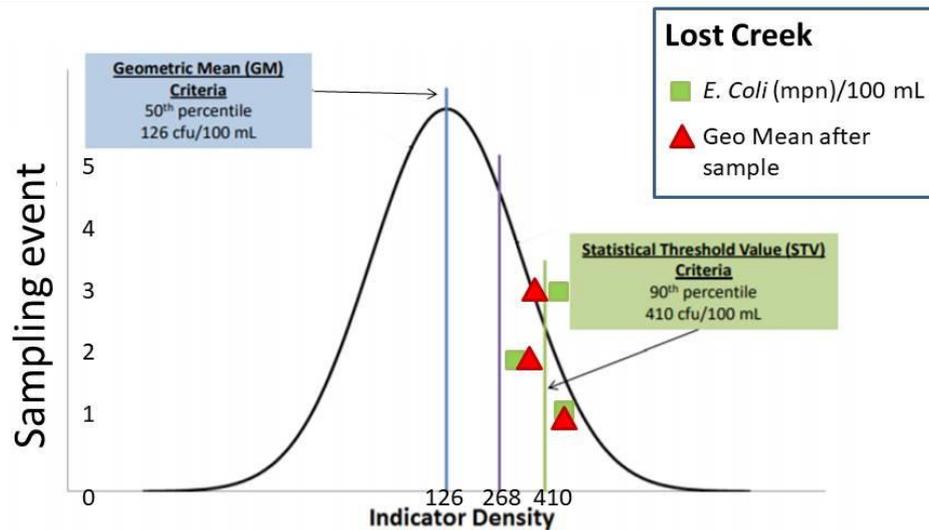
Example: Exceedance of Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	440	440	Yes
2	308	368	Yes
3			
4			
5			



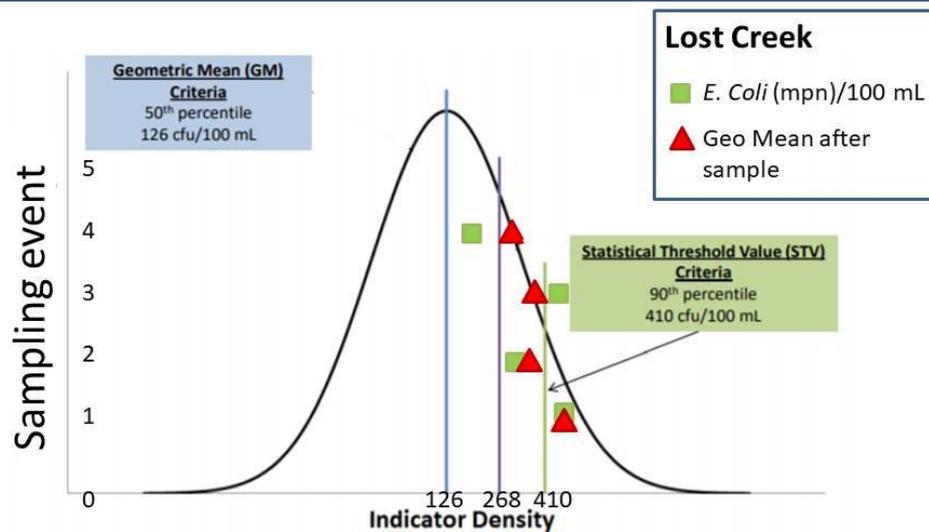
Example: Exceedance of Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	440	440	Yes
2	308	368	Yes
3	435	389	Yes
4			
5			



