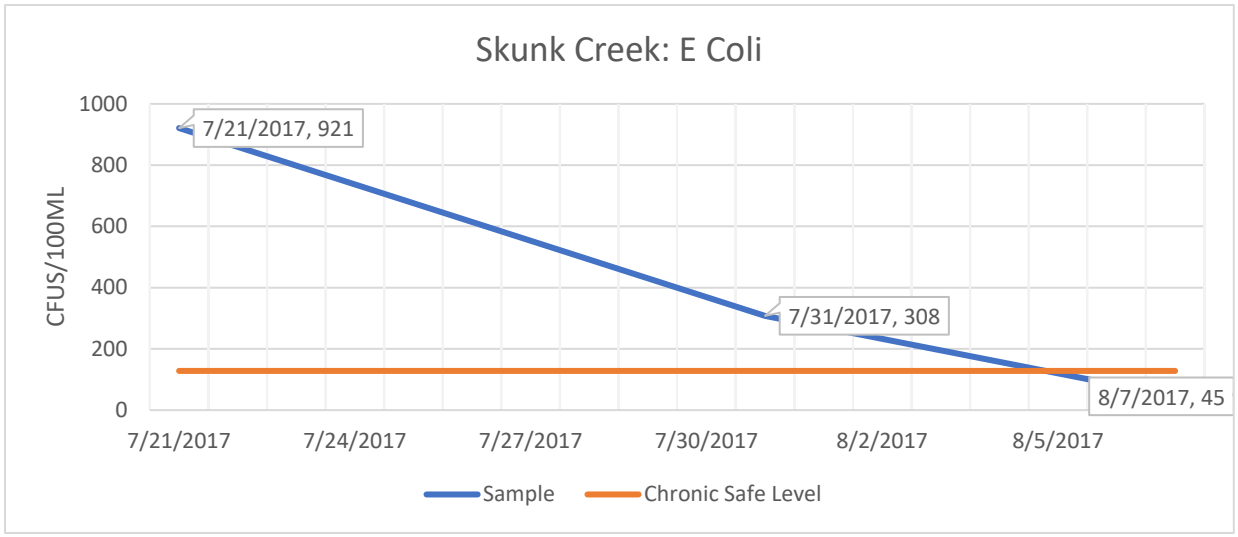

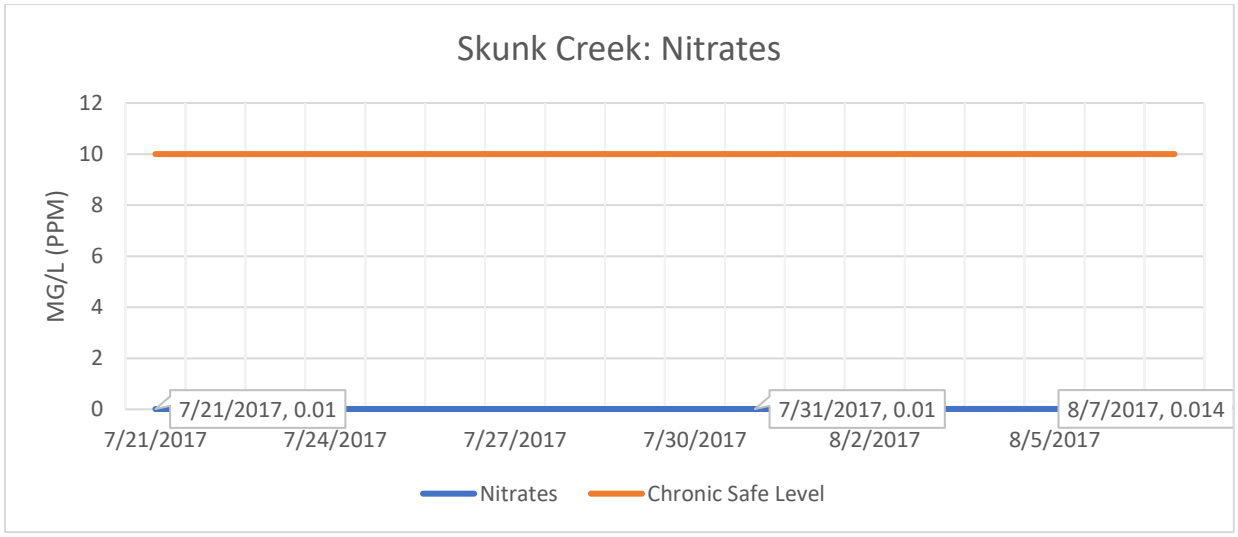

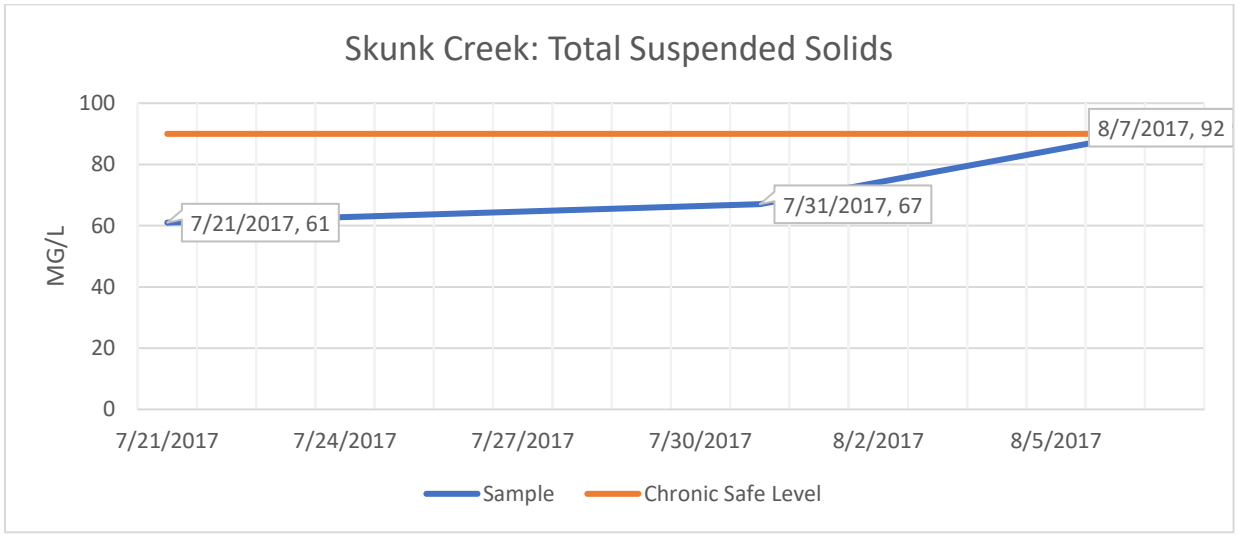

