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SEQUENCE
Activity I: Soup Can Water Budget
Activity II: Geo Sandbox Water Budget
Activity III: Small Scale Watershed - Schoolyard
Activity IV: Large Scale Watershed – Battelle Darby Creek
Activity V: Land Use Change – Hellbranch Run

OVERVIEW OF THIS ACTIVITY
Activity V provides a detailed examination of one watershed within Central Ohio with a specific focus on water flow and additional water quality measurements such as total suspended sediment, biochemical oxygen demand, chemical oxygen demand, soluble phosphorous, and lead. This activity extends student understanding to include materials carried within water and also serves as a self-contained activity looking at land use in classrooms that might not have time to complete Activities III and IV.

COORDINATION WITH OTHER FOUR ACTIVITIES
During Activity I, students use materials to create an apparatus and process to investigate the ultimate destination for water delivered to a system. Students make quantitative measurements and compare two different soil substrates. The first activity results in a mental schema for how water ultimately flows through a system. During the Activity II, the instructor introduces a miniature watershed, named a GeoSandbox, to provide a conceptual bridge between the schema created in Activity I and the watersheds of Activity III. Students introduce known quantities of water to the GeoSandbox using spray bottles and measure the resulting surface flow and infiltration. The concepts of topography and land use are also introduced. Additional instructional materials are provided to firmly establish the concept of watershed for students who need the support.

During Activity III, students are taken to an area of the schoolyard that is readily seen from one location. The surface area and slope are measured, the land use is noted, and students estimate the volume of water that would fall during a rainfall event. Using a highly relevant question about flooding, students begin to understand the complexity of water flow within a watershed and benefits of utilizing computer models. The web application, titled Simple Storm Runoff Model for Geosciences Education, is introduced to allow students to use computer models to examine impacts of various storm events and land use changes to the schoolyard watershed. Free, online tools, such as Google Earth Pro, Google Maps, and various sites from the U.S. Geological Survey and National Weather Service are also introduced so that students can expand their geographic scope without needing to personally collect every measurement.

Activity IV expands the watershed from the schoolyard to a large drainage. This activity continues with an examination of changing land uses within the drainage and discusses interactions between society and the environment. A number of supporting activities are provided for those students who need practice with topographic maps or learning to use various web resources.