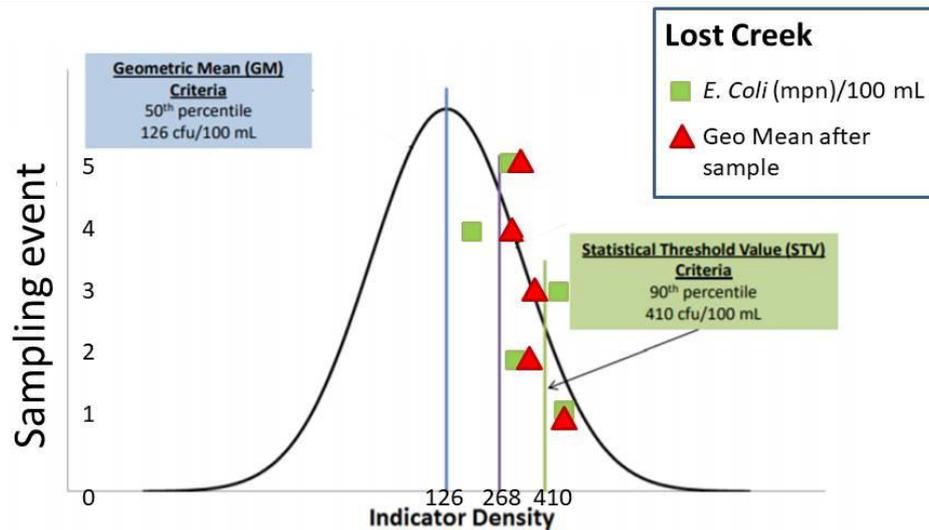
Example: Exceedance of Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	440	440	Yes
2	308	368	Yes
3	435	389	Yes
4	214	335	Yes
5			



Example: Exceedance of Geomean Criterion



Sample No.	<i>E. Coli</i> (mpn) /100 mL	Geomean after sample	Geomean > 126 counts/100 mL
Initial Sample	440	440	Yes
2	308	368	Yes
3	435	389	Yes
4	214	335	Yes
5	326	333	Yes



Current Rule vs. Pre-2019

Current Rule					
			² SSM		
	¹ Geomean	STV	PCR	SCR	Public Swimming Beach
<i>E. coli</i>					
Magnitude (CFU/mL)	126	410	--	--	--
Duration	30 days	30 days			
Frequency	--	10%			
Enterococci					
Magnitude (CFU/mL)	35	130	--	--	--
Duration	30 days	30 days			
Frequency	--	10%			

Pre-2019					
<i>E. coli</i>					
Magnitude (org/100mL)	126	--	406	576	235
Enterococci					
	--	--	--	--	--

¹Geometric Mean based on a minimum of 5 samples taken every 3 to 7 days over a 30-day period.

²Single sample maximum value (SSM) is not criteria, and exceedance of the SSM alone is not considered a criterion violation. Rather, it is considered a "trigger value" that initiates additional sampling.



AIC comments



Supports the use of the proposed single “statistical threshold value” of either *E. coli* or enterococci

- swimming beach closures

DEQ & Public Health District partners

- bacteria testing
- monitoring equipment
- validated methods



AIC comments



Does not support

- statistically based criteria without corresponding required minimum number of samples

Requests rule language be revised

- specify a minimum of 5 samples
- single sample exceeding an STV not be considered a criterion violation



USGS comments

DEQ should consider

- Ambient water projects might provide useful insights

Combined cost savings

- sampling trips
- handling
- data analysis
- data curation

If a organization detects an exceedance of a STV, does DEQ wish to be notified?



EPA comments

Primary Contact
Recreation
Activities (IDAPA
58.01.02.100.02.a)

- supports rule revision to clarify activities associated with PCR

Enterococci Criteria
(IDAPA
58.01.08.251.02)

- supports transition approach with two fecal indicators



EPA comments



Geometric Mean and Statistical Threshold Value Criteria Implementation (IDAPA 58.01.08.251.02.a.i and b.i.)

- confirm rule language to mean that for each indicator there are two components: GM and STV
- each are independently applicable

Geometric Mean and Statistical Threshold Value Criteria Implementation Time Period (IDAPA 58.01.08.251.02.a.ii and b.ii)

- confirm rule provisions to mean the STV and GM for each 30-day period are calculated from the same data distribution
- supports 2019 rule revision to include STV criteria and remove previous SSM's

Sample Size and Geometric Mean (IDAPA 58.01.08.251.02.a.i and b.i)

- no action on language under section 303(c) of the CWA
- does not meet the test for what constitutes a new or revised water quality standard



Discussion