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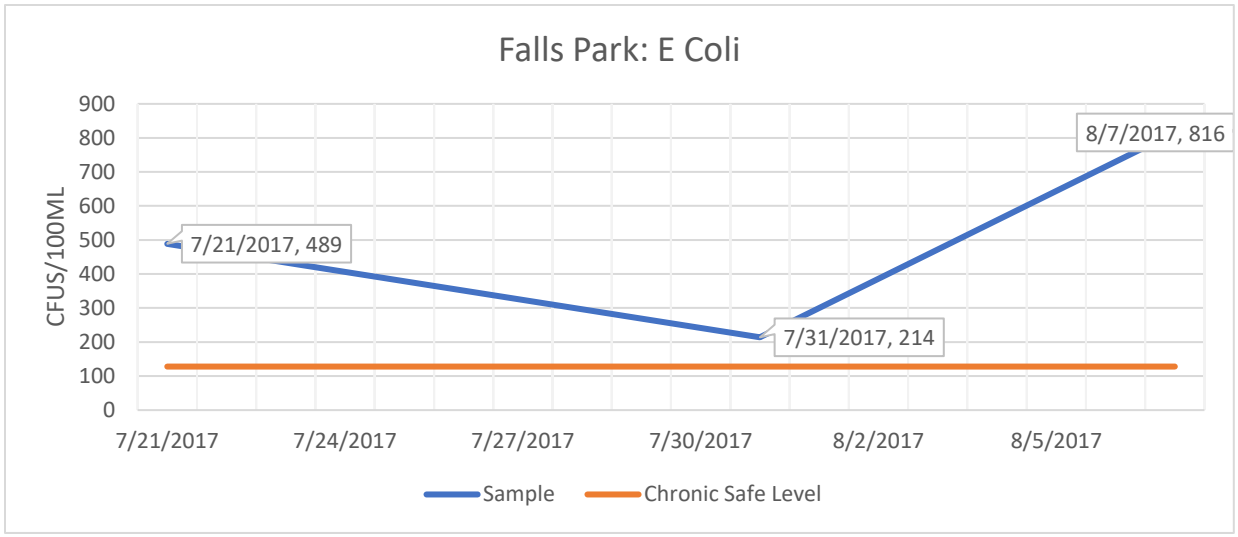

