UK Cooperative Extension BAE Logic Model for Urban Water Resources Management and Design: STEM/Environmental Education, Carmen Agouridis, Ph.D., P.E.

Situation Analysis

The Next Generation Science Standards (NGSS) represent a revision of U.S. science standards to more align content to international benchmarks (Elkins, 2013). The NGSS include requirements to teach both science and engineering practices, the latter of which pose more challenges due to the unfamiliarity of many K-12 educators with engineering concepts (Nadelson, et al., 2012). To promote environmental stewardship and sustainability, it is important to have younger generations well-informed on the inner workings of the environment. Kentucky has developed the Kentucky Environmental Literacy Plan which is a "planned approach to improving the environmental literacy of all students" (KELP Task Force, 2012). Educational programs and materials are intended to assist K-12 educators and 4-H/youth development agents in the design of interactive learning environments and engaging lesson plans.

Elkins, S. 2013.Next generation science standards. Kentucky Department of Education. Available at: http://education.ky.gov/curriculum/sci/pages/next-generation-science-standards.aspx.

[KELP Task Force] Kentucky Environmental Literacy Plan Task Force. 2011. Kentucky Environmental Literacy Plan. Education and Workforce Development Council, Kentucky Department of Education, and Kentucky Environmental Education Council, Frankfort, KY.

Nadelson, L., A. Seifert, and J. Hettinger. 2012. Teaching by design: preparing K-12 teachers to use design across the curriculum. American Society for Engineering Education.

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Inputs	Outputs		Outcomes/Impact		
	Activities	Participation	Initial/Short Term	Intermediate Term	Long Term
• Time • Funding • Equipment • Supplies • Personnel • Teacher collaboration • School collaboration • Non-profit collaboration • Agency (federal, state and local) collaboration	• Fact sheets and Cooperative Extension publications • Refereed journal articles • On-site visits and consultations • In-service trainings for agents and teachers • Workshops • Presentations at state/ national conferences • Web-based resources	• Consultants • Extension agents • 4-H agents • 4-H youth • Teachers • Non-profits • College students • Watershed stewards • Federal, state and local government employees	Participants and teachers will gain knowledge about one or more of the following topics: -Watersheds -Stormwater and stormwater management practices -Water quality -Stream assessment and restoration -Erosion -Urban agriculture Youth will increase interest in STEM related careers	Participants will: -Demonstrate and share knowledge and skills with others -Adopt environmentally sustainable behaviors Teachers will use the environment as a basis to teach lesson across disciplines - Teachers will design, build and use an outdoor classroom at their school -Test water quality using a kit -Practice methods to reduce or prevent erosion -Survey and assess streams	Increased number of individuals pursuing STEM careers Utilization of scientific method to solve problems and make informed decisions Improved natural environment

			Teachers will gain knowledge about one or more of the following topics: -How to design, build and utilize outdoor classrooms -Resources to contact for assistance	-Plant a school garden Students will take STEM classes	