

Memo

To: Whom it may Concern

From: SCRП Team

Date: 10/7/2013

Subject: Preliminary Decision Matrix

Decision matrices aid in the decision-making process by assigning numerical values for different parameters of proposed design alternatives. For the SCRП, four design alternatives were proposed; taking no action, a concrete-lined channel, a rock-vane structure, and a natural-channel design. Taking no action involves letting nature take its course. A concrete-lined channel involves lining the existing channel with concrete for stabilization. A rock-vane design involves the placement of a weir-like rock bar structure across the channel to prevent further channel-incision around the culvert. The natural-channel design involves realigning the channel with the culvert using a reference reach as a template. This includes using native vegetation for bank-stabilization and flood plain reactivation. Using a decision matrix, numerical values were assigned to each design for different parameters. The scale used was 1 through 5, where 1 is a poor value and 5 is the best value. Figure 1 below illustrates the decision matrix used.

Decision Matrix							
Design	Cost	Construction Time	Earthwork	Stability	Natural Integration	Lifespan	Total
Take No Action	5	5	5	1	1	1	18
Concrete-Lined Channel	1	2	5	5	1	3	17
Rock Vane	4	4	5	2	1	2	18
Natural Channel Restoration	3	3	2	5	5	5	23

Figure 1: SCRП Decision Matrix

As illustrated in Figure 1 above, the Natural Channel Restoration design proves to be of the highest quality. The cost, construction time, and lifespan parameters are self-explanatory. The earthwork parameter defines the soil volume required for cut and fill operations. Stability represents the avoidance of head cutting and further channel incision. Natural integration encompasses aesthetics and the use of native resources. In conclusion, the Schultz Creek Restoration Project design will consist of a natural channel restoration. Different natural channel designs will later be analyzed using another decision matrix.