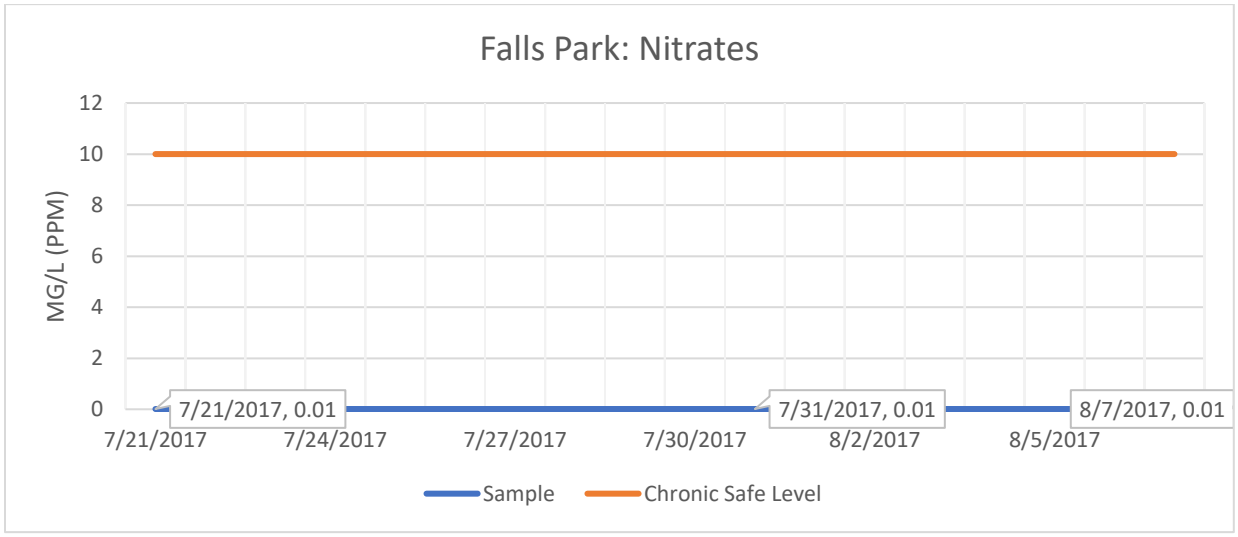

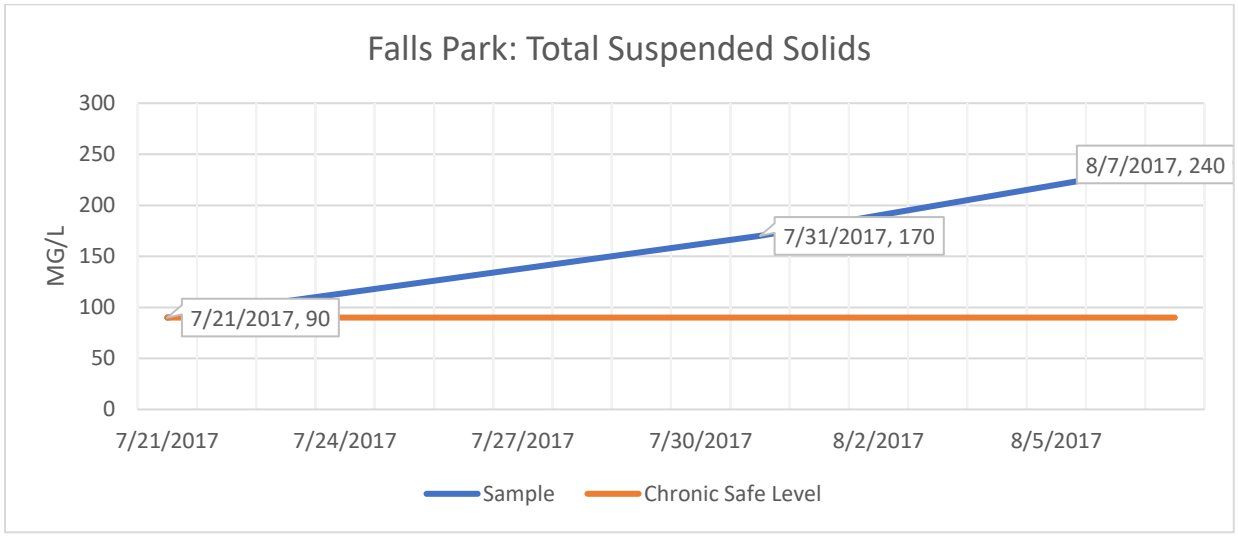

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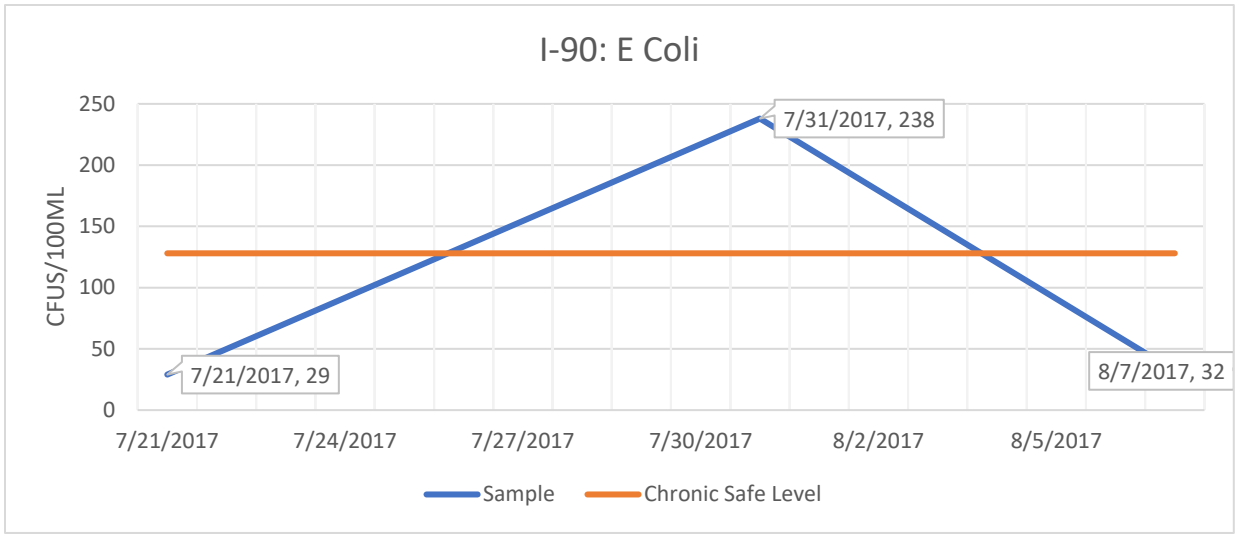

