

## Capital and Non-capital Costs Ranges for North Reach Restoration Actions

2/15/08

Capital Costs of Site Preparation/ Restoration Actions	Unit Cost Range	Sources	
Land Acquisition	\$5-15/ sq ft	Steve Kountz, City of Portland Bureau of Planning	(\$5-15/ sq ft)
		Don Ossey, Capacity Commercial Group	(\$8-20/ sq ft)
		Tom Dechenne, Norris, Beggs & Simpson	(\$12-15/ sq ft)
		Paul Agrimis, Vigil-Agrimis	(\$18-23/ sq ft)
		Seth Hudson, Portland Development Commission	(\$5-7/ sq ft)
		* Unit cost has been revised and set at \$6/ sq ft based on input of Integration Task Group.	
Removal of Paving	\$10-20/ sq yd	Fahim Rahman, City of Portland Bureau of Environmental Services	(\$10-20/ sq yd)
Removal of Over-water structures	\$4-15/ sq ft	Evergreen Funding Consultants, <a href="#">Seattle SAMP analysis</a>	(\$4-15/ sq ft over water; \$4-12/ sq ft on land)
		Andy Jansky, Flowing Solutions	(small piers \$4/ sq ft)
Removal of Land-based structures	\$4-12/ sq ft		
Removal of Armoring	\$30-200/ lin ft	<a href="#">Seattle SAMP analysis</a>	(\$30-150/ lin ft)
		Jansky	(\$100-\$200/ lin ft)
Removal of Pilings	\$500-\$600 per	Jansky	(cutting & removal of pilings at \$500- \$1,000/ piling)
Removal of Fill	\$15-50/ cu yd	City of Portland Bureau of Environmental Services Ramsey Refugia Project bid tabs	(\$16-\$20/ cu yd)
		Agrimis	(\$15-50/ cu yd)
		Jansky	(as low as \$9/ cu yd for clean, easy to move material)- \$50 / cu yd;
		<a href="#">Seattle SAMP analysis</a>	(\$25-50/ cu yd)
Bioengineering for Bank Stability	\$20-60/ sq ft	Agrimis	(\$20-60/ sq ft)
		Jansky	(\$1000-2,000/ lin ft)
		Evergreen Funding Consultants, <a href="#">Primer on Habitat Project Costs</a>	(\$400-700/ lin ft)
		Soil Bioengineering at <a href="http://www.wsdot.wa.gov/eesc/design/roadside/sb.htm">http://www.wsdot.wa.gov/eesc/design/roadside/sb.htm</a>	(\$1.73-\$3.83/ sq ft – DOT & WCC labor- roads)
		Shoreline Hardening <a href="http://hudsonriverestuary.pbwiki.com/Shoreline+Hardening">http://hudsonriverestuary.pbwiki.com/Shoreline+Hardening</a>	(\$180/ m)
		Best Management Practices for Soft Engineering of Shorelines, Patterson, 2000	(\$100-600/ m)
		<a href="#">Bioengineering for Streambank Erosion Control</a> , USACE, 1997	(\$15.19-\$104/ lin ft – higher value for 6' banks, 1997 dollars)
		* Armoring Removal and Bioengineering for Bank Stability Actions have been combined and renamed Riverbank Restoration with a unit cost of \$1,500/ lin ft based on input from Andy Jansky, Flowing Solutions.	

Capital Costs of Site Preparation/ Restoration Actions	Unit Cost Range	Sources	
On-channel Habitat Enhancement	\$12-50/ sq ft	Agrimis	(high end of \$40-50/ sq ft)
		<u>Seattle SAMP Analysis</u>	(\$12-33/ sq ft- extensive restoration)
Wetland Enhancement	\$2-4 sq ft	Floodplain: Scot Clement, City of Portland Bureau of Environmental Services (Tryon; Ramsey Refugia; Oaks Bottom; Brownwood; Stevens Creek Projects)	(\$2-5/ sq ft); Brownwood (\$3.15 sq ft)
		<u>Evergreen Funding Consultants Primer on Habitat Project Costs</u>	(\$.46-\$2.30/ sq ft)
Stream Daylighting	\$600-1,500/ lin ft	<u>Daylighting and Restoring Streams in Rural Community City Centers: Case Studies</u> ; National Park Service, 2002	(\$166-\$11,600/ lin ft)
		<u>Daylighting: New Life for Buried Streams</u> ; Pinkham, Stormwater Journal, 2001	(\$1,000/lin ft)
		<u>Urban Stream Daylighting: Case Study Evaluations</u> , VA Polytechnic Institute, 2007	(\$68-812/ lin ft)
Stream Enhancement	\$7-15/ sq ft	City of Portland, Bureau of Environmental Services Lents Crossing Project	(\$800/ lin ft/ 100 ft width = \$8 sq ft)
		Agrimis	(high end to \$1500/ lin ft)
		<u>Seattle SAMP Analysis</u>	(\$7-14/ sq ft for moderate restoration)
Revegetation/ Wetland Enhancement	\$ .30- \$2/ sq ft	Lynn Barlow, City of Portland Bureau of Environmental Services	(\$ .25-\$.32/ sq ft)
		Mark Wilson, City of Portland Parks and Recreation	(\$ .46-\$.92/ sq ft)
		Clement	(\$.46/ sq ft for sites > 1 acre)
		Agrimis	(high end to \$2/ sq ft)
		<u>Seattle SAMP Analysis</u>	(\$1-4/ sq ft for simple restoration)
		<u>Evergreen Funding Consultants Primer on Habitat Project Costs</u>	(\$ .45 – \$1.15/ sq ft)
		Wetland: Mark Wilson, City of Portland Parks and Recreation	(\$20,000/ acre)
Oregon Department of State Lands Wetland Mitigation Banking Program	(\$75,000/ acre)		
Non-Capital Costs of Restoration Actions	Range as a % of Capital Costs	Sources	
Design	10-30%	Clement; Bureau of Environmental Services Stevens Creek Budget; Agrimis; Jansky; Seattle SAMP Analysis, Patty Freeman City of Portland Parks and Recreation	
Permitting	6-15%		
Construction Management	2-3%		
Monitoring	4-9%		
Maintenance & Repair	6-16%		
TOTAL Non-capital Costs	28-73%		

