THE EFFECTS OF INCREASED DISCHARGE ON THE CHANNEL MORPHOLOGY OF KILLJORDAN CREEK, IL

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Daniel Paul Schmidt

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ABSTRACT

The channel morphology of a stream is dependent on a number of variables; discharge, velocity, gradient, bed and bank materials, sediment concentration, etc. If one variable is altered, the stream will adjust to compensate for the change. Killjordan Creek has experienced a large increase in discharge over the last 60 years. The source of the increased discharge is the city of Macomb wastewater treatment plant. The water discharged is from an adjacent drainage basin. This study attempted to measure the effect of the increased discharge on the channel morphology of the Killjordan. Hydraulic and channel geometry variables were measured and analyzed through the use of field work and a historical sequence of air photos respectively. The research found that the Killjordan has experienced accelerated meandering and vertical and lateral erosion downstream from the treatment plant discharge. The Killjordan is altering its length and cross-sectional area to compensate for the increased discharge. In compensating, vegetation is being undercut and headward erosion on tributaries may affect surrounding areas in the future.