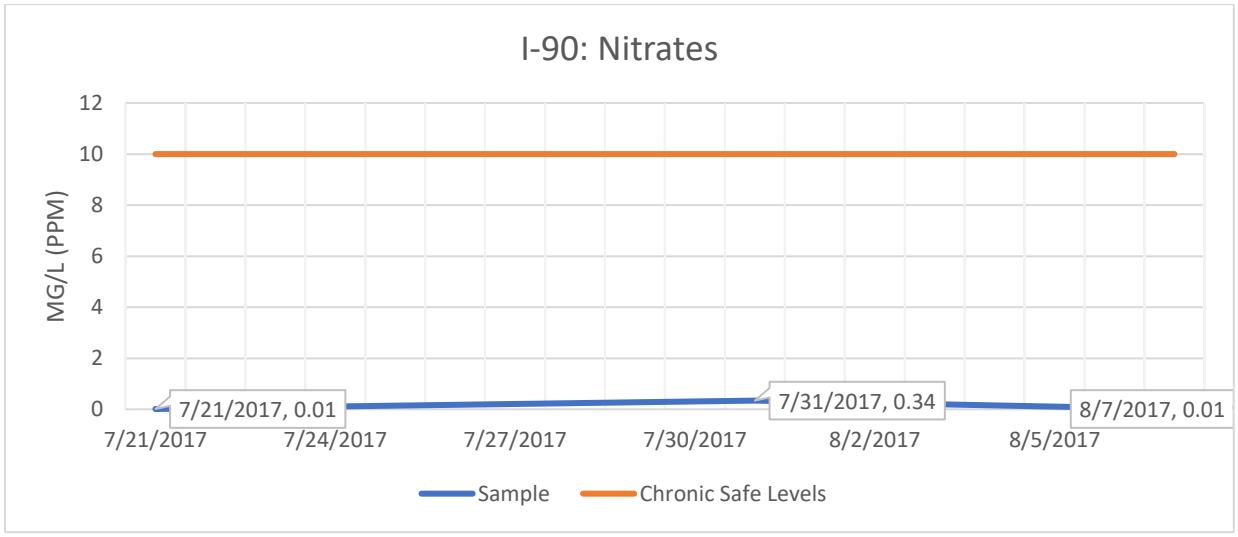

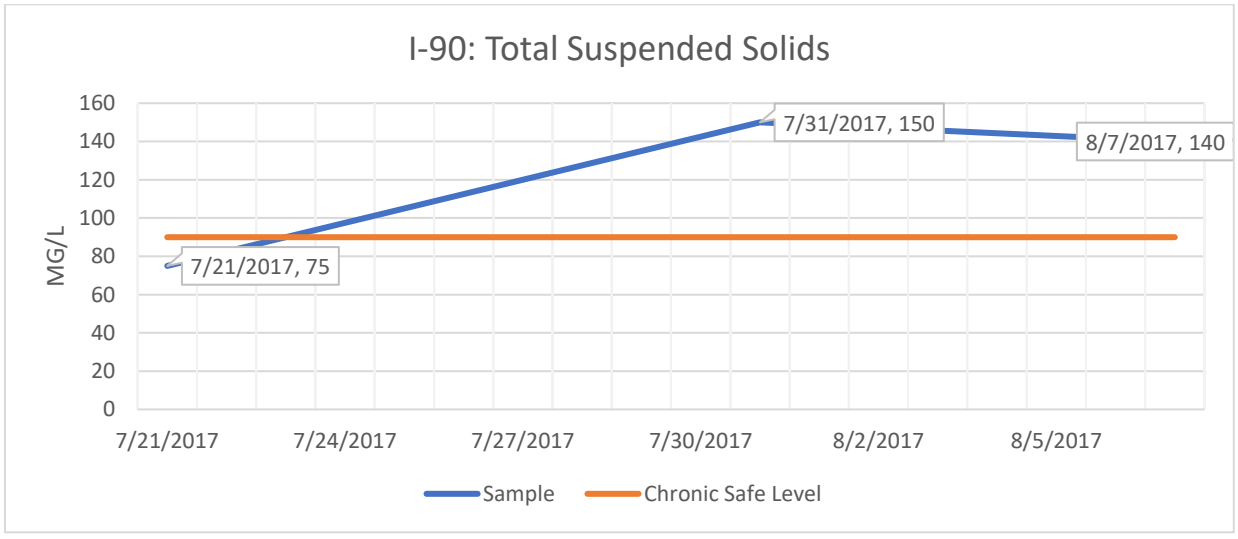

Testing performed by American Engineer Testing, Inc.

E Coli

The Big Sioux River has a designated use for Immersion Recreation. The State of SD has established the following E. Coli bacteria criteria to protect these water bodies for their designated use.

- ≤ 235 colonies/100 mL (Daily Limit)
- ≤126 colonies/100 mL (30 Day Geometric Mean)

If the Big Sioux River exceed these water quality criteria then the water quality is not good enough for this designated use. For example, elevated levels of E. Coli bacteria may be a health concern to the public if they use these waters for swimming

Total Suspended Solids

The Big Sioux River has a designated use for Warmwater Semipermanent Fish Life. The state of SD has established the following Total Suspended Solids criteria to protect this water body for this designated use.

- ≤158 mg/L Daily Max (Acute Criteria)
- ≤90 mg/L 30 Day Average (Chronic Criteria)

High levels of Total Suspended Solids (TSS) can clog fish gills which can interfere with the fish's ability to breathe. Higher levels of TSS can cause the water with the water body to cloudy, making it difficult for aquatic life to find food. The cloudy mucky water also reduces light penetration. This reduction in light decreases the ability of aquatic plants to produce food and oxygen. As the solids settle during lower flows, the silt may also smother bottom-dwelling organisms, cover breeding areas, and smother eggs. TSS can also influence temperature and dissolved oxygen.

Nitrates

The EPA has set a national standard of safety level at 10 parts per million. The state of South Dakota has not set a nitrate level for state waters

Nitrate (NO_3) is a form of nitrogen. It is a natural part of soil and groundwater. Human activities such as fertilizer use and manure applications, have increased nitrate concentrations in drinking water to levels above EPA's drinking water standard. Why is nitrate contamination a concern? Nitrate is an acute contaminant, meaning that one exposure can affect a person's health. Too much nitrate in your body makes it harder for red blood cells to carry oxygen. While most people recover quickly, this can be very dangerous for infants and some adults. Infants exposed to high amounts of nitrate may develop "blue baby syndrome." This illness is rare, but it can be fatal. Infants may be especially vulnerable if they are fed with formula mixed with well water that has a high nitrate concentration. Research on other human health effects of nitrate in humans has been inconclusive

When products containing nitrogen, such as fertilizer or manure, are applied to land, natural bacteria living in the soil can change nitrogen into nitrate. Human waste from septic systems can also be a source of nitrate. Rain or irrigation water can carry the nitrates down through the soil to the groundwater below.

Testing performed by American Engineer Testing, Inc.