

Comments on the Draft 2019 SWMMWW		
Draft 2019 SWMMWW Section (select from drop down)	Comment	Comment Made By
(General Comment)	<p>Recommend changing all references and testing requirements from fecal coliform, to <i>E. coli</i> and/or enterococci. <i>E. coli</i> and enterococci are more protective indicators of fecal contamination versus fecal coliforms. Fecal coliform bacteria are commonly identified as being thermotolerant bacteria (able to grow at 44.5°C) [1]. Thermotolerant bacteria consists of <i>E. coli</i>, Klebsiella, Enterobacter, and Citrobacter species [1,2]. When testing for fecal coliforms, the population of the bacteria present can affect the fecal coliform results, for example: Klebsiella, Enterobacter, & Citrobacter species are false-positive indicators of fecal contamination as they are from nonfecal origin [2]. It has been found, up to 15% of Klebsiella (nonfecal origin) are thermotolerant and up to 10% of <i>E. coli</i> are not thermotolerant, thus potentially causing a combined error rate of 25% when testing for fecal coliforms [3]. <i>E. coli</i> is the only bacteria of the coliform bacteria group that comes from the intestinal tract and found to be more specific to the detection of fecal contamination, so much so, that <i>E. coli</i> is the definitive indicator of fecal contamination in US drinking water regulations [3,4] and is the recommended bacterial indicator for fecal contamination in recreational fresh water, as part of the 2012 US EPA Recreational Water Quality Criteria recommendations [5]. Within marine waters, studies show enterococci, as compared to other fecal contamination indicators, have a higher survival rate and enterococci show a direct association with risk of swimmer’s illness [6,7]. The European Union (EU), uses enterococci as an indicator of fecal contamination for recreational waters, as well as in drinking water, and additionally enterococci are part of the US EPA 2012 Recreational Water Quality Criteria and included by the World Health Organization as recommended bacteria indicator for fecal contamination for recreational water [5,7]. We hope this information can form the basis to change bacterial indicactors from fecal coliform to <i>E. coli</i> /enterococci in your program. Thank you.</p> <p>1. Warden, Paul; DeSarno, Monique; Volk, Sarah; and Eldred, Bradley. Analytical Services. Evaluation of Colilert-18 for Detection and Enumeration of Fecal Coliform Bacteria in Wastewater Using the U.S. Environmental Protection Agency Alternative Test Procedure Protocol. Microbiological Methods, Journal of AOAC International. Volume 94, Number 5: 2011</p> <p>2. Doyle, Michael. Erickson, Mary. Closing the Door on the Fecal Coliform Assay. Microbe, Volume 1, Number 4, page 162: 2006</p> <p>3. Allen, Martin; Edberg, Stephen; Clancy, Jennifer; Hurley, Steve. Drinking water microbial myths. Critical Reviews in Microbiology; ISSN: 1040-841X (print), 1549-7828 (electronic): 2013: http://informahealthcare.com/mby</p> <p>4. Cummings, Dennis. The Fecal Coliform Test Method Compared to Specific Tests for Escherichia coli. IDEXX: https://www.idexx.com/resource-library/water/water-reg-article98.pdf</p> <p>5. US Environmental Protection Agency. Recreational Water Quality Criteria. Office of Water 820-F-12-058. https://www.epa.gov/sites/production/files/2015-10/documents/rwqc2012.pdf</p> <p>6. Hussain M, Rasool SA, MT Khan, A Wajid. “Enterococci vs coliform as a possible fecal contamination indicator. Baseline data for Karachi.” Pak J Pharm Science. 20(2): 107-111; 2007: https://www.ncbi.nlm.nih.gov/pubmed/17416563</p> <p>7. Boehm, Alexandria and Sassoubre, Lauren. Enterococci as Indicators of Environmental Fecal Contamination. Enterococci: From Commensals to Leading Causes of Drug Resistant Infection. 2014: https://www.ncbi.nlm.nih.gov/books/NBK190421/</p>	Jody Frymire, IDEXX Laboratories Inc.
I-C.6 Jurisdictional Planning for Wetland Protection from Stormwater	Monitoring requirements for monitoring water quality of bogs and other Category I wetlands doesn't specify what the approved analytical test methods are. Recommend specifying approved analytical test methods listed at 40 CFR Part 136 and specify if testing is required to be carried out by an accredited laboratory.	Jody Frymire, IDEXX Laboratories Inc.