KATHRYN ANGLIN-IRWIN & YOUNG B. KIM, Department of Applied Sciences, School of Arts & Sciences, Bluefield State College, Bluefield, WV. Comparison of Aerobic Digestion and Oxidation Ditch Wastewater Treatment Systems

Wastewater treatment is the process of converting wastewater into water that is suitable to be discharged back into the environment. Proper wastewater treatment is essential in order to ensure the health of the population and the environment. According to a June 2012 USEPA case study in Fairfax County, Virginia, poorly designed/managed wastewater treatment systems lead to the pollution of nearly 900 miles of streams, lakes, and ponds. Due to environmental consequences resulting from poor management, two distinct treatment systems will be explored to observe their efficacy. They are aerobic digestion at Bland Correctional Center and oxidation ditch at Appalachian Detention Center. Both systems are common as they are simple and cost effective. My hypothesis is that aerobic digestion will be the more effective over oxidation ditch, and objective is to determine which is the more effective system. The tests to be performed include carbonaceous biochemical oxygen demand, total suspended solids, and *E. coli*. Once all data from both institutions are collected, it will all be analyzed and compared against current USEPA standards. It is anticipated that the Bland Correctional Center's aerobic digestion system will have much lower *E. coli*, TSS, and CBOD readings in their samples because the institution sends samples to Blue Ridge Analytical Environmental Laboratory thrice weekly to ensure compliance to EPA standards, while Appalachian Detention Center only sends samples once monthly. Given the data observed so far, all tests conducted at Bland Correctional Center have proved that the facility is well within compliance of USPEA standards. *(Supported by Bluefield State College and Virginia Department of Corrections)*