

RESTORATION COST ESTIMATES



King County

Department of
Natural Resources and Parks
Water and Land Resources Division

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Cost Estimates for Basin Restoration Planning

- ✈ Detailed cost estimates for B-IBI restoration activities are very difficult to establish
- ✈ Determining specific volume/extent of restoration not feasible through GIS analysis
- ✈ As a result cost estimates are done by restoration type
- ✈ Even detailed cost of restoration types has significant variability (location, agency, ownership, etc.)
- ✈ Individual site visits would be necessary to establish a more accurate estimate



In Stream Restoration Costs

- 🐜 Instream project cost based on King County Restoration projects
- 🐜 Many variables exist including:
 - 🐜 Depth and width of channel, linear meters of restoration needed, pieces of wood/depth of substrate, anchoring, etc.



In Stream Restoration Costs(cont)

Restoration Action	Crude Estimate of Unit Construction Cost (Includes Mobilization, TESC, Water Management)	Tax, Contingency, CM&I (multiplier on construction cost)	Design (Multiplier on Construction cost)	Monitoring and Maintenance (Multiplier on Construction cost)	Total Cost	Assumptions
Large Wood Placement for Hydraulic Diversity	\$20,000-\$30,000	1	0.25 - 1	0.05-0.2	\$47,000-\$108,000/100m	1 log w/rootwad/6-10 m
Bank Stabilization	\$45,000- \$70,000	1	0.25-1	0.05-0.2	\$105,000-\$252,000/100m	1 log/5M, 1 shallow pile/3.3M
Establishing Spawning substrate (Import of Gravel)	\$100,000-\$200,000	1	0.25-0.5	0.05-0.2	\$236,000-\$720,000/100m	Suitable conditions, but lacking gravel
Establishing Spawning Substrate	\$20,000-\$30,000	1	0.25 - 1	0.05-0.2	\$47,000-\$108,000/100m	1 log w/rootwad/6-10 m

Riparian Planting Cost Estimates

Restoration Action	Crude Estimate of Unit Construction Cost (Includes Mobilization, TESC, Water Management)	Units	Tax, Contingency, CM&I (multiplier on construction cost)	Design (Multiplier on Construction cost)	Monitoring and Maintenance (Multiplier on Construction cost)	Total Cost
Riparian Plantings	\$25,000	Planting Costs per Acre	0.2	0.2	0.4	\$35,000-45,000/acre

<i>Plants</i>	<i>Quantity</i>	<i>Spacing</i>	<i>Cost</i>	<i>Notes</i>
Conifers	680	8' O.C.	\$2,040.00	
Deciduous trees	870	5' O.C.	\$2,610.00	
Shrubs	870	5' O.C.	\$2,610.00	
Planting labor	9 days		\$12,000.00	
Mulch/weed fabric			\$6,500.00	Labor and mulch
Weed control			\$5,000.00	3 years
Watering			\$5,000.00	2 years
Total			\$35,760.00	

*Estimated cost of one acre of riparian restoration with no existing native plants.

Stormwater Retrofit Cost Estimates

- Based on WRIA 9 Stormwater Retrofit Project
- Retrofit BMP's include: bioswales, retention/detention ponds, rain barrels, cisterns
- Optimized for cost effectiveness/treatment (SUSTAIN model)
- Merged into 3 land use categories: commercial, agricultural, residential
- Average of many detailed parameters considered in the project (soil type, precipitation zone, slope, land cost, land use type)
- Based on 100 acre catchments



Stormwater Retrofit Cost Estimates (cont)

Type of costs	Land Use		
	Agriculture	Commercial	Residential
Private Cap (\$M)	3.55	3.39	4.85
Private O&M (\$M)	3.00	2.86	4.03
Private Total (\$M)	6.56	6.25	8.88
Public Cap (\$M)	2.15	10.56	4.15
Public O&M (\$M)	0.35	0.41	0.32
Public I&E (\$M)	6.28	5.96	8.25
Public Total (\$M)	8.77	16.92	12.72
Total Cap (\$M)	5.70	13.95	9.00
Total O&M (\$M)	3.35	3.27	4.35
Total I&E (\$M)	6.28	5.96	8.25
Total (\$M)	15.33	23.18	21.60

Note: Land costs are for a 100 acre catchment with homogenous land use

Other Restoration Activities

🐜 Still developing cost estimate's for:

🐜 Agricultural BMP's

🐜 Forest BMP's

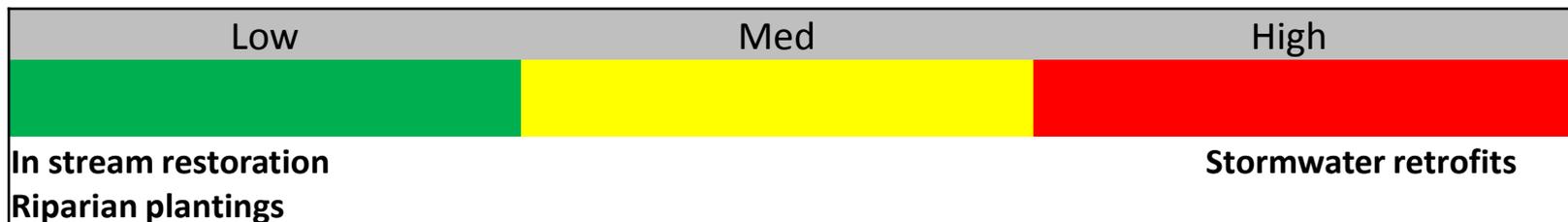
🐜 Mining BMP's

🐜 Programmatic BMP's



Binning Restoration Cost Estimates

- Given the uncertainty of the cost estimates binning may be preferred
- Unclear who bears the costs of some restoration activities (mining, agriculture, forest)
- Ranges of bins TBD (low=0-2M, med 2M-10M, high=>10M)



Programmatic BMP's (likely low)

Agricultural BMP's (likely low)

Mining BMP's (likely low to med)

Forest BMP's (likely low to med)

Break Out Groups

WRIA 15 & 18

Anderson	Artondale
Bagley	Barker
Big Scandia	Boyce
Carpenter	Gamble
Herron	Jump Off
Little Anderson	Little Boston
Mosher	Parish
Purdy	Ray Nash
Seabeck	Stavis

WRIA 9, 10, 13

Christenson	Crisp
Fisher	Green Cove
Icy	Indian
Judd	Mission
Newaukum	O'Grady
Rock trib	Soosette
Spiketown	Tahlequah

WRIA 5 & 7

Boxley	Brockway
Carpenter trib	Cherry trib
Clough	Coal
Harris	Harvey
Little Pilchuck	Portage
Raging trib	Ricci
S Fk Snoqualmie trib	Swartz Lake

WRIA 8

Cabin
Carey
Fifteenmile
Laughing Jacobs
May
Rock
Stensland

