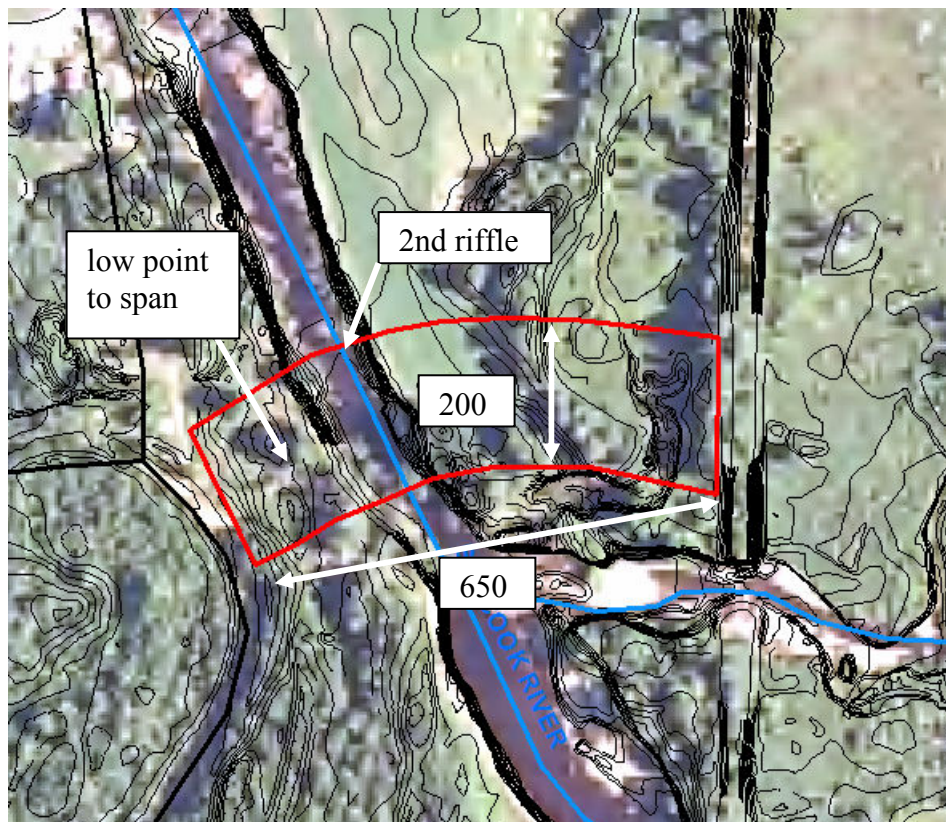




- Thickness: 7 ft, which equals approximately two grain size diameters in thickness. The rock would be approximately 3-4 ft in diameter
- The rock would be placed in the channel from the top of the second riffle downstream through most of the deep pool. The rock at the top of the riffle would provide the same backwatering upstream as the existing 30% designs discussed on Jan 3.
- Outside of the channel, the rock would be placed approximately 13-15 ft below the ground surface. This depth is at approximately the water line - excavating below that point becomes significantly more challenging and expensive. This also allows for sufficient fill on top of the rock so that it is not visible and does not impact farming or other surface disturbances. If the 10-ft knickpoint does migrate upstream and exposes the rock outside of the channel, this rock will collapse into place at the elevation of the migrating knickpoint. Essentially, the constructed grade control will drop into place once it is undercut and will adjust into a stabilized riffle. Placing the rock at the expected elevation of the bed if the knickpoint were to migrate would necessitate excavating significantly more material.



## Cost Estimate

A few assumptions have been made regarding the cost estimates:

- We have assumed the dimensions discussed above - the boundaries of the railroad berm and race track seem appropriate in the near term, but they are not beyond the meander belt-width of the Suncook River.
- The cost estimate does not include property acquisition or reimbursement for lost revenue, etc.
- Water control costs assume that rock will be placed in the Suncook River in wet conditions and that the river will not be diverted
- Excavated sediment will be disposed of on-site, either to fill in the excavation areas or for other uses (landowners may want fill)
- Cut/fill volumes were roughly calculated based on estimated dimensions - volumes were not calculated with CAD surfaces or otherwise

The costly line item is the rock necessary for the grade control. If rock can be obtained more cheaply, this cost could be diminished significantly. We have also included a 20% contingency cost. The mobilization/demobilization costs are 12% of the total cost of the remaining line items. In general, these costs are likely a bit conservative, but we feel that is preferable to the alternative at this level of estimation.

No.	Bid Item	Unit	Unit Price	Quantity	Subtotal
S1	Mobilization & Demobilization	LS	\$469,207	1	\$469,207
S2	Clearing & Grubbing	acre	\$20,000	2.6	\$52,000
S3	Water Control	LS	\$50,000	1	\$50,000
S4	Access & Traffic Control	LS	\$15,000	1	\$15,000
S5	Erosion & Pollution Control	LS	\$15,000	1	\$15,000
S6	Excavation (cut)	CY	\$6	55,370	\$332,222
S7	Excavation (fill)	CY	\$6	55,370	\$332,222
S8	Rock	TON	\$65	47,185	\$3,067,037
S9	Surface Fabric Treatment	SY	\$6	530	\$3,180
S10	Existing Wood Salvage	EA	\$200	50	\$10,000
S11	Seed	LB	\$100	30	\$3,000
S12	7-Gallon Container Plants	EA	\$160	140	\$22,400
S13	5-Gallon Container Plants	EA	\$100	80	\$8,000
			<b>Construction Subtotal</b>		\$4,379,269
<b>Contingency &amp; Construction Oversight</b>					
S14	20% Contingency	20% Subtotal	20%	--	\$875,853.84
S15	Construction Oversight	LS	\$80,000	1	\$80,000
			<b>Construction Total</b>		\$5,335,123
			<b>GRAND TOTAL</b>		<b>\$5,340,000</b>