

# Expanding Watershed Education and Outreach via an Em2 Stream Table

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## Background

Biologists and educators on the Peninsula have long felt the need to be able to visually demonstrate watershed principles and geomorphic concepts in an understandable way to a wide variety of audiences. An excellent tool to demonstrate these concepts is a stream table. After considerable research on different types and designs, the U.S. Fish and Wildlife Service (USFWS) and the Kenai Soil and Water Conservation District (KSWCD) worked with a company called Emriver to purchase an [Em2 stream table](#) in 2021. The name of the table doesn't tell the complete story: this is a highly portable table that is large enough to demonstrate more than just stream dynamics, it can help tell the story of watersheds and the natural and anthropogenic processes that shape them. A few of the many concepts that can be demonstrated include:

- How undersized culverts impact stream function and fish passage
- How vegetation removal impacts streambank stability and accelerates erosion
- How impervious surfaces can increase erosion and facilitate pollution via runoff
- The vulnerability of development within the flood plain or on cut banks
- The impact of rip rap, rock jetties, and other hardened structures on stream hydrology

*"WE HAD SO MUCH FUN WITH THE RIVER TABLE! I LOVE HOW IT IS SO OPEN ENDED AND CUSTOMIZABLE TO DIFFERENT LEVELS AND INTERESTS. THE BEST PART THOUGH IS WATCHING THE KIDS' FACES WHEN THE THINGS THEY LEARN IN THEORY BECOME REAL BEFORE THEIR EYES AND IN THEIR HANDS...SO FUN!"*

-KPBSD ELEMENTARY TEACHER, 2022



Em2 being enjoyed by visitors at the 2022 River Fest. Photo by Kyle Graham/USFWS

The USFWS and KSWCD collaborated with the Kenai Watershed Forum early on to assist in both developing a Kenai-specific curriculum for utilizing the Em2 in the school setting and also to assist in deploying the Em2 in schools and at events. The River Center and the USFWS have also utilized the Em2 at events including an open house at the River Center, the Kenai Peninsula Sports Show, and River Fest.

## Purpose and Need

In just over six months, the Em2 has reached over 200 kids in the school setting, and hundreds of community members and visitors at community events. All accounts point to the Em2 stream table being an incredible resource for our area. Feedback from schools, partners,

landowners, agency personnel, and community members has been overwhelmingly positive. We have even received requests from partners as far away as Palmer to use the table. **We have quickly learned that a second Em2 is needed to meet the high demand – in particular, the demand of landowner education.**

*Ideas and Opportunities*

The intent would be for a second Em2 be hosted by the River Center but available for use by partners. In addition to being ready for use in the River Center lobby to demonstrate concepts to landowners and other permit applicants, there are numerous other opportunities to maximize use of a second table. The following is a cursory and unvetted list of ideas and opportunities for a second table:

- Utilize the Em2 at community events beyond the Kenai/Soldotna area, for example Homer, Ninilchik, Cooper Landing, and beyond.
- Utilize the Em2 at the Seward and Kenai permitting days to present landowners and community partners with watershed and streambank health topics and best management practices.
- Develop a series such as “Watershed Wednesdays” at the River Center where the Em2 could be utilized to highlight relevant principles. Guest speakers could be brought in to provide educational talks on topics of interest.
- Develop a session for the Guide Academy, providing guides with knowledge to share with clients to not only enhance client experience but to create a culture of appreciation of the Kenai’s resources.



KWF staff demonstrating stream processes to a community member. Photo by Meg Pike/KWF



*“AFTER ATTENDING THE OPEN HOUSE AT THE RIVER CENTER IN DECEMBER, I UNDERSTAND WHY PILING ROCKS ALONG MY STREAMBANK IS A BAD IDEA FOR THE STREAMBANK AND FOR FISH. I’VE TOLD MY NEIGHBORS THAT TOO.*

-LOCAL LANDOWNER, 2021

*Projected Costs and Proposed Cost-Sharing*

The quote below from Emriver was issued June 29, 2022 and is valid for 90 days and represents an equivalent model to the Em2 purchased in 2021. We propose to divide the costs equally between the KPBS and the USFWS. USFWS dollars would be provided via a pass through agreement with the Kenai Soil and Water Conservation District.

One Complete Standard Emriver Em2 System	\$5,850.00
Upgrade to Color-coded-by-size Modeling Media	\$3,170.00
K500 Digital Flow Controller	\$1,835.00
Structures Kit	\$225.00
Academic Kit	\$310.00
Emriver Battery Adapter	\$115.00
Shipping	\$1,012.00
<b>Total</b>	<b>\$12,517.00</b>