As the demand for reliable and safe water supplies increases, both water quality and available quantity are being challenged by population growth and climate change. Greywater reuse is becoming a common practice worldwide; however, in remote locations of limited water supply, such as those encountered in military installations, it is desirable to expand its classification to include dishwashing water to maximize the conservation of fresh water. Given that no standards for dishwashing greywater reuse by the military are currently available, the current study determined a specific set of water quality standards for dishwater recycling systems for U.S military field operations. A tentative water reuse standard for dishwashing water was developed based on federal and state regulations and guidelines for non-potable water, and the developed standard was cross-evaluated by monitoring water quality data from a full-scale dishwashing water recycling system using an innovative electrocoagulation and ultrafiltration process. Quantitative microbial risk assessment (QMRA) was also performed based on exposure scenarios derived from literature data. As a result, a specific set of dishwashing water reuse standards for field analysis (simple, but accurate) was finalized as follows: turbidity (<1 NTU), E. coli (<50 cfu mL-1), and pH (6-9). UV254 was recommended as a surrogate for organic contaminants (e.g., BOD5), but requires further calibration steps for validation. The developed specific water standard is the first for dishwashing water reuse and will be expected to ensure that water quality is safe for field operations, but not so stringent that design complexity, cost, and operational and maintenance requirements will not be feasible for field use. In addition the parameters can be monitored using simple equipment in a field setting with only modest training requirements and real-time or rapid sample turn-around. This standard may prove useful in future development of civilian guidelines.

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The public is welcome to attend.