Identifying Presumptive Positive Colonies of *Salmonella* spp. in Raw Sewage, Reclaimed, and Surface Water Samples

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Research Question

Are presumptive positive bacteria colonies isolated selectively and purified from raw sewage, reclaimed, and surface water samples by culture methods actually *Salmonella* spp.?

Based on *Salmonella* spp. concentrations, is reclaimed water safe, if not safer than surface water, when further treated for human consumption?

Why does it matter?

North Carolina recently passed legislation to incorporate reclaimed water into the drinking water supply. The microbial quality of reclaimed water has been an ongoing concern, as the presence of pathogens, such as *Salmonella* spp., at excessive concentrations can affect public health.
Results & Importance

- Only 3 of the 11 1 liter reclaimed water samples tested resulted in the isolation of presumptive positive *Salmonella* spp. which indicates that most of the time, waste water treatment to produce type 2 reclaimed water is effective in removing *Salmonella* spp.
- Of the presumptive positive colonies isolated, *Salmonella* spp. was identified 49% of the time.
- The agar media used to selectively culture *Salmonella* spp. from samples was not as selective as desired. The agar media selected for two different black centered bacteria colonies, of which one was not *Salmonella* spp.
- The EnteroPluri test, a biochemical test panel for different growth properties, identified to genus but did not identify to species for most bacteria. Reactions on Triple Sugar Iron agar slants were used for further confirmatory biochemical testing to compliment the EnteroPluri test.
- In general type 2 reclaimed water treatment is effective at removing *Salmonella* spp. This information helps assess microbial quality and safety in implementing the use of such water as a source to make drinking water.